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Fundic Heterotopic Pancreas: Endoscopic Submucosal Dissection of a Subepithelial Lesion

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Abstract

Gastric subepithelial lesions (SELs) encompass a wide range of pathologies, including lipomas, gastrointestinal stromal tumours (GISTs) and heterotopic pancreas, and can be challenging to diagnose on endoscopy and endoscopic ultrasound (EUS) alone. We report a woman in her 50s who presented with abdominal discomfort and was found to have a subepithelial lesion in the gastric fundus, initially considered to represent a GIST. Despite repeated EUS and fine-needle aspiration (FNA) over four years of surveillance, tissue diagnosis remained elusive. She ultimately underwent endoscopic submucosal dissection (ESD), with histology confirming pancreatic heterotopia. Follow-up endoscopy demonstrated complete healing, and she was discharged from surveillance. This case highlights the diagnostic difficulty of heterotopic pancreas presenting with atypical features often masquerading as a GIST. It demonstrates ESD as a safe, minimally invasive, diagnostic and therapeutic option when diagnosis cannot be achieved by conventional means.

Categories: Pathology, Gastroenterology
Keywords: endoscopic submucosal dissection (esd), gastric ectopic pancreas, gastric subepithelial lesion, gastrointestinal stromal tumour (gist), heterotopic pancreatic tissue, pancreatic rest

Introduction

A gastrointestinal subepithelial lesion (SEL) is a growth that arises from the muscularis mucosa, submucosa or muscularis propria and protrudes into the lumen [1]. The distinction between subepithelial and submucosal lesions has become possible with the advent of endoscopic ultrasound (EUS). Histologically, they can range from nonneoplastic, to neoplastic but benign, to neoplastic with malignant potential, to malignant. Gastric subepithelial lesions consist of lipomas, gastrointestinal stromal tumours (GIST), neuroendocrine tumours, schwannomas and ectopic gallbladder and pancreas [1].

Heterotopic pancreas, also known as ectopic pancreas or pancreatic rest, is a rare congenital anomaly characterised by pancreatic tissue outside its usual anatomical location, without vascular or ductal continuity with the orthotopic pancreas. It is often found in the gastric antrum [2].

This case highlights an unusual location of heterotopic pancreas mimicking a GIST, the diagnostic challenges it presents and the role of endoscopic submucosal dissection (ESD), a minimally invasive procedure, in its management.

Case Presentation

A woman in her 50s initially presented in 2021 with abdominal discomfort and bloating to a private clinic.

She underwent a gastroscopy, which revealed a 20 mm × 25 mm submucosal lesion in the fundus along the greater curve just beyond the gastro-oesophageal junction, with overlying inflamed mucosa and non-slipping edges raising the possibility of a GIST or a lipoma. Histology demonstrated chronic gastric mucosal inflammation and *Helicobacter pylori* (*H. pylori*), with no metaplasia, dysplasia or malignancy. She was prescribed *H. pylori* eradication. Computed tomography (CT) of the abdomen demonstrated a 25 mm bulge in the greater curvature with increased enhancement (Figure *1* and Figure *2*).

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FIGURE 1: Axial view of gastric wall lesion along the greater curvature on abdominal CT post contrast

CT: computed tomography

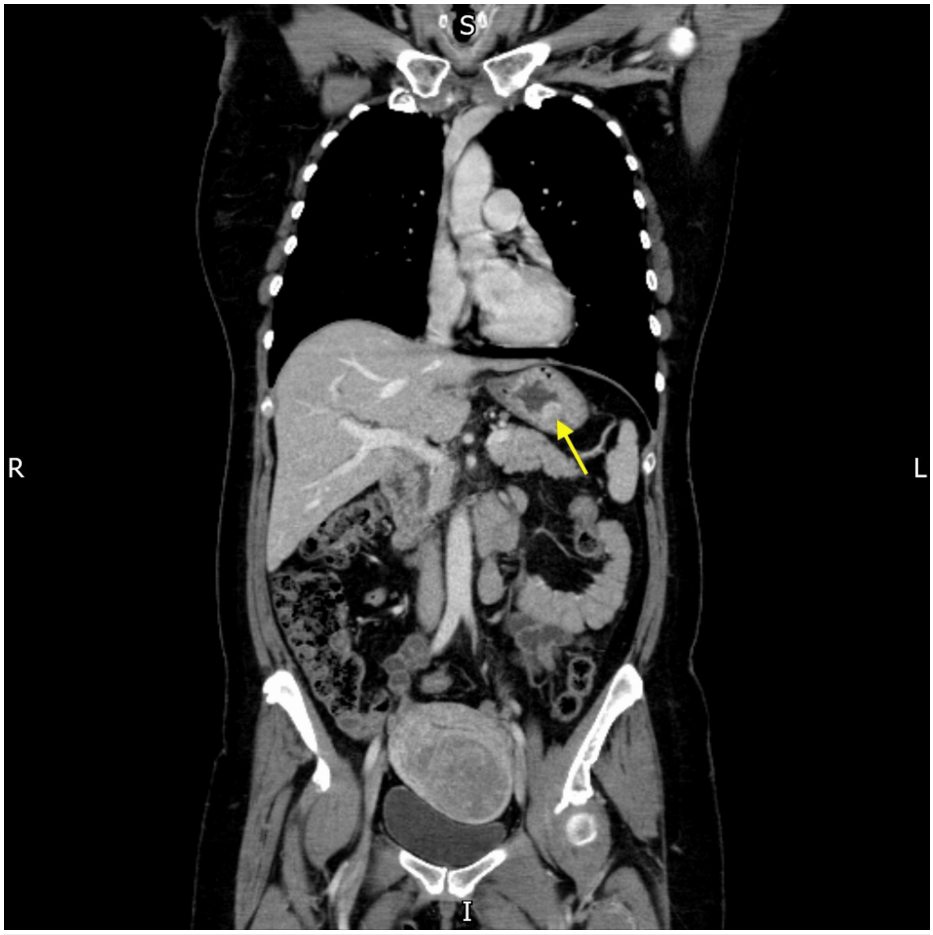


FIGURE 2: Coronal view of gastric wall lesion along the greater curvature on abdominal CT post contrast

CT: computed tomography

Following a multidisciplinary team (MDT) discussion, she underwent an EUS. The EUS identified a 19 mm × 17 mm subepithelial lesion with predominant hyperechogenicity with few hypoechoic areas involving layer 3 of the gastric wall. A urease test at the time was negative. Fine-needle aspiration (FNA) cytology was non-diagnostic. She was placed on annual surveillance after further discussion with the MDT.

Over the following three years, she underwent annual EUS examinations with two additional attempts at FNA, both of which remained non-diagnostic. During follow-up clinic visits, she remained asymptomatic and showed complete clearance of *H. pylori*. Serum tumour markers were found to be negative.

She was offered ESD four years after her initial presentation as it was deemed suitable based on EUS findings. A 24 mm × 22 mm × 5 mm lesion with an area of central depression adherent to underlying muscle with smooth marginal contours was removed en bloc and retrieved successfully (Figure *3* and Figure *4*). Histopathological examination showed organoid architecture composed of intersecting smooth muscle and glandular structures, predominantly ductal in nature, with admixed chief and oxyntic cells consistent with pancreatic heterotopia of ductal type. No evidence of malignancy or dysplasia was noted.

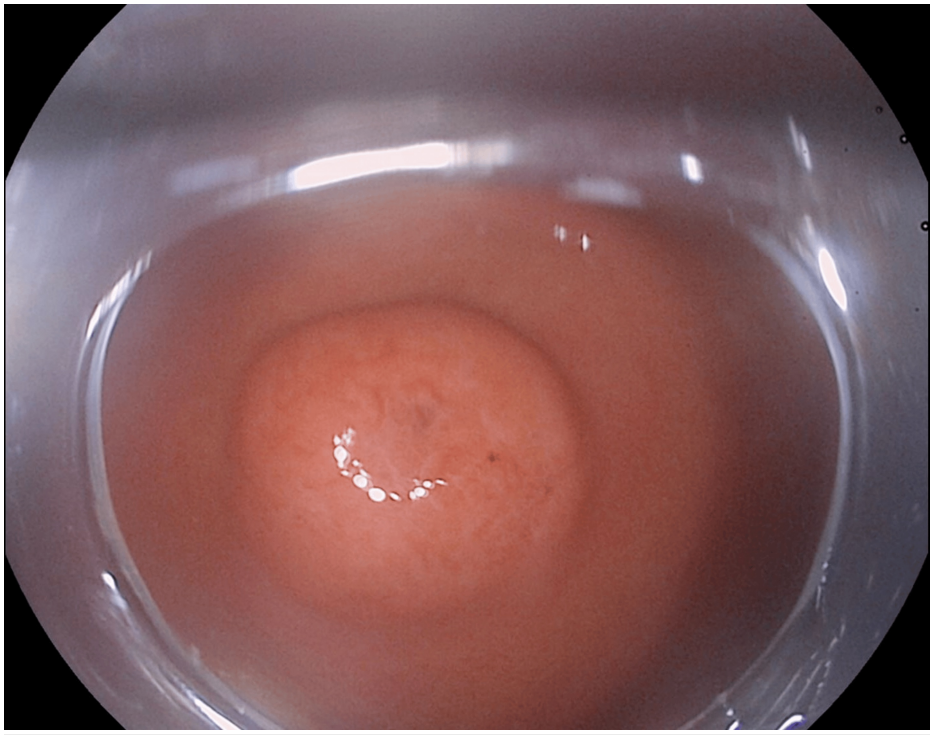


FIGURE 3: Fundic pancreatic heterotopia seen as a subepithelial lesion during endoscopic submucosal dissection

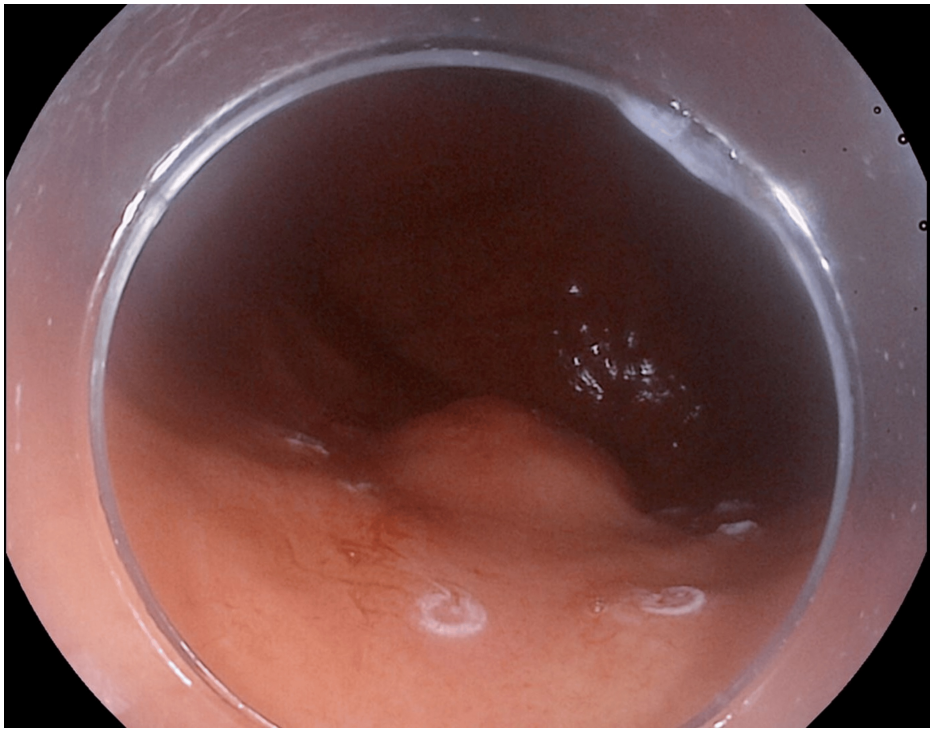


FIGURE 4: Lateral view of the fundic pancreatic heterotopia during ESD

ESD: endoscopic submucosal dissection

She underwent a repeat gastroscopy two months later, which showed a well-healed lesion (Figure *5* and Figure *6*). She remains asymptomatic and has been discharged from annual surveillance.

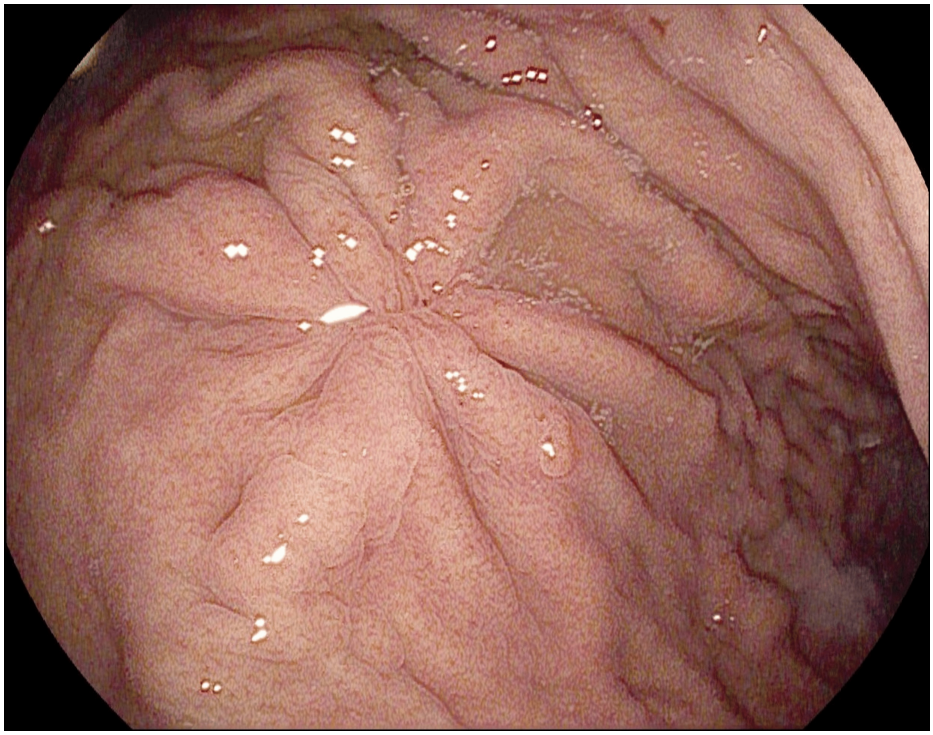


FIGURE 5: White light image of a well-healed site after endoscopic submucosal dissection

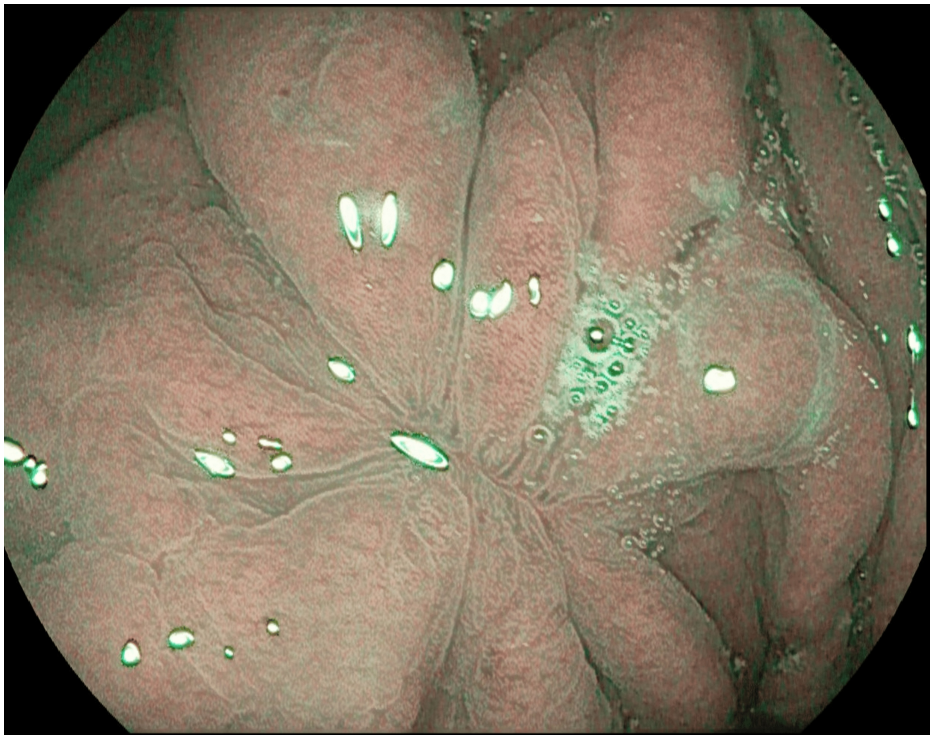


FIGURE 6: Blue light image of a well-healed site after endoscopic submucosal dissection

Discussion

Ectopic pancreas was first characterised by Schultz in 1727 [3,4] and later histologically proven by Klob in 1859 [4]. It is commonly found in the stomach, duodenum and jejunum and rarely in the oesophagus,

gallbladder, common bile duct, spleen, mesentery, mediastinum and fallopian tubes. The most common site in the stomach is the antrum (85%-95%), frequently along the greater curvature [3]. The most widely accepted embryological explanation is the misplacement theory, which proposes that fragments of pancreatic tissue become displaced during foregut rotation and later develop into mature pancreatic tissue [5].

Most patients are asymptomatic, and the lesions are often incidental findings. Symptomatic cases, depending on location, can present with pancreatitis [6,7], pseudocyst formation [8,9], bleeding [10,11], gastric outlet obstruction [8,12] and rarely malignant transformation [13,14].

The current consensus for pancreatic rest is that tissue acquisition is not needed for the diagnosis if they possess typical features and, once diagnosed, they do not need surveillance [15]. Typical features include antral location, central umbilication and hypoechogenicity on EUS [16]. This poses a conundrum as endoscopic findings are often non-specific and may resemble other SELs, particularly when found in atypical locations as in our patient [4,17,18]. EUS diagnostic accuracy is only 57%-61%, and in contrast to the typical hypoechoic, heterogeneous appearance, our lesion was predominantly hyperechoic, which, together with its fundic location, contributed to diagnostic uncertainty [15]. In this case, the location of the lesion also rendered the acquisition of a tissue sample more technically difficult. Most reported cases of pancreatic heterotopia have been recognised after surgical or endoscopic resection for suspected stromal tumour. The lesion was managed as a low-risk GIST with annual follow-up in the absence of tissue diagnosis despite multiple attempts at FNA [15].

After four years of surveillance, careful consideration and patient consultation, the decision was made to proceed with endoscopic rather than surgical resection. ESD is already recommended as a first-line option for superficial gastric lesions, allowing en bloc removal, which may be curative [19]. Upon review of the literature, to our knowledge, there has only been one other case of a fundic heterotopic pancreas posing as a GIST, which was surgically resected [20]. Our case illustrates the use of ESD in the management of atypical pancreatic heterotopia in the stomach, offering a less invasive approach and reducing the need for prolonged surveillance and repeated investigations.

Conclusions

Endoscopists should consider ectopic pancreas in the differential diagnosis of gastric fundic SELs. Pancreatic heterotopia can closely mimic GISTs and other SELs both endoscopically and radiologically, causing diagnostic uncertainty, particularly when it has atypical features. EUS may be inconclusive and should not delay the consideration of ESD. Endoscopic resection can be both diagnostic and therapeutic and is a minimally invasive option in the management of SELs where the diagnosis remains indeterminate.

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: Apoorva Hegde, Parth Paskaran

Acquisition, analysis, or interpretation of data: Apoorva Hegde, Parth Paskaran

Drafting of the manuscript: Apoorva Hegde

Critical review of the manuscript for important intellectual content: Parth Paskaran

Supervision: Parth Paskaran

Disclosures

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