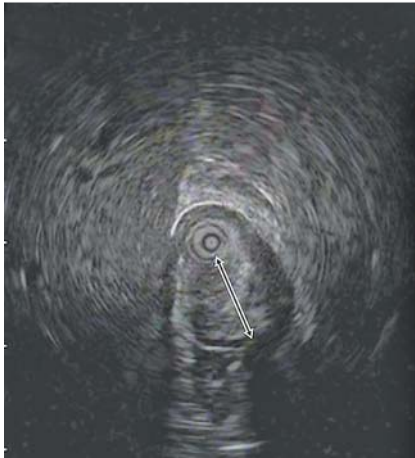
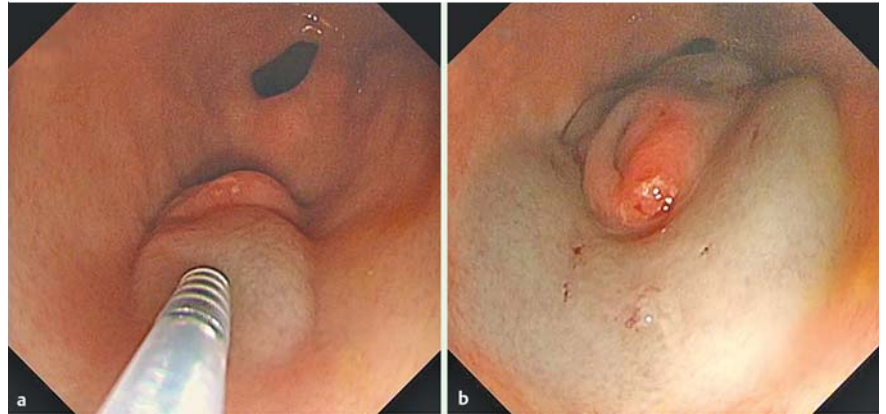


## Endoscopic submucosal dissection of pancreatic heterotopia in children



**Fig. 1** Endoscopic ultrasound showing the extent of the submucosal lesion, which has a maximal diameter of 7.8 mm (arrow).

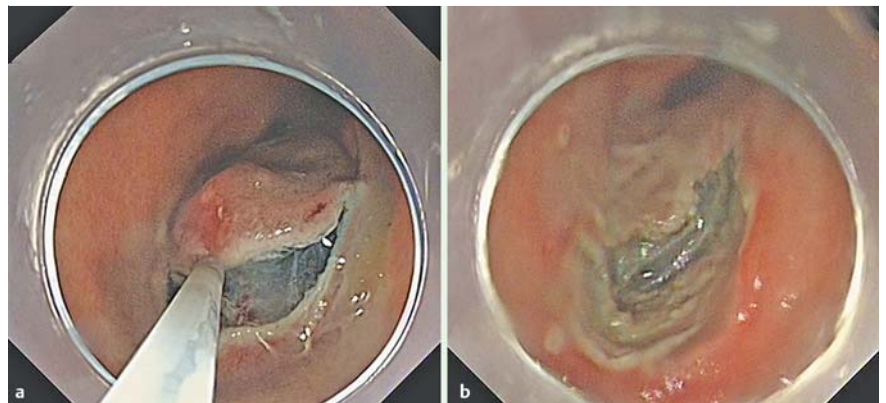


**Fig. 2** A solution of sodium hyaluronate, adrenalin, indigo carmine, and normal saline is circumferentially injected into the submucosa of the lesion: **a** the start of the injection; **b** completion of the injection.

Aberrant pancreatic tissue is mostly found in the submucosal layer of the upper gastrointestinal tract, occurring in 1.7% of the population according to summarized post-mortem studies [1]. Gastric pancreatic heterotopia was first recognized by Klob in 1859 [2].

Herein we describe the resection of gastric pancreatic heterotopic lesions in children by endoscopic submucosal dissection (ESD). After the lesion has been localized endoscopically (GIF-HG 290; Olympus Medical, Tokyo, Japan), its extent within the stomach wall is clarified by ultrasound (UM-2R; Olympus Medical) (▶ **Fig. 1**). A solution is circumferentially injected into the submucosa of the lesion (▶ **Fig. 2**). This solution consists of 2.5 mL 1% sodium hyaluronate (Hyruan; LG Life Sciences) and 7.5 mL of a mixture that is made up of 5 mL adrenalin (1 : 10 000; DBC Adrenaline Injection) and 1–2 mL of 8% indigo carmine (Indigocarmin Amino) diluted in 100 mL normal saline. An electro-surgical knife (DualKnife, KD-650L; Olympus Medical) is used for the mucosal incision and submucosal dissection of the lesion (▶ **Fig. 3**).

A 12-year-old girl with known hemoglobin H disease presented with intermittent epigastric pain. She was diagnosed with gallstones and a polypoid lesion in the antrum of the stomach (▶ **Fig. 4**). She underwent a laparoscopic cholecystectomy and the gastric lesion was removed by ESD



**Fig. 3** View during endoscopic submucosal dissection showing: **a** the incision being made with an electro-surgical knife; **b** the antrum after completion of the resection.



**Fig. 4** Endoscopic view of a polypoid tumor (pancreatic heterotopia) in the antrum with indentation.



**Video 1**  
Endoscopic submucosal dissection of gastric pancreatic heterotopia in a 12-year-old girl.

([Video 1](#); [Fig. 3](#)). At follow-up, she continued to complain of mild abdominal pain when eating oily foods.

Another antral lesion was identified in a 14-year-old girl with epigastric pain. After the resection of her 10-mm submucosal tumor by ESD, she returned with similar complaints at her follow-up.

The histology of both of these lesions showed pancreatic lobules with islet cells representing type 1 pancreatic heterotopia, according to the classification by von Heinrich [3]. Whilst the alleviation of symptoms is questionable in both patients, the timely removal of these lesions should prevent long-term risks such as gastric outlet obstruction through enlargement, blood loss through ulceration, and neoplastic transformation [4,5]. In both cases the ESD technique was performed without complications. There have been no late sequelae or evidence of local recurrence after a mean follow-up of 3 years.

ESD currently offers the most elegant method to resect aberrant pancreatic tissue, with perforation being the only significant risk factor [6].

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**Competing interests:** None

**Yvonne Leung<sup>1</sup>, Christoph H. Houben<sup>1</sup>, Mabel Lacambra<sup>2</sup>, Anthony Teoh<sup>3</sup>, Yuk Him Tam<sup>1</sup>, Philip Chiu<sup>3</sup>**

<sup>1</sup> Division of Paediatric Surgery & Paediatric Urology, Department of Surgery, Prince of Wales Hospital, Hong Kong, China

<sup>2</sup> Department of Anatomical and Cellular Pathology, Prince of Wales Hospital, Hong Kong, China

<sup>3</sup> Division of Upper GI Surgery, Department of Surgery, Prince of Wales Hospital, Hong Kong, China

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### Corresponding author

**C. H. Houben, MD**  
 Division of Paediatric Surgery Urology  
 Department of Surgery  
 Prince of Wales Hospital  
 The Chinese University of Hong Kong  
 Hong Kong SAR  
 China  
 Fax: +852-26324669  
 chhouben@web.de