A Case of Brunner's Gland Hamartoma Presenting as Gastric Outlet Obstruction: Surgical Approach and Literature Review

Abstract

Brunner's gland hamartoma, also known as Brunneroma, is a rare, non-cancerous tumor that represents about 5–10% of benign duodenal growths, with an incidence of less than 0.01%. Most cases remain silent, causing no symptoms, but in some instances, they can lead to duodenal obstruction, upper gastrointestinal bleeding, or, more rarely, complications such as biliary fistulation, cholestatic jaundice, or intussusception. Diagnosis is primarily based on imaging techniques and upper gastrointestinal endoscopy. When these hamartomas grow large and cause symptoms, treatment typically involves surgical or endoscopic removal. Here, we present the case of a 50-year-old man with no known medical history who developed symptoms of gastric outlet obstruction. He was diagnosed with a sizable Brunner's gland hamartoma and successfully treated with surgery.

Keywords

Brunner's gland hamartoma, duodenal obstruction, surgery, gastrointestinal pathology.

Introduction

Brunner's gland hamartoma is a rare tumor of the duodenum, accounting for less than 0.01% of all gastrointestinal tumors and approximately 5–10% of benign duodenal lesions. Although these growths are usually asymptomatic, they can sometimes lead to complications such as gastrointestinal obstruction, bleeding, or, in rare cases, biliary and pancreatic involvement. Diagnosis typically relies on imaging studies and endoscopic biopsy. When intervention is necessary, the preferred treatment approach is either surgical removal or endoscopic excision, depending on the size and location of the lesion.

Case Report

A 50-year-old man, with no prior medical conditions, arrived at the emergency department reporting a month-long history of gradually worsening upper abdominal pain, accompanied by nausea and non-bilious vomiting. Over the past week, his symptoms had intensified, making it difficult for him to tolerate oral intake. He denied experiencing fever, unintended weight loss, jaundice, or changes in bowel habits. On examination, he was hemodynamically stable, with mild tenderness in the epigastric region. There was no detectable abdominal mass or organ enlargement, and his bowel sounds were normal.

Laboratory tests showed no significant abnormalities. Contrast-enhanced abdominal computed tomography (CT) revealed a heterogeneously enhancing mass located in the second part of the duodenum, measuring 22 mm in thickness and 36 mm in length, causing complete luminal obstruction (figure1). Upper gastrointestinal endoscopy further confirmed the presence of a large, proliferative mass within the duodenum.

Due to the persistence of symptoms and imaging findings, surgical exploration was performed. Intraoperatively, a broad-based mass was discovered in the duodenum, with partial infiltration into the pancreatic head (figure 2), making a pancreatoduodenectomy necessary. Histopathological examination confirmed the diagnosis of Brunner's gland hamartoma, revealing proliferative acinar glands without atypia, along with signs of chronic pancreatitis (figure3).

Discussion

Brunner's glands are specialized mucin-secreting acinar structures found in the submucosa of the duodenum. Their primary role is to produce an alkaline secretion that helps safeguard the duodenal mucosa from the harsh effects of acidic gastric contents. First identified in 1688 by Johann Conrad Brunner, these glands can sometimes undergo hyperplastic changes, resulting in the formation of nodular or polypoid hamartomas. While the exact cause of this phenomenon remains uncertain, various factors have been suggested, including excessive gastric acid secretion (hyperchlorhydria), chronic inflammation, *Helicobacter pylori* infection, and prolonged pancreatic irritation due to chronic pancreatitis.

Brunner's gland hamartomas are categorized into three types based on Feyrter's classification: **diffuse nodular hyperplasia (Type 1), circumscribed nodular hyperplasia (Type 2), and adenomatous hyperplasia (Type 3)**. Type 3 lesions, commonly referred to as Brunner's gland hamartomas, typically present as solitary polypoid masses. Their size can range from **0.7 cm to 12 cm**, with an average diameter of approximately **4 cm**. These lesions are predominantly located at the junction between the **first and second parts of the duodenum**, making this the most common site of occurrence.

Although most Brunner's gland hamartomas remain asymptomatic and are discovered incidentally, larger lesions can lead to **obstructive symptoms**, including **nausea, vomiting, and abdominal pain**. In rare cases, they may present with **gastrointestinal bleeding** or more severe complications such as **intussusception and biliary obstruction**. The **diagnostic approach** primarily relies on **endoscopy with biopsy**, which allows direct visualization and tissue sampling. Additionally, **contrast-enhanced imaging techniques**, such as **CT scans or MRI**, are valuable in assessing the **size, extent, and potential complications** of the lesion, aiding in treatment planning.

The treatment plan is based on the severity of the symptoms and the size of the lesion. For small, asymptomatic lesions, regular monitoring might be enough. However, if the lesion is larger or causing symptoms, it may need treatment. Endoscopic resection is typically a good option for pedunculated or small lesions, while larger or more invasive lesions often require surgical removal. In cases where the tumor affects nearby structures, a pancreatoduodenectomy, like the one we encountered in our case, may be necessary.

Small, asymptomatic lesions can often be observed, while larger or symptomatic ones typically require intervention. Endoscopic resection is usually the treatment of choice for lesions smaller than 2 cm, especially those with a pedunculated shape. However, surgical resection becomes necessary in the following situations:

- Tumors larger than 3 cm that are causing obstructive symptoms
- Tumors that are broadly attached or invading nearby structures
- Persistent or recurring symptoms despite endoscopic treatments

- Cases where malignancy cannot be ruled out before surgery

Surgical options vary and can include local excision, duodenotomy with polypectomy, or, in cases with significant involvement of the duodenum or pancreas, pancreatoduodenectomy. In our patient's case, a pancreatoduodenectomy was necessary because the tumor had invaded the pancreatic head and caused substantial obstruction, making a less invasive approach impossible. Fortunately, postoperative outcomes are usually positive, with a low risk of recurrence when the lesion is completely removed.

Conclusion

Brunner's gland hamartoma is an uncommon, benign tumor of the duodenum that can cause gastric outlet obstruction. Surgical removal is typically the preferred treatment for symptomatic cases, especially when a less invasive approach isn't possible. Our case underscores the importance of identifying this rare condition in patients who present with duodenal obstruction.

Conflict of Interest The authors declare no conflict of interest.

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Figures:

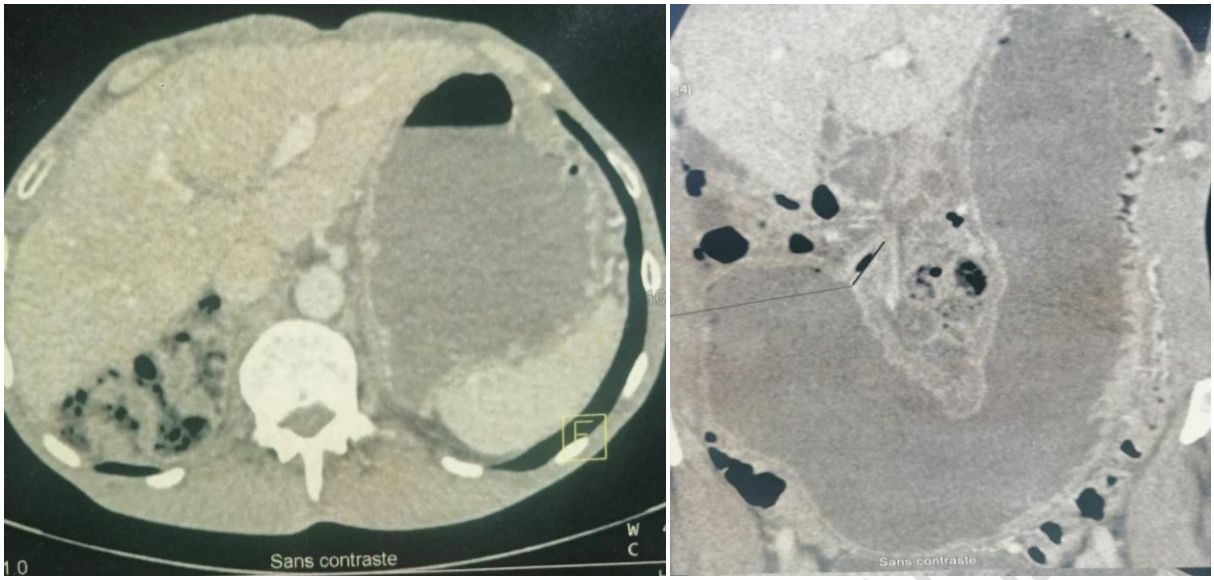

Figure 1: CT scan image showed a heterogeneously enhancing mass located in the second part of the duodenum

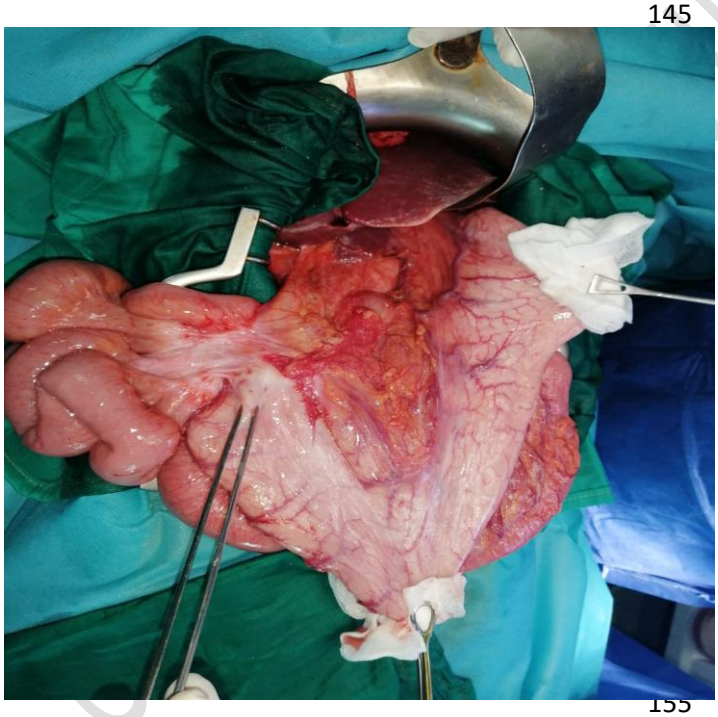

Figure 2: intraoperative image showed a broad-based mass was discovered in the duodenum, with partial infiltration into the pancreatic

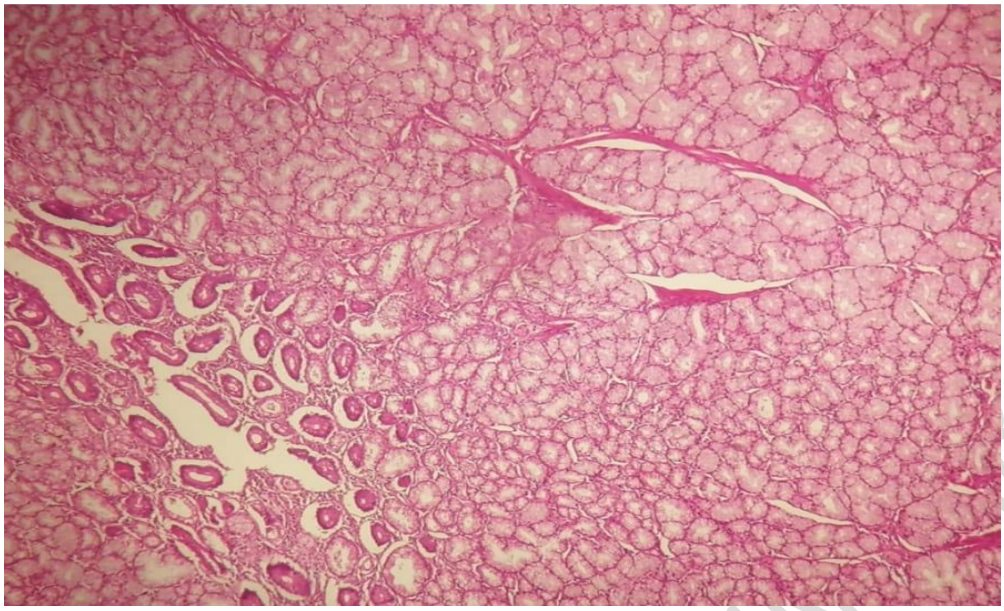

Figure 3: Histopathological image showed a proliferative acinar gland without atypia in favor of Brunner's gland hamartoma