Case Report

Brunner's Gland Adenoma: An Unusual Cause of Abdominal Pain

Mahbub I[1], Karim ME[1], Hossain MI[1]

Abstract

Background: Brunner's gland adenoma is a rare entity. It can cause various symptoms like bleeding, abdominal pain, and obstruction.

Case Report: This is a case report of a 35-year-old shopkeeper who presented with a 2-month history of episodic upper abdominal pain, burning, and nausea. Upper gastrointestinal endoscopy revealed a pedunculated submucosal swelling with normal overlying mucosa at the first part of the duodenum. Endoscopic ultrasound revealed a mixed echogenic mass originating from the mucosa and submucosa. It was resected endoscopically. Histopathological evaluation of the resected polypoid mass revealed the proliferation of benign Brunner's gland cells in the submucosal region.

Conclusion: Most of the Brunner's gland adenomas are diagnosed by Endoscopy. Endoscopic or surgical intervention remains the mainstay of treatment.

Keywords: Brunner's gland adenoma

Authors:

Imteaz Mahbub
MBBS, MD (Gastroenterology), Registrar, Medical Gastroenterology, National Gastroliver Institute, Mohakhali, Dhaka,
Email: imteaz121@gmail.com.

Md. Enamul Karim
MBBS, FCPS (Medicine), MD (Gastroenterology), Associate Professor, Medical Gastroenterology, National Gastroliver Institute, Mohakhali, Dhaka, Email: mdenkarim@gmail.com.

Md. Iqbal Hossain
FCPS (Medicine), MCPS (Medicine), MD (Gastroenterology), Junior Consultant, Medical Gastroenterology, National Gastroliver Institute, Mohakhali, Dhaka
Email: qbal.dmc@gmail.com

Corresponding Author:
Imteaz Mahbub
Registrar, Medical Gastroenterology,
National Gastroliver Institute, Mohakhali, Dhaka.
Email: imteaz121@gmail.com,
Phone: +8801715792435

Introduction:

Duodenal tumors are an extremely rare entity. It accounts for only 0.5 to 1.0% of the entire gastrointestinal tract tumors.[1,2] Brunner's gland adenoma is a benign tumor originating from the small bowel. It is scarce, with an estimated incidence of < 0.01%.[3] Curveilhier described the first benign duodenal Brunner's gland adenoma case in 1835.[4] It usually originates from the posterior wall of the first or second part of the duodenum as per the distribution of the alkaline mucin-secreting Brunner glands. The pathogenesis is yet unknown. However, primary dysembryoplasia or an exaggerated compensatory response to hyperchlorhydria, pancreatic insufficiency, or H pylori infection have been hypothesized to be the important mechanisms.[5] It is typically found incidentally on endoscopy. When symptomatic, the most common presentations are hemorrhage or gastric outlet obstruction. However, pancreatitis, intussusception, and diarrhea have also been reported.[6,7] Treatment is endoscopic or surgical removal.[8] Here we present a case of Brunner's gland adenoma presenting with upper abdominal pain, burning and nausea.

Case Report:

A 35-year-old male with no significant past medical history presented to the outpatient gastroenterology department with a history of occasional upper abdominal pain, burning, and nausea for 2 months. The pain was mild, burning, episodic, and non-radiating, located in the epigastric region. He had no history of significant weight loss, melena or hematemesis. The patient's medical history was non-contributory. The patient was well-appearing and cooperative during the physical examination. The abdominal examination revealed mild tenderness in the epigastric region. No organomegaly or ascites was found. The rest of the systemic examination was unremarkable. Initial laboratory investigations, including complete blood count (CBC), liver function tests (LFTs) and abdominal ultrasound were within normal limits. The patient underwent an upper gastrointestinal endoscopy and it revealed a smooth, non-ulcerated, submucosal polypoid lesion located in the first part of the duodenum (Figure 1). A biopsy was not performed due to the suspected submucosal nature of the lesion.

Figure 1: UGIT Endoscopic image

Due to the indeterminate nature of the lesion on endoscopy, the patient underwent an endoscopic ultrasound (EUS). The EUS shows a mixed echoic, pedunculated mass approximately 1.5 cm in diameter in the first part of the duodenum. Mass was located in the mucosa and submucosa with minimal vascularity within the mass. These findings were highly suggestive of a benign submucosal lesion, with Brunner's gland adenoma being the most likely diagnosis (Figure 2).

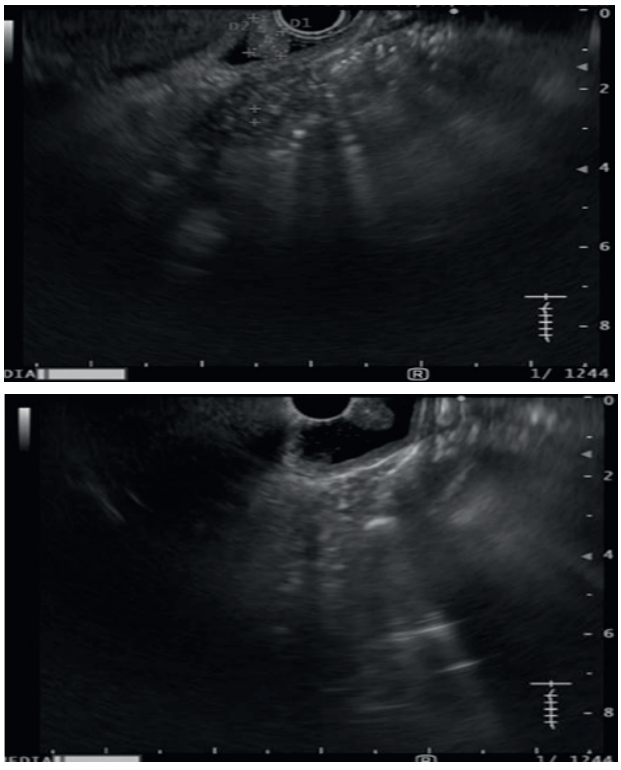

Figure 2: EUS image

After that, endoscopic resection of the mass was done, and it was sent for histopathology. Histopathology reveals proliferation of benign Brunner's gland in the submucosal region and Lamina propria is infiltrated with chronic inflammatory cells (Figure 3).

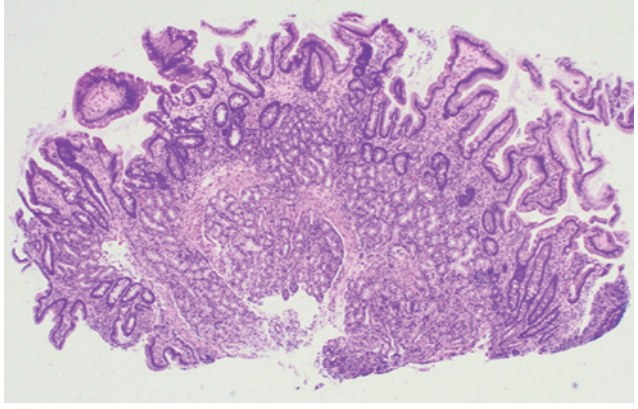

Figure 3: Histologic image

So, based on the clinical presentation, UGIT endoscopy, EUS and histopathology findings, the diagnosis of Brunner's gland adenoma was confirmed.

Discussion:

Brunner's gland adenoma (BGA) is a rare, benign neoplasm arising from the Brunner's glands in the duodenum. Brunner's glands are primarily found in the submucosa of the duodenum. They secrete mucus and bicarbonate, which protect the duodenal mucosa from gastric acid and digestive enzymes. A benign neoplasm arising from these glands is called Brunner's gland adenoma.[9] It is infrequent and diagnosed incidentally during endoscopy or imaging procedures.

Brunner's glands are predominantly found in the duodenum proximal to the ampulla of Vater. The most common site is the duodenal bulb.[10] However, they may extend up to the proximal jejunum. They play a key role in protecting the duodenal mucosa.[11] It arises from the hyperplasia of Brunner's glands and is often presented as a pedunculated mass or nodule in the submucosal layer of the duodenum. These lesions can range from small, benign tumors to larger growths. These lesions can cause abdominal pain, obstruction, or gastrointestinal bleeding.[12]

BGA is linked to factors such as middle age, male gender, and specific genetic conditions. Additionally, it is suggested that chronic irritation of the duodenal lining, possibly from acid reflux or Helicobacter pylori infection, could contribute to its pathogenesis.[13,14]

Brunner's gland adenomas are typically asymptomatic. However, some patients may present with symptoms like epigastric pain, nausea, vomiting, gastrointestinal bleeding, or a palpable mass.[12] In large adenomas, obstruction or intussusception may also occur.

Endoscopy is the most common diagnostic tool for diagnosis. On endoscopy, the adenoma usually appears as a polypoid mass within the duodenum. Ultrasound or CT scans can also help to identify larger tumors.[15,16] However, definitive diagnosis and characterization of the lesion requires histopathology. Most of the cases are histologically benign. However, there have been isolated reports of malignant transformation. Incidence is extremely rare.[17]

The treatment of Brunner's gland adenoma depends upon the symptoms and size of the tumor. In asymptomatic cases, conservative observation may be sufficient. Periodic follow-up by endoscopy should be done to monitor for any changes. In symptomatic conditions like bleeding, obstruction, or a risk of malignant transformation, endoscopic or surgical intervention may be necessary.[18]

The prognosis for patients with Brunner's gland adenoma is generally excellent. Recurrence is rare. However, long-term follow-up may be required, especially in cases that have undergone more conservative management or biopsy.[19]

Conclusion:

Brunner's gland adenoma is a rare benign tumor of the duodenum. It is often asymptomatic but may present with gastrointestinal symptoms in certain cases, requiring endoscopic or surgical intervention. The prognosis is generally good. Further research into its pathogenesis and potential links to gastrointestinal diseases would help refine diagnostic and treatment approaches.

Conflicts of Interest: There is no conflict of interest.

Acknowledgements:

We sincerely thank the patient for permitting us to publish this case report. We also acknowledge the National Gastroliver Hospital authority for their support.

Referencess:

1. Lu Y, Fröbom R, Lagergren J. Incidence patterns of small bowel cancer in a population-based study in Sweden: increase in duodenal adenocarcinoma. *Cancer Epidemiology.* 2012 Jun 1;36(3):e158-163.

2. Zar N, Holmberg L, Wilander E, Rastad J. Survival in small intestinal adenocarcinoma. *European Journal of Cancer.* 1996 Nov 1;32(12):2114-2119.

3. Stewart ZA, Hruban RH, Fishman EF, Wolfgang CL. Surgical management of giant Brunner's gland hamartoma: case report and literature review. *World Journal of Surgical Oncology.* 2009 Dec;7:1-4.

4. Cruveilhier J: Anatomy of the Human Body. New York, Harper and Bros, 1844.

5. Lu L, Li R, Zhang G, Zhao Z, Fu W, Li W. Brunner's gland adenoma of duodenum: report of two cases. *International Journal of Clinical and Experimental Pathology.* 2015 Jun 1;8(6):7565-7569.

6. Rocco A, Borriello P, Compare D, De Colibus P, Pica L, Iacono A, Nardone G. Large Brunner's gland adenoma: case report and literature review. *World journal of gastroenterology:* WJG. 2006 Mar 28;12(12):1966-1968.

7. Vyas S, Skipworth JR, Lytras D, Smyth C, Mee A, Hatfield A, Imber C, Webster G. Rare presentation of Brunner's gland adenoma: another differentiation in patients with recurrent "idiopathic" pancreatitis. *Hepatobiliary and Pancreatic Diseases International.* 2012 Feb 15;11(1):107-110.

8. 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 Reports in Gastroenterology.* 2017 Jan 27;11(1):1-8.

9. Levine JA, Burgart LJ, Batts KP, Wang KK. Brunner's gland hamartomas: clinical presentation and pathological features of 27 cases. *American Journal of Gastroenterology* (Springer Nature). 1995 Feb 1;90(2): 290.

10. Marine D, Jones B, Ghahremani GG, Hamilton SR, Bayless TM. Hyperplasia of Brunner glands: the spectrum of its radiographic manifestations. *Gastrointestinal radiology.* 1991 Dec;16:104-108.

11. Zhu M, Li H, Wu Y, An Y, Wang Y, Ye C, Zhang D, Ma R, Wang X, Shao X, Guo X. Brunner's gland hamartoma of the duodenum: a literature review. *Advances in Therapy.* 2021 Jun;38(6):2779-2794.

12. Ramay FH, Papadimitriou JC, Darwin PE. Brunner's Gland Adenoma with High-Grade Dysplasia. *ACG Case Reports Journal.* 2018 Jan 1;5(1):e81.

13. Stolte M, Schwabe H, Prestele H. Relationship between diseases of the pancreas and hyperplasia of Brunner's glands. *Virchows Archiv A.* 1981 Dec;394:75-87.

14. Yadav D, Hertan H, Pitchumoni CS. A giant Brunner's gland adenoma presents as gastrointestinal hemorrhage. *Journal of Clinical Gastroenterology.* 2001 May 1;32(5):448-450.

15. Gourtsoyiannis NC, Zarifi M, Gallis P, Mouchtouris A, Livaditou A. Radiologic appearances of Brunner's gland adenoma: a case report. *European journal of radiology.* 1990 Nov 1;11(3):188-190.

16. Block KP, Frick TJ, Warner TF. Gastrointestinal bleeding from a Brunner's gland hamartoma: characterization by endoscopy, computed tomography, and endoscopic ultrasound. Official journal of the American College of Gastroenterology| *ACG.* 2000 Jun 1;95(6):1581-1583.

17. Koizumi M, Sata N, Yoshizawa K, Kurihara K, Yasuda Y. Carcinoma arising from Brunner's gland in the duodenum after 17 years of observation–a case report and literature review. *Case Reports in Gastroenterology.* 2008 Oct 12;1(1):103-109.

18. Desai G, Yadav K, Pande P, Sali P, Tampi C, Wagle P. Brunner gland adenoma masquerading as a duodenal gastrointestinal stromal tumor with intussusception: CASE report. ABCD. *Arquivos Brasileiros de Cirurgia Digestiva (São Paulo).* 2017 Jan;30:71-72.

19. Xiang Y, Liu J, Tang D, Wang L, Xu G, Huang Q. The characteristics and treatment outcomes of 71 duodenal Brunner's gland adenomas with endoscopic submucosal dissection. *Digestive Diseases.* 2023 Dec 11;41(6):852-859.