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Heterotopic Gastric Mucosa at the Duodenojejunal Junction: A Rare Case Report of a Lesion Prone to Misdiagnosis as a Tumor

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Case Report

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Abstract

An 18-year-old female presented with a 1-year history of postprandial abdominal distension and belching, without other significant symptoms. Imaging studies, including CT and MRI, revealed a well-defined mass at the duodenojejunal junction showing enhancement consistent with gastric mucosa. Endoscopy identified a broad-based submucosal lesion with gastric pit patterns on narrow-band imaging. Histopathological examination confirmed the presence of heterotopic gastric mucosa containing chief and parietal cells. The patient was managed medically with a proton pump inhibitor (PPI), with resolution of symptoms confirmed at the 3-month follow-up. This case highlights the diagnostic challenge of differentiating heterotopic gastric mucosa from neoplastic lesions and supports conservative management as a safe first-line approach when malignancy is excluded.

1.INTRODUCTION

Heterotopic gastric mucosa (HGM) refers to a congenital developmental anomaly where normal gastric mucosa is present in other parts of the digestive tract. The most common sites of occurrence include the esophagus, duodenum, and Meckel's diverticulum[1–3]. Clinical reports of HGM occurring in the distal duodenum and proximal jejunum are exceedingly rare. These lesions often present radiologically as polyps, laterally spreading lesions, submucosal masses, or other growth patterns[4, 5]. Due to their particular growth patterns and clinical manifestations, they are highly susceptible to misdiagnosis as neoplastic lesions such as gastrointestinal stromal tumors or lymphoma. This article reports a case of extensive HGM located at the duodenojejunal junction, focusing on its clinical characteristics, diagnostic approach, and management strategy.

2.CASE PRESENTATION

An 18-year-old female patient was admitted to the hospital due to "recurrent postprandial abdominal distension and belching for 1 year". The symptoms were more pronounced in the morning and after meals. The patient reported no relevant past medical or family history of gastrointestinal conditions. She had not undergone any prior surgical or endoscopic interventions for her symptoms.There was no hematemesis, melena, or weight loss. The key clinical events are summarized in Table 1.

Table 1
Timeline of clinical evaluation and management

Timepoint	Event	Key findings / Actions
Month 0	Symptom onset	Postprandial abdominal distension and belching
Month 12	Initial imaging	Mass at duodenojejunal junction with gastric mucosa-like enhancement
Hospital day 1–3	Endoscopy and biopsy	Gastroscopy with NBI: submucosal lesion; biopsy obtained
Hospital day 5	Histopathological diagnosis	Confirmed heterotopic gastric mucosa
Hospital day 7	Treatment initiation	Conservative management decided
3-month follow-up	Outcome	Symptomatic improvement, no complications

Physical examination revealed no positive signs. Laboratory investigations, including complete blood count, liver and kidney function tests, and tumor markers, were all within normal limits.Gastrointestinal contrast examination indicated a space-occupying lesion at the duodenojejunal junction, with significant dilation of the horizontal segment reaching a maximum diameter of 5.3 cm, and a faint pen-like impression was vaguely visible. Contrast-enhanced CT scan revealed an oval-shaped space-occupying lesion at the duodenojejunal junction, measuring approximately 5.2 cm × 3.3 cm × 1.9 cm, with well-defined borders. Post-enhancement, the degree of enhancement was similar to that of normal gastric mucosa. The lesion protruded into the intestinal lumen, causing significant luminal narrowing (Fig. 1).Axial and sagittal T2-weighted MR images confirm the presence of the submucosal mass, showing intermediate T2 signal intensity. Gastroscopy identified a broad-based submucosal protrusion in the distal descending duodenum. The surface mucosa was smooth, occupying approximately two-thirds of the intestinal lumen. Using magnifying endoscopy with narrow-band imaging (NBI), typical gastric pit structures were observed(Figure 2). Microscopic examination of the biopsy specimen (hematoxylin and eosin staining, ×200 magnification) revealed complete gastric mucosal architecture, including well-formed gastric glands, lamina propria, and muscularis mucosae. Characteristic oxyntic glands with abundant parietal cells and chief cells were clearly identified, confirming the presence of heterotopic gastric mucosa. No intestinal metaplasia, dysplasia, or malignant features were observed (Fig. 3).

The primary diagnostic challenge centered on distinguishing this lesion from other submucosal tumors, particularly gastrointestinal stromal tumor (GIST) and lymphoma, due to its well-defined mass-like appearance and luminal narrowing. Other diagnostic considerations included ectopic pancreas, neuroendocrine tumor, and inflammatory polyp. The absence of systemic symptoms, normal tumor markers, and enhancement pattern similar to gastric mucosa on imaging argued against malignancy.

Based on the diagnosis, the patient was initiated on medical therapy with a proton pump inhibitor (PPI) for symptomatic control, and her symptoms had resolved at the 3-month follow-up.

3. DISCUSSION

Heterotopic gastric mucosa in the duodenum refers to a congenital condition where the full thickness of the duodenal mucosa is covered by fundic-type gastric mucosa containing numerous parietal and chief cells[6], more commonly seen in adults. Most scholars believe it is related to abnormal migration of foregut cells during embryonic development[7]. The presence of oxyntic glands facilitates the secretion of gastric acid and pepsin, which may contribute to clinical symptoms. However, due to the neutralization of gastric acid and pepsin by duodenal juices, the clinical symptoms of duodenal HGM are often atypical and are frequently discovered incidentally during gastroscopy.

The particularity of this case lies in the patient's young age, absence of a history of chronic inflammation, extensive involvement of the lesion, and the formation of a significant tumor-like mass effect, favoring an explanation of congenital developmental anomaly. In terms of diagnosis, this case highlights the challenges in differentiating ectopic gastric mucosa (EGM) from neoplastic lesions such as gastrointestinal stromal tumors (GISTs) and lymphoma. The differential diagnosis for a submucosal mass at this junction also included ectopic pancreas and neuroendocrine tumor. In the present case, the homogeneous enhancement pattern isodense to gastric mucosa on contrast-enhanced CT argued against the typical hypervascular appearance of a GIST or the mild enhancement of lymphoma. The absence of a duct-like structure or characteristic morphology helped exclude ectopic pancreas. The patient's lack of hormonal symptoms and the lesion's well-defined borders made neuroendocrine tumor less likely. Ultimately, the identification of gastric pit patterns via magnifying endoscopy with NBI and the histopathological confirmation of fundic-type gastric mucosa with chief and parietal cells provided the definitive diagnosis, ruling out the aforementioned neoplastic conditions.The duodenojejunal junction has a complex anatomical structure, closely adjacent to the uncinate process of the pancreatic head and supplied by the superior mesenteric vessels. This area is also characterized by a relatively fixed intestinal lumen with an acute angulation, offering limited working space. Surgical dissection in this area can easily lead to uncontrollable bleeding and pancreatic injury. Postoperatively, the continuous erosion by digestive juices (pancreatic juice, bile) and high intestinal wall tension make anastomotic healing difficult, significantly increasing the risk of duodenal fistula or pancreatic fistula, with serious consequences. Furthermore, while endoscopic resection is a less invasive option in principle, performing procedures like endoscopic submucosal dissection at this specific site carries exceptionally high technical difficulty, with substantially increased risks of perforation, hemorrhage, and pancreatic injury. Should such an endoscopic procedure lead to uncontrollable complications, it might necessitate an immediate conversion to emergency laparotomy—a scenario potentially riskier than a planned surgery. Therefore, for asymptomatic or mildly symptomatic HGM with imaging findings supporting a benign diagnosis, conservative management is preferable to surgical resection. Compared to cases reported in the literature[7, 8], the lesion in this case was more extensive. We suggest that for similar cases,

treatment decisions should be individualized, comprehensively considering factors such as the extent of the lesion, severity of symptoms, and risk of malignant transformation.

Declarations

Consent for publication

Written informed consent for publication, including the publication of images/videos and related clinical details contained within this manuscript, was obtained from the patient.

CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest.

ETHICS STATEMENT

According to national regulations (Measures for the Ethical Review of Life Science and Medical Research Involving Human Participants, 2023, Article 32), ethical approval was not required for this case report. All procedures performed were in accordance with the ethical standards of the Helsinki Declaration.

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Author Contribution

Zekai Zhao: Data curation (equal); project administration (equal); writing – original draft (lead). Yuhong Li: Data curation (equal); formal analysis (equal).Peiji Song: writing – review and editing (equal).

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DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

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Figures

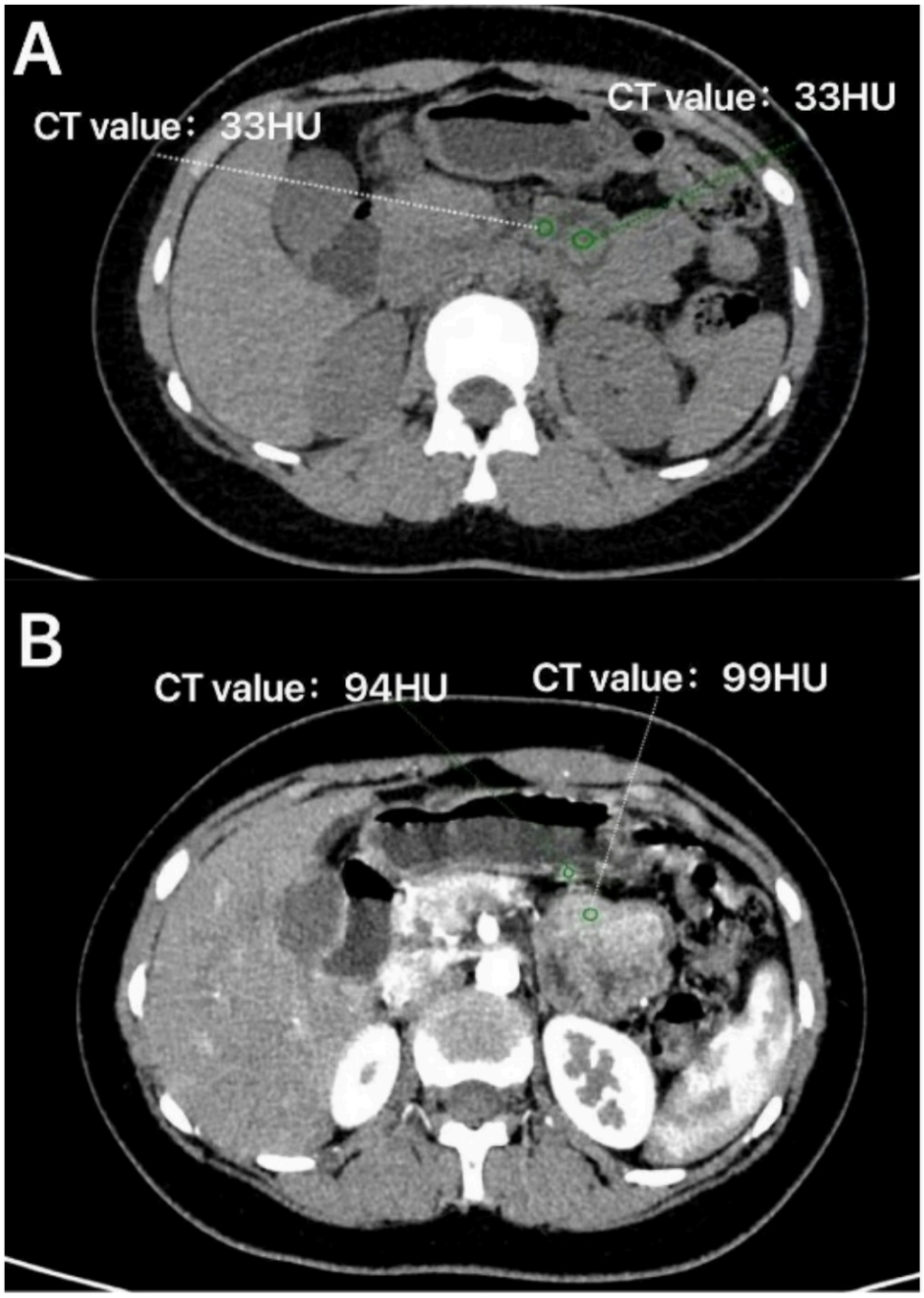


Figure 1

Contrast-enhanced CT scan at the duodenojejunal junction.

(A) Non-contrast CT image showing the lesion with a density of 33 HU. (B) Contrast-enhanced CT image showing significant enhancement of the lesion to 94 HU, similar to the enhancement pattern of normal

gastric mucosa. The well-defined, oval-shaped mass protrudes into the intestinal lumen, causing significant luminal narrowing.

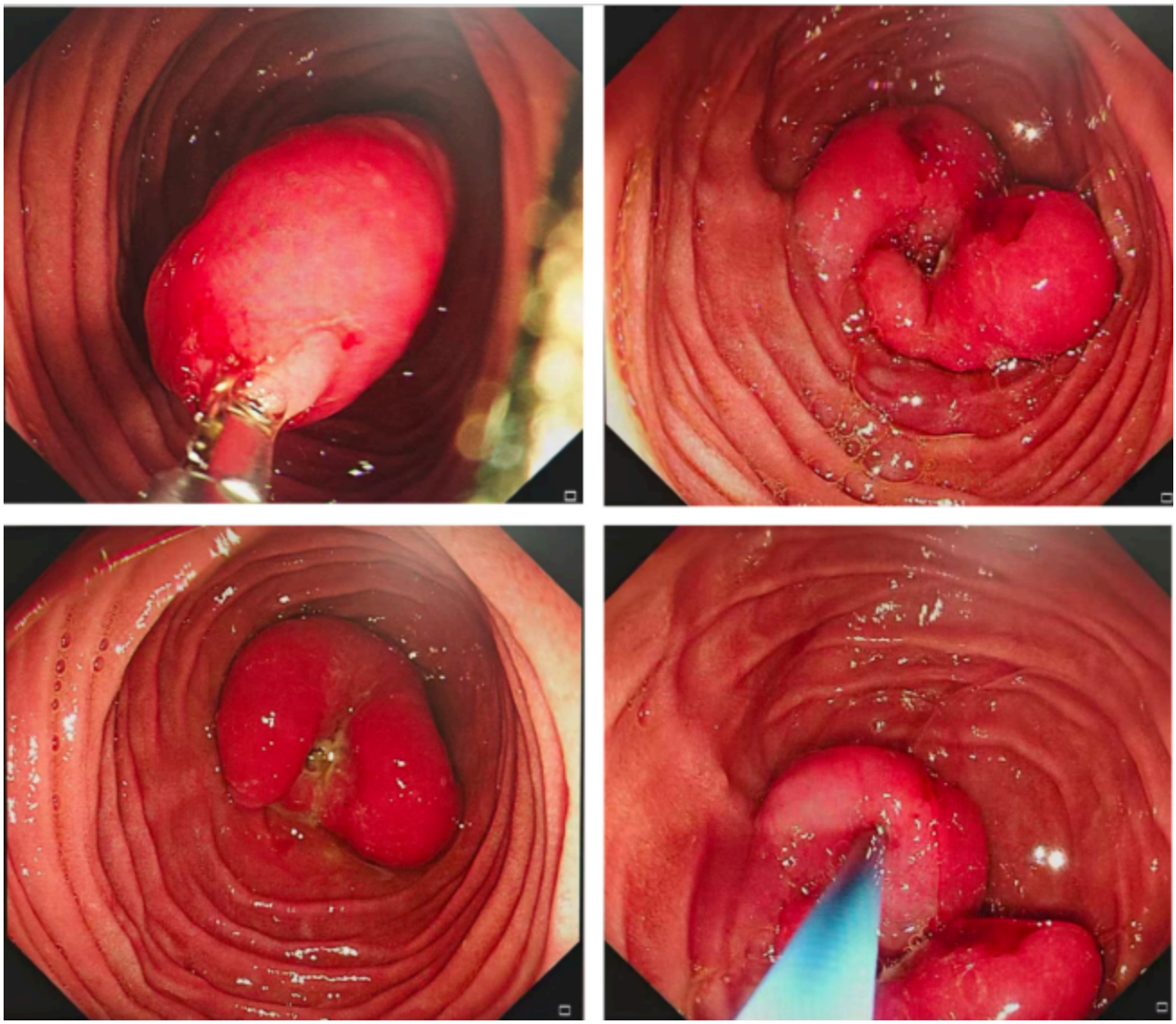


Figure 2

Endoscopic and narrow-band imaging (NBI) findings.

Description: Gastroscopy identified a broad-based submucosal protrusion in the distal descending duodenum. The surface mucosa was smooth, occupying approximately two-thirds of the intestinal lumen. Under narrow-band imaging (NBI), typical gastric pit structures were observed, characteristic of heterotopic gastric mucosa.

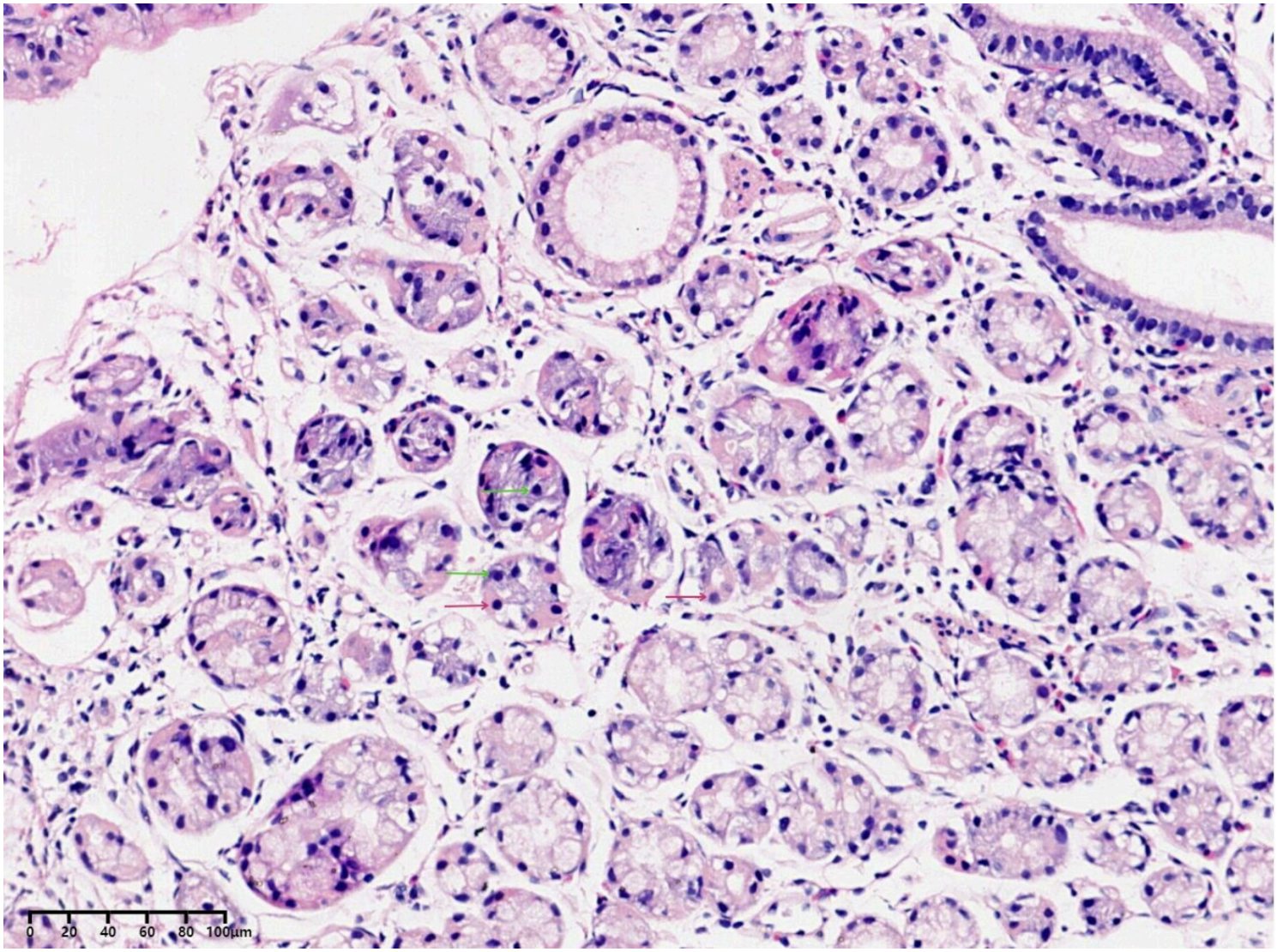


Figure 3

Histopathological confirmation of heterotopic gastric mucosa.

Photomicrograph of the biopsy specimen (hematoxylin and eosin stain, ×200 magnification) shows characteristic gastric mucosal architecture with well-formed oxyntic glands. Abundant parietal cells (red arrows) and chief cells (green arrows) are clearly visible. No intestinal metaplasia, dysplasia, or malignant features are identified.