

CASE REPORT

Gastric Ectopic Pancreas Manifested As a Subepithelial Tumor: Three Case Reports and an Overview

Yen-Chun Chen^{1,2}, Hoi-Hung Chan^{1,3,4,5,6}, Kwok-Hung Lai^{1,5}, Tzung-Jiun Tsai¹, Ping-I Hsu^{1,5}

¹Division of Gastroenterology & Hepatology, Department of Internal Medicine, Kaohsiung Veterans General Hospital, 386 Ta-Chung 1st Road, Kaohsiung 81362, Taiwan

²Division of Gastroenterology, Department of Internal Medicine, Dalin Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Chia-Yi, Taiwan

³Department of Biological Sciences, National Sun Yat-sen University, 70 Lien-Hai Road, Kaohsiung, 80424, Taiwan

⁴College of Pharmacy and & Health Care, Tajen University, 20 Weisin Road, Sin-er Village, Yanpu Township, Pingtung County, 907, Taiwan

⁵School of Medicine, National Yang-Ming University, No. 155, Sec. 2, Li-Nong Street, Taipei, Pei-Tou, 112, Taiwan

⁶Department of Business Management, National Sun Yat-sen University, 70 Lien-Hai Road, Kaohsiung, 80424, Taiwan

ABSTRACT

Context Heterotopic pancreas can be seen along the alimentary tract. Gastric heterotopic pancreas may be asymptomatic or symptomatic. Symptoms are often nonspecific. The presentation is associated with the location, size and depth of that ectopic tissue. Possible complications include ulcer bleeding, obstruction, intussusceptions, pancreatitis or even malignancy. To treat asymptomatic patients is still debatable. It is reasonable to treat symptomatic patients. **Case report** We reported three patients who presented with epigastric discomforts. Gastrointestinal stromal tumors were diagnosed after the initial work-up. However, pathology following surgical resection showed ectopic pancreas. **Conclusion** The endoscopic pictures of ectopic pancreas may mimic subepithelial tumors so the accurate diagnosis requires multi-modalities, such as computed tomography/magnetic resonance imaging, Endoscopic ultrasound and Endoscopic ultrasound - fine-needle aspiration. Sometimes the diagnosis is made by the pathology result after surgical resection. If treatment is indicated, the options include laparoscopic resection, electronic medical record or electrostatic discharge.

INTRODUCTION

Heterotopic pancreas means the existence of pancreatic tissue outside the usual anatomical location of the pancreas and has no anatomical or vascular continuity with the regular pancreas [1]. It is also called aberrant pancreas or ectopic pancreas, and may be found in the stomach, duodenum, jejunum and ileum, Meckel's diverticulum, and common bile duct (CBD) [2]. It was estimated that approximately

70% of heterotopic pancreas were found throughout the stomach, duodenum and ileum [3]. Most patients are asymptomatic, but some may develop symptoms if associated complications occur (such as epigastric pain, ulcer bleeding, CBD obstruction or intussusception) [2, 4, 5]. Other complications such as pancreatitis, pancreatic cancer and gastric outlet obstruction have also been reported [6, 7, 8]. Here we presented three cases of gastric heterotopic pancreas mimicking subepithelial tumor.

CASE REPORTS

Case #1

A fifty-eight-year-old woman suffered from epigastric pain for more than one year. She didn't have other past histories. She ever visited a local hospital for epigastric pain, and she underwent esophagogastroduodenoscopy (EGD). It revealed gastritis and a subepithelial tumor. Later, she came into our hospital for second opinion. EGD was repeated again (**Figure 1**). Upper gastrointestinal endoscopic ultrasonography (EUS) showed a subepithelial

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Keywords Pancreas

Abbreviations EMR electronic medical record; ESD Electrostatic discharge; EUS Endoscopic ultrasound; FNA fine-needle aspiration; MRI Magnetic resonance imaging

Correspondence Hoi-Hung Chan
Division of Gastroenterology & Hepatology
Department of Internal Medicine
Kaohsiung Veterans General Hospital
386 Ta-Chung 1st Road, Kaohsiung 81362
Taiwan

Phone +886-7-342-2121

E-mail hoihungchan@gmail.com

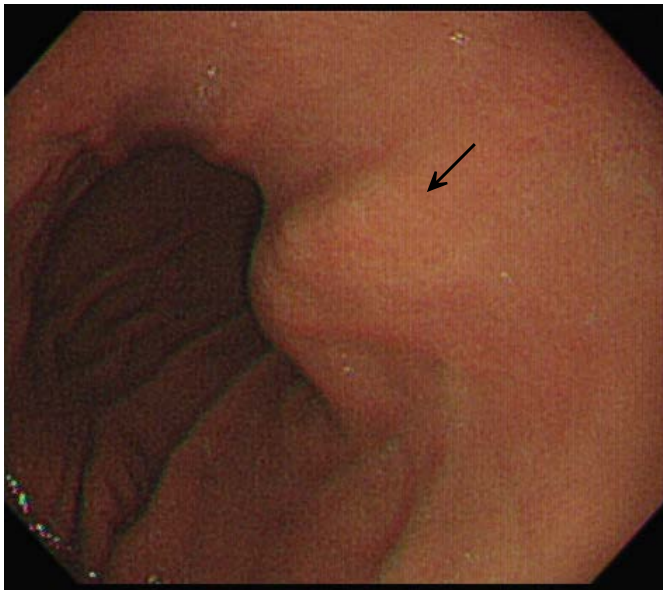


Figure 1. EGD picture showed a subepithelial tumor (black arrow).

lesion, about 2 cm in size, at the LC side of the lower body (Figure 2). Computed tomography (CT) scan of stomach demonstrated a submucosal tumor of lesser curvature (LC) of the stomach, approximately 2.2 cm in size, and gastrointestinal stromal tumor (GIST) was suspected (Figure 3a, 3b, 3c). With the diagnosis of GIST in stomach, surgical intervention was recommended. Physical examination was unremarkable. Her routine blood examinations were normal, including white blood cells, hemoglobin, platelet, renal function, liver function and tumor markers. Laparoscopic wedge resection of the stomach was performed uneventfully. The pathology of resected gastric lesion showed heterotopic pancreas. She was discharged with outpatient department (OPD) follow-up.

Case #2

A forty-three-year-old woman suffered from epigastric discomfort for more than 20 years. Those symptoms include early satiety, fullness sensation and acid regurgitation. She didn't have other past histories. She didn't have weight loss, abdominal pain, or bowel habit change. She came to our GI OPD and afterward EGD revealed gastritis and a subepithelial tumor in the antrum (Figure 4). *Helicobacter pylori* (*H. pylori*) - associated gastritis was diagnosed after endoscopic biopsy. She received anti- *H. pylori*, but the epigastric discomfort persisted. Colonoscopy demonstrated no significant lesions. CT scan of the stomach demonstrated a submucosal tumor at the anterior wall of gastric antrum, approximately 1.6 cm in size, and GIST was suspected (Figure 5a, 5b). With the diagnosis of GIST in stomach, surgical intervention was suggested so she was admitted. Physical examination was unremarkable. Her routine blood examinations were normal, including white blood cells, hemoglobin, platelet, renal function, liver function tests and tumor markers. Wedge resection of gastric tumor plus pyloroplasty was performed uneventfully. The pathology of resected gastric lesion showed heterotopic pancreas. She was discharged with OPD follow-up.

Case #3

A twenty-eight-year-old man suffered from epigastric discomfort for more than six months. He also felt fullness sensation during the same period. He didn't have other past histories. He went to a local clinic and EGD was arranged. It showed a subepithelial tumor at the greater curvature (GC) side of the antrum (Figure 6). He came to our GI OPD for second opinion. EUS revealed gastritis and an ill-defined heteroechoic lesion in the fourth layer of the antral wall (Figure 7). CT scan of the stomach demonstrated a submucosal tumor at pre-pyloric antrum, approximately 1.4 cm in size, and GIST was suspected (Figure 8a, 8b, 8c). With the diagnosis of GIST in stomach, surgical intervention was suggested so he was admitted. Physical examination was unremarkable. His routine blood examinations were normal, including white blood cells, hemoglobin, platelet, renal function, and liver function. Laparoscopic gastric tumor resection was performed uneventfully. The pathology of resected gastric lesion showed ectopic pancreas. He was discharged with OPD follow-up.

DISCUSSION

The overall frequency of the heterotopic pancreas was reported to be 0.6- 13.7% of autopsies [9] and the rate for this lesion in the stomach might be much less than that. In one study, 8,154 gastric specimens (from biopsies or gastrectomy) were reviewed, and only three cases were (0.04%) found to have the heterotopic pancreas [10]. Another study investigating 5446 resected stomachs and found that the frequency of the gastric heterotopic pancreas was estimated to be 0.7% [11]. However, the prevalence might be underestimated because many patients were asymptomatic.

If symptoms or signs develop, the most frequent presentations may be abdominal pain, and/or abdominal fullness, and tarry stools [12]. In our cases, three patients showed epigastric pain or discomforts. Besides, their physical examinations were not unusual and their routine blood examinations were all unremarkable. Interestingly, our cases all didn't have other past histories.



Figure 2. EUS picture showed a subepithelial tumor in the fourth layer (white arrow).

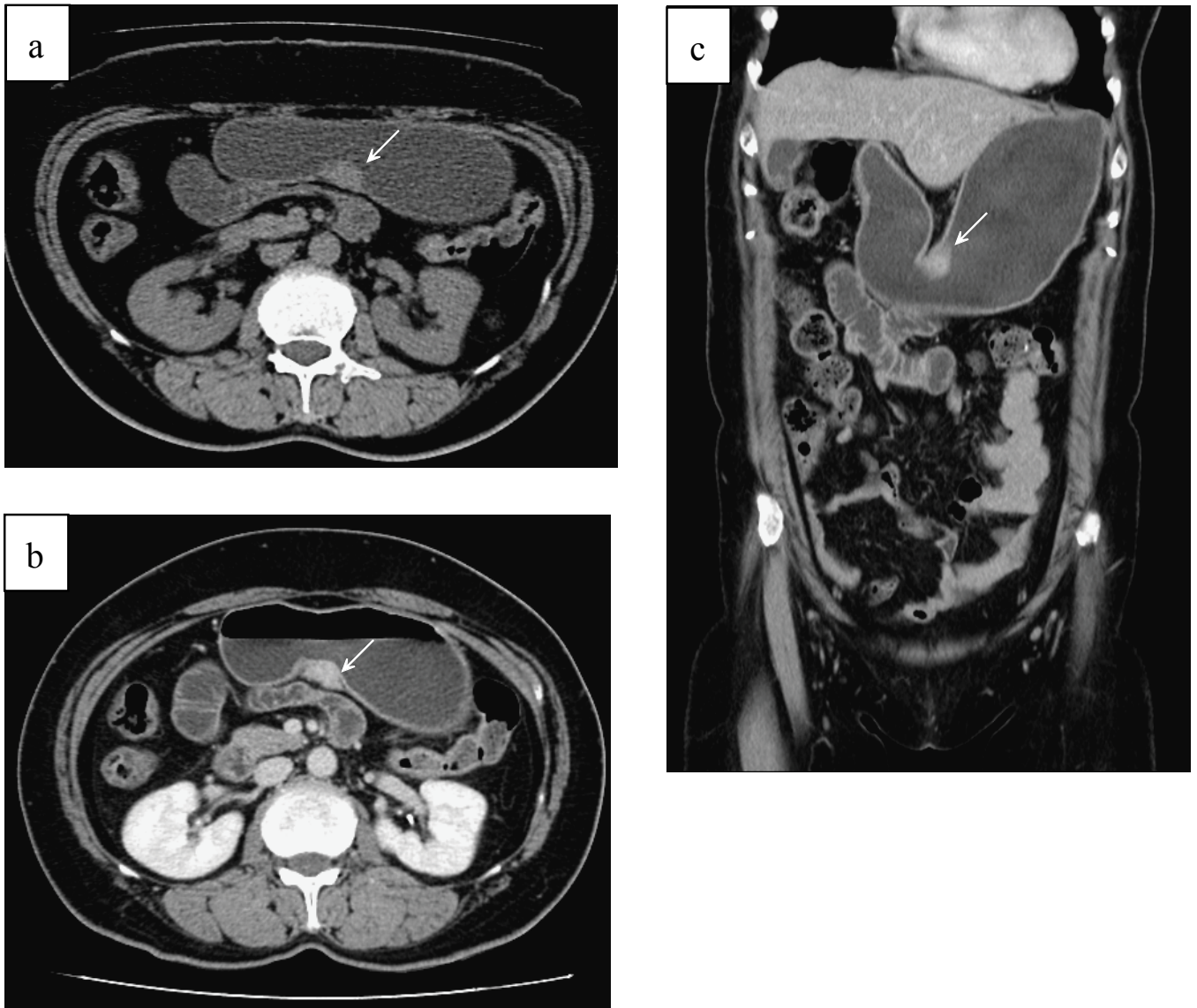


Figure 3. CT imaging showed a tumor (white arrows). (a). non-contrast axial view; (b). contrast-enhanced axial view; (c). coronal view.

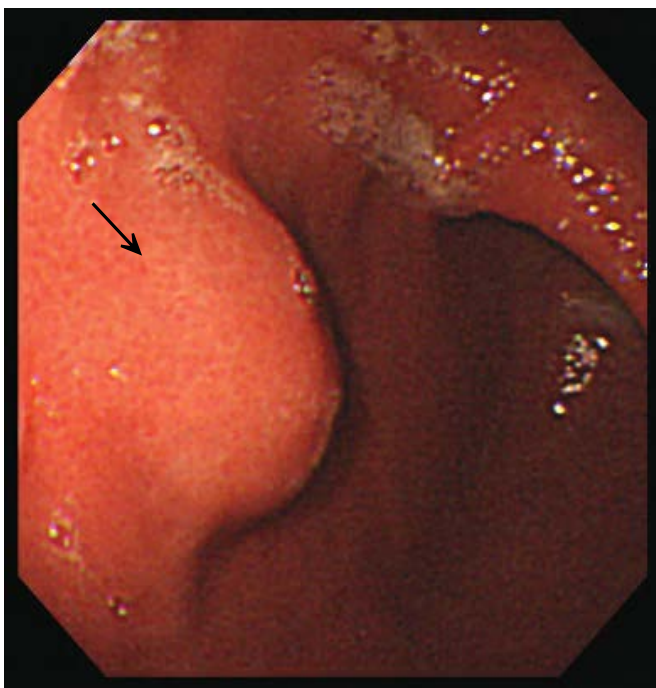


Figure 4. EGD picture showed a subepithelial tumor (black arrow).

It was reported that about 90% of the ectopic pancreas was located in the pylorus and antrum [11]. All of our patients received upper endoscopy for evaluation.

Endoscopically, all patients showed the pictures of subepithelial tumors. Two of them were located in the antrum (one was at anterior wall, and the other was at GC side) and the remaining one at LC side of the body. The sizes of the ectopic pancreas in our cases were from 1.5 cm to 2.0 cm. Actually, the sizes of ectopic pancreas were reported to range from 0.3 to 4.7 cm in diameter, and the shapes were variable [11, 12].

Grossly, the appearance of heterotopic pancreas may mimic subepithelial tumors in most cases [13, 14, 15, 16]. Cystic change of this lesion was ever reported [17]. From histology, the most often seen location of the tissue is submucosa, but it may also be seen in the muscularis mucosa, serosa or subserous area [16]. It is thought that the size of these lesions should be larger than 1.5 cm to be clinically significant [18].

The diagnosis was hard to be made preoperatively even after the examination of computed tomography,

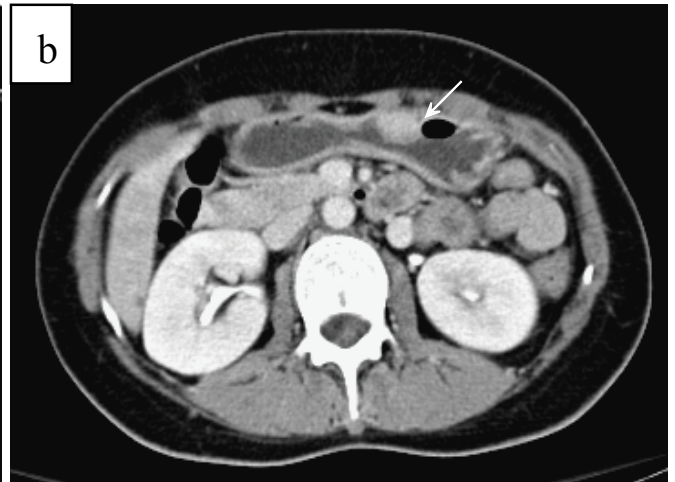


Figure 5. CT imaging showed a subepithelial tumor (white arrows).

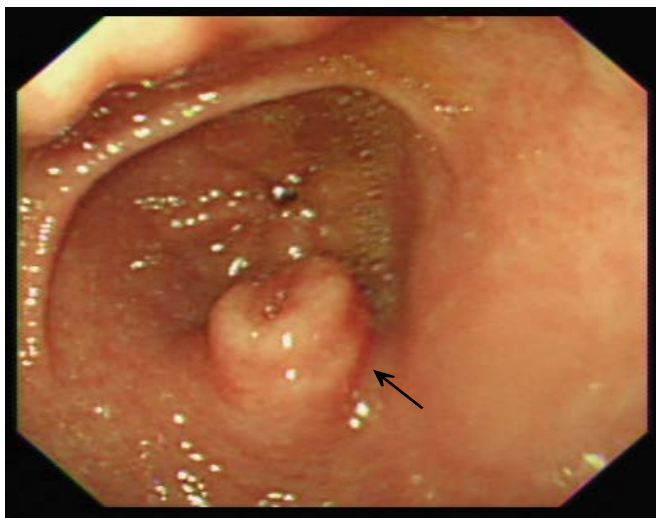


Figure 6. EGD picture showed a subepithelial tumor (black arrow).

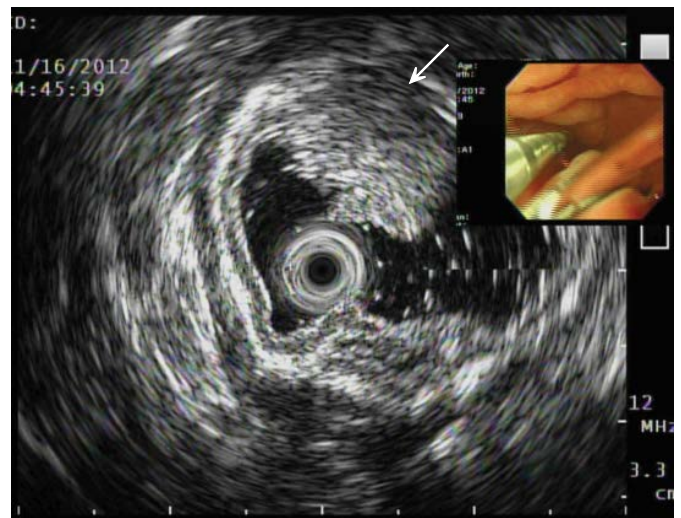


Figure 7. EUS picture showed a subepithelial tumor (white arrow).

small-intestinal series, barium enema, endoscopic retrograde cholangiopancreatography, angiography, and cholescintigraphy [12]. The result of routine endoscopic biopsy may also be inconclusive [19]. One study developed specific criteria based on computed tomographic findings to differentiate gastric/duodenal heterotopic pancreas from small GIST or leiomyoma [20]. Another study found that magnetic resonance imaging (MRI) with diffusion-weighted imaging (DWI) may help in differentiating ectopic pancreases from upper gastrointestinal subepithelial tumors [21]. EUS is useful for evaluating subepithelial tumors—it may demonstrate some characteristics suggestive of the ectopic pancreas, such as indistinct borders, lobulated margins, presence of anechoic duct-like structures, etc. [22]. A retrospective study, with ten patients enrolled, suggested that EUS with fine-needle aspiration (FNA) or biopsy can be an accurate and effective method for diagnosing heterotopic pancreas though one patient developed pancreatitis after FNA [23].

It is controversial to treat asymptomatic patients with gastric heterotopic pancreas. In considering the possible complications occurring in the future, more aggressive management is plausible [16]. For symptomatic patients, surgical excision is helpful in relieving symptoms [12].

Laparoscopic wedge resection of gastric subepithelial tumors (such as gastrointestinal stromal tumor, ectopic pancreas, leiomyoma, etc.) has been demonstrated to be a feasible treatment option [24]. There has been a case report showing that robotic-assisted laparoscopic resection is also an alternative [25]. Laparoscopic-endoscopic cooperative surgery—the utilization of intraoperative endoscopic localization—may be useful in selected cases to preserve cardia or pylorus [26]. Endoscopic mucosal resection and submucosal dissection have both been shown to be safe and effective treatment options in dealing with such lesions [27, 28, 29, 30]. Endoscopic removal of the gastric heterotopic pancreas is also helpful in symptom relief [30].

CONCLUSION

The nonspecific symptoms and images of the gastric heterotopic pancreas often lead to the difficulty in accurate diagnosis preoperatively. More characteristic features on CT, MRI and EUS have been reported to help in differentiating ectopic pancreas from other subepithelial tumors. However, FNA or even biopsy may be needed if those imaging are inconclusive. The treatment options include laparoscopic resection, EMR and ESD.

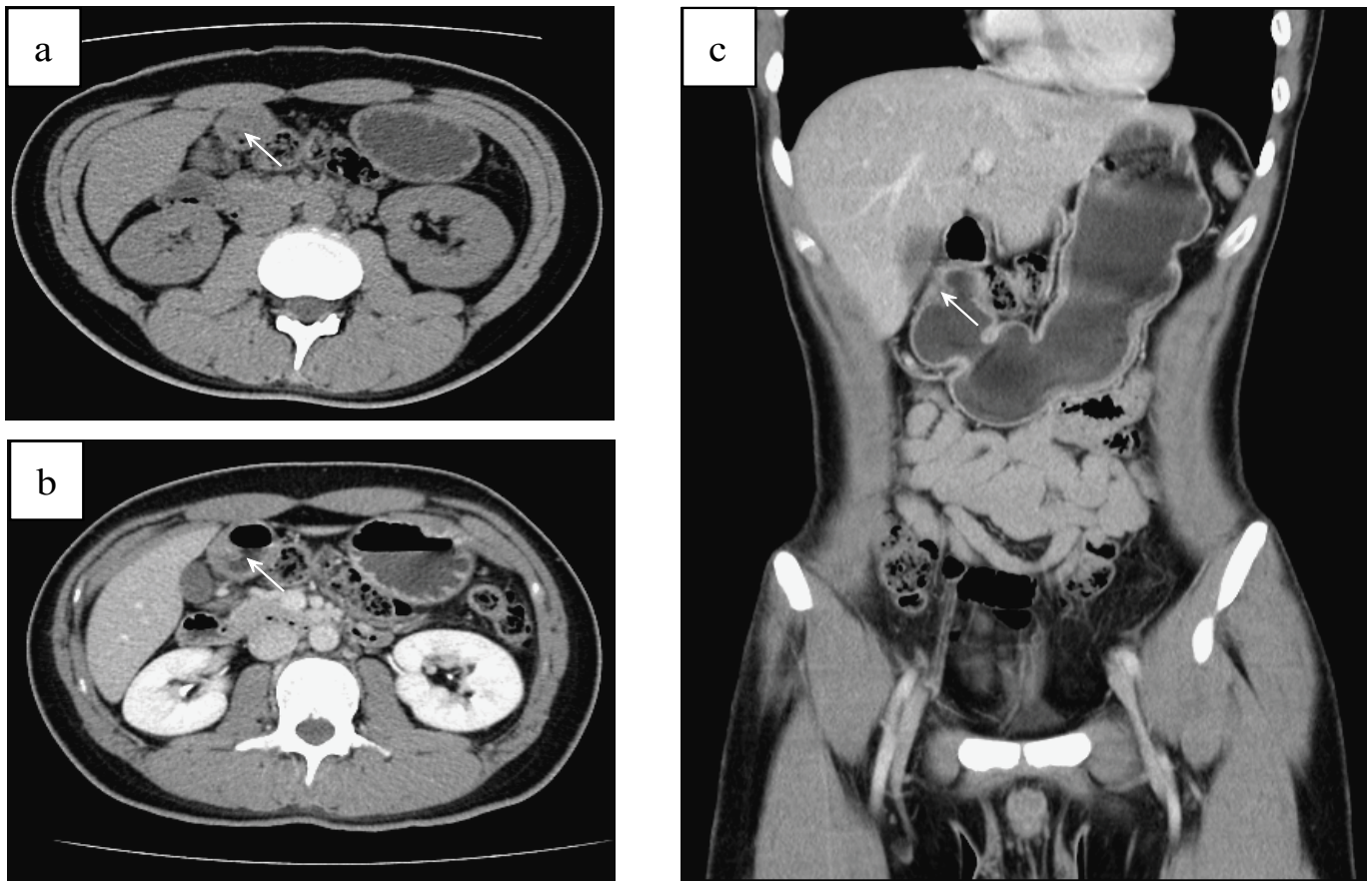


Figure 8. CT imaging showed a subepithelial tumor (white arrows). **(a)**, non-contrast axial view; **(b)**, Contrast-enhanced axial view; **(c)**, coronal view.

Conflict of Interest

The authors declare that there is no conflict of interests.

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