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Giant Brunner's Gland Hamartoma Presenting With Severe Iron-Deficiency Anaemia and Duodenojejunal Intussusception: A Case Report of a Rare Diagnostic Mimic of Duodenal Neoplasia

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Abstract

Brunner's gland hamartoma is an uncommon benign duodenal lesion that may present with gastrointestinal bleeding, iron-deficiency anaemia, or intestinal obstruction. Duodenojejunal intussusception is a rare complication, while the lesion's tumour-like appearance may create significant diagnostic uncertainty.

We report the case of a 31-year-old man presenting with severe iron-deficiency anaemia, abdominal pain, dark stools, fatigue, and exertional dyspnoea. His haemoglobin declined from 136 to 72 g/L over approximately 12 months, requiring transfusion of two units of packed red blood cells. Contrast-enhanced computed tomography (CT) demonstrated duodenojejunal intussusception, with a lobulated duodenal mass acting as the lead point, without evidence of bowel obstruction or active contrast extravasation. Gastroscopy revealed a large vascular tumour-like lesion involving the first and second parts of the duodenum, with mucosal oozing and an appearance suspicious for neoplasia. Endoscopic ultrasound (EUS) demonstrated a polypoidal lesion measuring at least 7 × 2 cm, involving the mucosal and submucosal layers and exhibiting prominent vascularity. EUS-guided fine-needle aspiration biopsy identified numerous closely packed Brunner's glands, with no neuroendocrine tumour or malignant cells detected in the sampled material. Following multidisciplinary correlation of the cytological, endoscopic, and radiological findings, the diagnosis of giant Brunner's gland hamartoma was established.

This case highlights the unusual presentation of a giant Brunner's gland hamartoma with severe transfusion-requiring anaemia and duodenojejunal intussusception. It demonstrates the diagnostic challenges posed by benign duodenal lesions mimicking neoplasia and emphasises the importance of multimodal imaging, targeted tissue sampling, and multidisciplinary assessment in establishing the diagnosis.

Categories: Oncology, Internal Medicine, Gastroenterology
Keywords: duodenal neoplasia, duodenojejunal intussusception, endoscopic ultrasound, gastro-duodenal, iron-deficiency anaemia

Introduction

Brunner's glands are mucus-secreting glands predominantly located in the submucosa of the proximal duodenum. Their alkaline secretions help protect the duodenal mucosa from gastric acid. Brunner's gland hamartoma, also known as Brunner's gland adenoma or brunneroma, is a rare benign proliferative lesion that accounts for a small proportion of duodenal tumours [1].

Most Brunner's gland hamartomas are asymptomatic and discovered incidentally during endoscopy. However, larger lesions may cause clinically significant complications, including gastrointestinal bleeding, iron-deficiency anaemia, abdominal pain, and intestinal obstruction [1,2]. Intussusception secondary to Brunner's gland hamartoma is particularly uncommon, with only a limited number of cases reported in the literature [2,3].

Diagnosis can be challenging because these lesions often arise within the mucosal or submucosal layers and may resemble other duodenal neoplasms, including gastrointestinal stromal tumours, neuroendocrine tumours, and leiomyomas. Conventional endoscopic biopsies may be inconclusive, making endoscopic ultrasound (EUS) and targeted tissue sampling valuable diagnostic tools [1].

We present a case of a giant duodenal Brunner's gland lesion in a 31-year-old man with severe transfusion-requiring iron-deficiency anaemia and duodenojejunal intussusception. The case highlights the diagnostic uncertainty arising from previous investigations suggesting a smooth muscle tumour, the subsequent

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endoscopic suspicion of neoplasia, and the role of EUS-guided sampling and multidisciplinary correlation in supporting the diagnosis of Brunner's gland hamartoma.

Case Presentation

A 31-year-old man was referred to hospital by his general practitioner following a significant decline in haemoglobin from 136 g/L to 72 g/L over 12 months. He presented with worsening fatigue, lethargy, exertional dyspnoea, palpitations, abdominal pain, and dark stools. He also reported recent weight loss of approximately 7 kg over six to eight weeks. Laboratory investigations demonstrated severe iron deficiency, with a serum iron level of 1.4 µmol/L and a positive faecal immunochemical test (FIT). Faecal calprotectin was also elevated at 235 µg/g (reference range: <50 µg/g). He required transfusion of two units of packed red blood cells, following which his haemoglobin increased to 93 g/L. The laboratory findings at presentation are summarised in Table *1*.

Investigation	Patient's result	Normal reference range
Haemoglobin (Hb) (g/L)	72	130-180
Serum iron (µmol/L)	1.4	10-30
Faecal calprotectin (µg/g)	235	<50
Faecal immunochemical test (FIT)	Positive	Negative

TABLE 1: Laboratory investigations demonstrating severe anaemia, reduced serum iron, elevated faecal calprotectin, and a positive faecal immunochemical test

His medical history included gastroduodenitis and previous episodes of gastrointestinal bleeding. He had been under gastroenterology follow-up at another hospital for a known duodenal lesion, which had undergone previous endoscopic investigations and tissue sampling. Earlier findings had raised the possibility of a benign smooth muscle tumour, particularly a duodenal leiomyoma, although the diagnosis remained uncertain. Shortly before the current admission, he had received a short course of naproxen for brachial neuritis, followed by worsening abdominal discomfort.

Triple-phase contrast-enhanced computed tomography (CT) of the abdomen and pelvis performed during the index admission demonstrated duodenojejunal intussusception, with the known duodenal lesion acting as the lead point. A lobulated mass measuring approximately 38 × 26 mm was identified at the distal aspect of the intussusception, with vascular supply from branches of the gastroduodenal artery. There was no evidence of active intraluminal contrast extravasation, bowel obstruction, or extramural extension. Representative CT images are presented in Figure *1*.

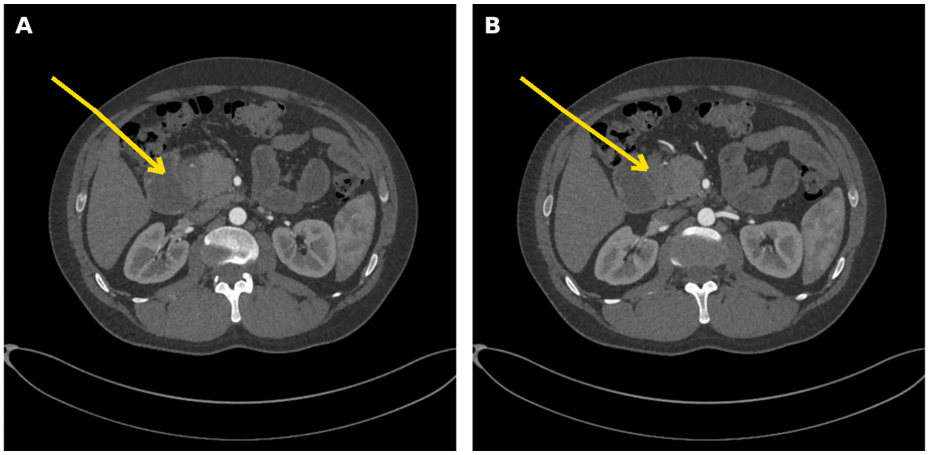


FIGURE 1: Contrast-enhanced axial CT images showing the duodenal lesion

(A, B) Axial CT images highlighting the duodenal mass (yellow arrows). The CT examination demonstrated duodenojejunal intussusception, with the duodenal lesion identified as the lead point, without evidence of bowel obstruction.

Upper gastrointestinal endoscopy demonstrated marked mucosal swelling and a large, vascular, tumour-like lesion involving the junction of the first and second parts of the duodenum (D1/D2). Its appearance raised concern for duodenal neoplasia, particularly a neuroendocrine tumour. Mucosal oozing was observed and treated with six injections of adrenaline (1:10,000), totalling 17 mL. Tissue biopsy was deferred during this procedure because of the lesion's vascularity and the associated bleeding risk. Endoscopic views are shown in Figure 2.

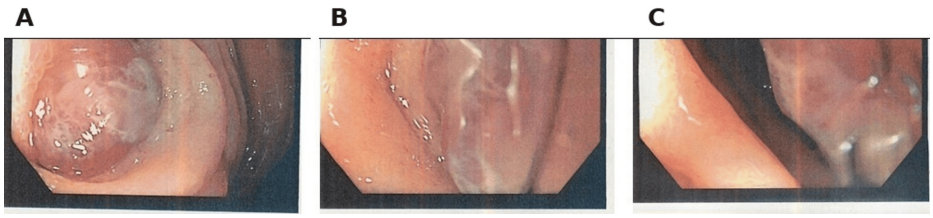


FIGURE 2: Upper gastrointestinal endoscopy showing a large vascular polypoidal lesion at the D1/D2 junction

(A-C) Endoscopic images demonstrating the large, vascular-appearing polypoidal lesion involving the first and second parts of the duodenum (D1/D2). The lesion exhibited marked mucosal swelling and raised initial concern for duodenal neoplasia.

During subsequent diagnostic evaluation following the initial admission, contrast-enhanced linear EUS demonstrated a large polypoidal lesion extending from the duodenal bulb into the second part of the duodenum along the medial and posterior walls. The lesion measured at least 7 × 2 cm and involved the mucosal and submucosal layers, with preservation of the deeper duodenal wall. The ampulla was described as opening within the lesion, without associated dilatation of the common bile duct or pancreatic duct. Contrast-enhanced assessment showed early heterogeneous enhancement followed by rapid washout, with prominent vascularity related to branches of the gastroduodenal artery. The apparent discrepancy in lesion size likely reflects differences in anatomical extent and imaging planes. CT measured a focal lobulated component at the distal aspect of the intussusception (38 × 26 mm), whereas EUS assessed the broader longitudinal extent of the polypoidal lesion across D1 and D2 (at least 7 × 2 cm). Endoscopic views obtained during the procedure are shown in Figure 3. Although duodenojejunal intussusception was demonstrated on the initial CT, the subsequent gastroscopy and EUS reports did not specify whether it persisted or had spontaneously reduced.

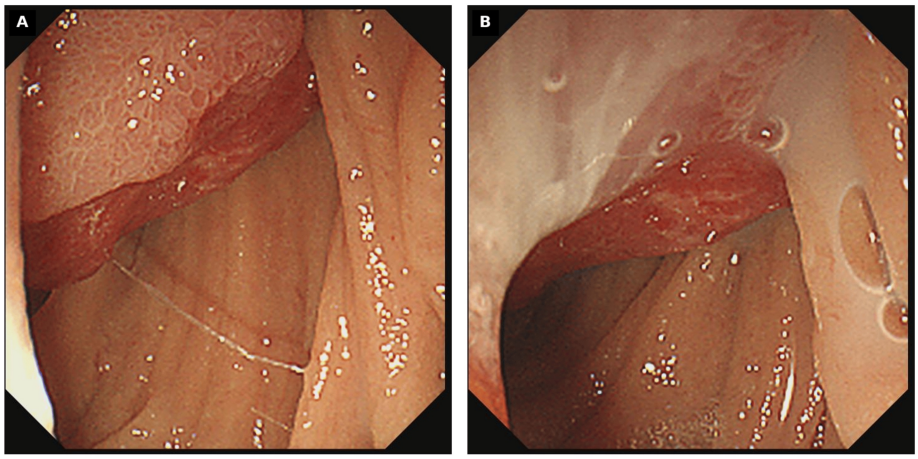


FIGURE 3: Endoscopic views obtained during endoscopic ultrasound examination

(A, B) Endoscopic images demonstrating the large polypoidal duodenal lesion extending from the duodenal bulb (D1) into the second part of the duodenum (D2).

EUS-guided fine-needle aspiration biopsy (FNAB) was performed using 22-gauge and 25-gauge needles, targeting enhancing regions of the lesion. The cytological specimen was markedly haemorrhagic and contained numerous closely packed Brunner's glands, accompanied by scant fragments of benign duodenal epithelium showing reactive changes. No neuroendocrine tumour or malignant cells were identified in the sampled material.

Following correlation of the cytological, endoscopic, and radiological findings through multidisciplinary review, the diagnosis of giant Brunner's gland hamartoma was established.

The patient received supportive treatment, including blood transfusion, iron replacement, and proton-pump inhibitor therapy. *Helicobacter pylori* eradication treatment was prescribed, and urgent outpatient gastroenterology follow-up and further evaluation were arranged.

Discussion

Brunner's gland hamartoma is an uncommon benign proliferative lesion arising predominantly from the submucosal Brunner's glands of the proximal duodenum. Most lesions are small and asymptomatic, often discovered incidentally during endoscopy. However, larger lesions may cause clinically significant complications, including gastrointestinal bleeding, iron-deficiency anaemia, abdominal pain, and intestinal obstruction. Giant lesions exceeding 5 cm are particularly uncommon and may present considerable diagnostic and therapeutic challenges because of their size, vascularity, and anatomical location [1].

The present case is notable for the combination of a giant duodenal lesion measuring at least 7 × 2 cm, severe transfusion-requiring iron-deficiency anaemia, and duodenojejunal intussusception in a 31-year-old man. Adult intussusception is uncommon and frequently associated with a structural lead point, which may be benign or malignant. Although Brunner's gland hamartoma is an unusual cause, similar presentations have been reported. Aldossary et al. [2] described a giant Brunner's gland hamartoma causing retrograde jejunoduodenal intussusception, while Bayan et al. [3] reported a giant pyloric lesion associated with duodenojejunal intussusception and recurrent gastrointestinal bleeding. These reports demonstrate that large benign duodenal lesions can produce significant mechanical complications and may resemble malignant pathology.

Severe iron-deficiency anaemia was another important feature of our case. The patient's haemoglobin declined to 72 g/L, requiring transfusion of two units of packed red blood cells. Bleeding from larger Brunner's gland hamartomas may result from mucosal erosion, ulceration, or vascular injury [1]. Judd et al. [4] described a Brunner's gland hamartoma presenting with symptomatic iron-deficiency anaemia, while Frenkel et al. [5] reported a giant lesion causing severe gastrointestinal bleeding requiring transfusion and surgical intervention. Recent reports have also highlighted the mechanical complications of these lesions. Wang et al. [6] described a pedunculated Brunner's gland hamartoma associated with incomplete duodenal intussusception, while Doamba et al. [7] reported a giant haemorrhagic duodenal hamartoma complicated by intussusception. In our patient, the history of dark stools, marked iron deficiency, and direct endoscopic observation of mucosal oozing from the vascular duodenal lesion strongly indicated that the lesion was a

major source of gastrointestinal blood loss. The need for endoscopic haemostatic treatment further demonstrated its clinical significance. Although recent naproxen use may have contributed to gastrointestinal mucosal injury, the prolonged history of anaemia and direct endoscopic evidence of bleeding from the duodenal lesion support the hamartoma as the principal source of blood loss.

A particularly important aspect of this case was the prolonged diagnostic uncertainty. Brunner's gland hamartomas can resemble gastrointestinal stromal tumours, neuroendocrine tumours, leiomyomas, and other duodenal neoplasms on imaging and endoscopy. Their predominantly submucosal location can also limit the diagnostic value of conventional superficial biopsies [1]. Our patient had undergone previous investigations at another hospital, where tissue sampling raised the possibility of a benign smooth muscle tumour, particularly a duodenal leiomyoma. During the current admission, the lesion's hypervascular and tumour-like appearance again raised concern for neoplasia, especially a neuroendocrine tumour. This illustrates the diagnostic difficulties associated with large duodenal masses and the importance of integrating findings from different investigative modalities.

Contrast-enhanced CT played an important role in identifying the duodenojejunal intussusception and the associated structural lead point. It demonstrated a lobulated mass measuring approximately 38 × 26 mm at the distal aspect of the intussusception, without evidence of bowel obstruction or extramural extension. Subsequent EUS provided a more detailed assessment of the lesion, demonstrating its overall polypoidal extent of at least 7 × 2 cm, mucosal and submucosal involvement, and prominent vascularity. EUS also defined the lesion's close anatomical relationship with the ampulla and confirmed the absence of biliary or pancreatic duct dilatation. These findings were particularly valuable in characterising a large, complex duodenal lesion and distinguishing its anatomical extent from the focal mass measured on CT.

EUS-guided FNAB was central to establishing the diagnosis. The specimen contained numerous closely packed Brunner's glands and benign reactive duodenal epithelial cells, with no neuroendocrine tumour or malignant cells identified in the sampled material. Following multidisciplinary review of the cytological, endoscopic, and radiological findings, the diagnosis of giant Brunner's gland hamartoma was established. This case demonstrates the diagnostic value of EUS-guided tissue sampling combined with multidisciplinary evaluation, particularly when previous investigations have produced conflicting diagnostic impressions.

Management of Brunner's gland hamartoma depends on the size of the lesion, clinical presentation, anatomical location, and feasibility of safe removal. Symptomatic or giant lesions associated with significant bleeding, obstruction, or intussusception often warrant consideration of endoscopic or surgical resection [1,2]. Endoscopic treatment may be suitable for accessible lesions, whereas large, highly vascular, or anatomically complex lesions may require surgical assessment. In the present case, the lesion's considerable size, prominent vascularity, and close relationship to the ampulla highlighted the importance of detailed anatomical assessment and multidisciplinary involvement when evaluating treatment options.

The principal educational value of this case lies in the combination of severe gastrointestinal bleeding, duodenojejunal intussusception, and prolonged diagnostic uncertainty caused by a benign duodenal lesion mimicking neoplasia. It reinforces the importance of considering Brunner's gland hamartoma in the differential diagnosis of large duodenal masses, particularly when accompanied by unexplained iron-deficiency anaemia or intussusception. The case also highlights the complementary roles of contrast-enhanced CT, gastroscopy, EUS-guided tissue sampling, and multidisciplinary review in achieving an accurate diagnosis.

Conclusions

Giant Brunner's gland hamartoma is a rare benign duodenal lesion that can present with significant complications, including gastrointestinal bleeding, severe iron-deficiency anaemia, and, exceptionally, duodenojejunal intussusception. This case highlights how a benign lesion can mimic duodenal neoplasia, creating diagnostic uncertainty despite repeated investigations.

Contrast-enhanced CT was essential in identifying the intussusception and its structural lead point, while EUS-guided tissue sampling, combined with multidisciplinary correlation, established the diagnosis. Clinicians should consider Brunner's gland hamartoma in the differential diagnosis of large duodenal masses, particularly when associated with unexplained gastrointestinal bleeding or intussusception.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Dana B. Abdo, Hassan Hatab

Acquisition, analysis, or interpretation of data: Dana B. Abdo, Ahmed Ahmed

Drafting of the manuscript: Dana B. Abdo, Ahmed Ahmed, Hassan Hatab

Critical review of the manuscript for important intellectual content: Dana B. Abdo, Ahmed Ahmed, Hassan Hatab

Disclosures

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