

## Case Report

# An Extramural Duodenal Ectopic Pancreas Mimicking an Exophytic Pancreatic Tumour in an Adolescent

YH WU, CW CHEN, YT CHANG

**Abstract** Ectopic pancreatic tissues are rare anomalies and are usually submucosal lesions most commonly located in the stomach and proximal small intestine. The authors herein describe an uncommon case of an extramural duodenal ectopic pancreatic tissue, which was misinterpreted as an exophytic pancreatic tumour on imaging examination. Laparoscopy was undertaken because of unresolved symptoms, and the ectopic pancreatic tissue was located beyond the duodenal submucosal and muscular layer on pathologic examination.

**Key words** Adolescent; Duodenal ectopic pancreatic tissue; Laparoscopy

### Introduction

Ectopic duodenal pancreatic tissues account for approximately 17%-36.3% of all ectopic pancreatic tissues, and usually appear as intraluminal protrusions with normal overlying mucosa.<sup>1,2</sup> The description of an extramural location has been rarely reported in the literature. Herein we present such a case, of a female adolescent, successfully managed by laparoscopic excision of an extramural duodenal pancreatic tissue.

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### Case Report

A 15-year-old female had suffered from recurrent episodes of moderate to severe epigastralgia and feeding intolerance for the past two years. She was admitted with the complaint of these symptoms increasing in intensity over the recent week. Physical examination of the abdomen noted marked tenderness localised to the upper abdomen without pain radiation to the back. There was neither distention nor any palpable masses observed. The haemoglobin level was 14.4 g/dL, and total white blood cell count was  $6.70 \times 10^9/L$ . The platelet count was  $221 \times 10^9/L$ , and C-reactive protein was undetectable. Serum amylase was 136 U/L, and lipase was 22 IU/L. The upper gastrointestinal X-ray series showed normal filling and gastric and duodenal mucosal folds. Endoscopic ultrasound disclosed a narrowing of the first portion of the duodenum. A nodular lesion with calcified change was noted at the head of the pancreas close to the portal vein. Abdominal computed tomography showed a soft tissue lesion below duodenal bulb which similar enhancement pattern as the pancreas (Figure 1). Magnetic resonance image showed that there was an exophytic pancreatic tissue at pancreas head with compression to adjacent gastrointestinal tract.

Because of persistent symptoms and the abnormal image findings, it was decided that a surgical intervention should be performed; and a laparoscopic approach was elected. The patient was placed in a supine modified lithotomy

position with the surgeon standing between the legs. Laparoscopy was performed with a 5-mm Hasson port at the umbilicus, and video laparoscopy was performed with a 5-mm 30-degree laparoscope (Karl Storz GmbH, Tuttlingen, Germany). Two additional 5-mm working ports at the right and left middle subcostal regions were placed. Initially, Harmonic scalpel (Ethicon Endosurgery, Cincinnati, Ohio, USA) was used for the division of the gastrocolic ligament to expose the lesion. However, the mass was found to be located over the first portion of the duodenum (Figure 2). Therefore, resection of the tumour and wedge resection of the duodenum were performed. The anastomosis of the duodenum was performed

intracorporeally. Operative time was 80 minutes, and blood loss was estimated as 10 mL without blood transfusion. The patient was discharged 10 days after operation and continued to remain free of epigastric pain on two-year follow-up at our outpatient clinic.

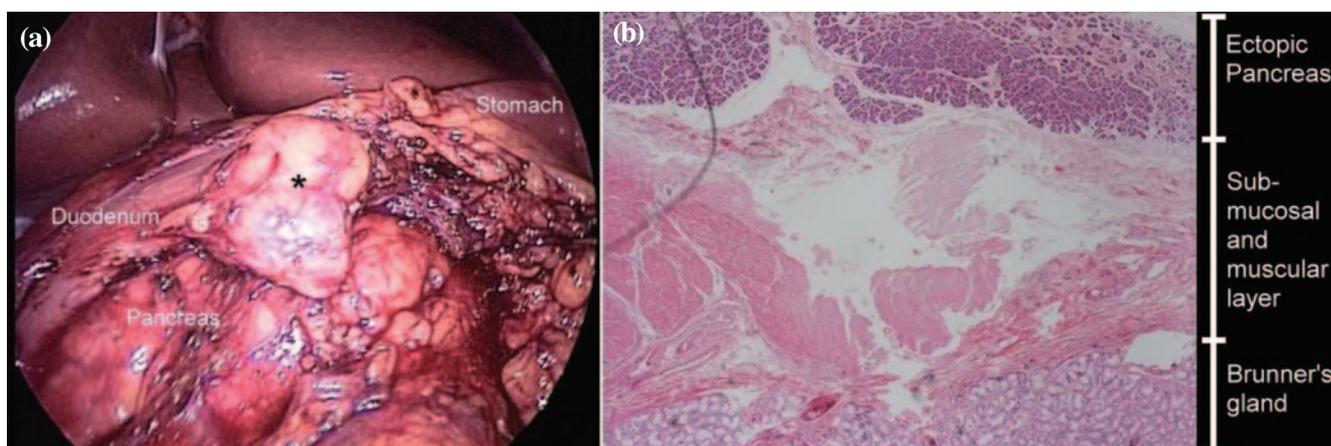
Histology confirmed the diagnosis of heterotopic pancreas. Macroscopically, the specimen consisted of one tissue fragment measuring 4 cm × 2 cm × 0.7 cm in diameter. Cut sections of the specimen displayed a normal pancreas with lobular arrangement. On microscopic examination, it showed an ectopic pancreatic tissue beyond the duodenal submucosal and muscular layers, composed of typical islets of Langerhans scattered in the exocrine pancreas (Figure 2).



**Figure 1** Computed tomography of the abdomen showing a solid lesion (arrow) suspected to arise from the pancreatic head.

## Discussion

Heterotopic pancreatic tissue, first described by Jean Schultz in 1727,<sup>3</sup> is a relatively uncommon tumour, accounting for 1% to 2% in an autopsy series.<sup>4</sup> It usually remains asymptomatic throughout life and is found incidentally during gastroendoscopy or other imaging modalities in patients between 40 and 70 years of age, and sometimes has nonspecific clinical manifestations.<sup>1,5</sup> According to Heinrich classification system, ectopic pancreas can be classified into three types under microscopy: type 1 (endocrine and exocrine element: acini, ducts, and islet cells), type 2 (exocrine element: acini and ducts) and type 3 (only ducts).<sup>6</sup> Our case was considered to be the type 1 heterotopic pancreas which contains all components



**Figure 2** (a) Operative photograph showing a solid mass (asterisk) from the first portion of the duodenum in close association with the pancreas. (b) Photomicrograph of the mass showing a heterotopic pancreas situated beyond the duodenal submucosal and muscular layer. (Haematoxylin and eosin stain, x 40)

of pancreas. Although previously considered benign, reports of ductal adenocarcinoma arising in ectopic pancreas have been published.<sup>7</sup>

The most common sites of the ectopic pancreas include the stomach (25%-38.2%), duodenum (17%-36.3%) and jejunum (15%-21.7%).<sup>1,2</sup> However, it has also been reported in the lungs, gallbladder, mediastinum, mesentery, oesophagus, bile ducts and umbilical cord.<sup>1</sup> Of the alimentary tract, ectopic pancreas is typically a submucosal mass covered by normal mucosa.<sup>1</sup> Endoscopic ultrasonography is the mainstay of imaging modalities in the detection the neoplasm located in the stomach and first and second portions of the duodenum.<sup>1</sup> Unlike submucosal localisation of other reported ectopic pancreatic tissues, the lesion at our present case originated from the submucosal layer and extended extramurally.

Some papers have mentioned that the operation technique and patient selection might be made on the basis of location and size of lesion and the patient's comorbidities. The optimal treatment for asymptomatic lesions of ectopic pancreatic tissue is not well defined. Also, laparotomy should be considered if there are emergency complications secondary to ectopic pancreas such as intussusception or peritonitis.<sup>8</sup> However, these reports relate mostly to gastric ectopic pancreas. Currently, there is still no clear consensus guideline for the treatment of duodenal ectopic pancreas. With refinements in minimally invasive surgery, laparoscopy in the treatment of ectopic pancreas was first reported in 2002.<sup>9</sup> This, however, appears to be the first report of complete laparoscopic excision of a duodenal ectopic pancreas in an adolescent.

The detailed pre-operative examination including imaging survey and video magnification of the endoscopy can offer surgeons better exposure of the extramural duodenal mass and its surrounding vessels and nerves. Therefore, delicate manoeuvres can be performed to protect nearby important structures during surgery. Despite the present case representing experience within the learning curve and was a time-consuming operation, the laparoscopic approach holds promise for providing advantages seen with minimally invasive approaches in other procedures, such as postoperative recovery and cosmetic considerations.<sup>10</sup>

## Conclusions

This case presents a relatively uncommon clinical problem and is the first case report of successful laparoscopic management in an adolescent with an extramural duodenal ectopic pancreas. Laparoscopic wedge resection for duodenal ectopic pancreas appears to be safe and feasible.

## Declaration of Interest

The authors have no conflicts of interest.

## References

1. Harold KL, Sturdevant M, Matthews BD, et al. Ectopic pancreatic tissue presenting as submucosal gastric mass. *J Laparoendosc Adv Surg Tech A* 2002;12:333-8.
2. De Vogelaere K, Buydens P, Reynaert H, et al. Laparoscopic wedge resection for gastric ectopic pancreas. *Surg Laparosc Endosc Percutan Tech* 2005;15:166-8.
3. Fam S, O'Briain DS, Borger JA. Ectopic pancreas with acute inflammation. *J Pediatr Surg* 1982;17:86-7.
4. Kaneda M, Yano T, Yamamoto T, et al. Ectopic pancreas in the stomach presenting as an inflammatory abdominal mass. *Am J Gastroenterol* 1989;84:663-6.
5. Rubbia-Brandt L, Huber O, Hadengue A, et al. An unusual case of gastric heterotopic pancreas. *JOP* 2004;5:484-7.
6. von Heinrich H. Ein Beitrag zur Histologie des Sogen: akzessorischen Pankreas. *Virchows Arch A Pathol Anat Histopathol* 1909;198:392-401.
7. Matsuki M, Gouda Y, Ando T, et al. Adenocarcinoma arising from aberrant pancreas in the stomach. *J Gastroenterol* 2005;40:652-6.
8. Nasser HA, Sleiman YA, Hassoun ZA, et al. Bowel obstruction secondary to an ectopic pancreas in the small bowels: About 2 cases. *Int J Surg Case Rep* 2017;31:72-4.
9. Paolucci P, Brasco OE, Rosin D, et al. Laparoscopic resection of ectopic pancreas in the gastric antrum: case report and literature review. *J Laparoendosc Adv Surg Tech A* 2002;12:139-41.
10. Kendrick ML, Cusati D. Total laparoscopic pancreaticoduodenectomy: Feasibility and outcome in an early experience. *Arch Surg* 2010;145:19-23.