

CASE REPORT

Intraductal Papillary Mucinous Neoplasm Occurring in Pancreatic Heterotopia of the Duodenum: Two Cases and A Review of the Literature

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ABSTRACT

Context Heterotopic pancreas is usually an incidental finding during pathologic evaluation of gastrointestinal polyps or lesions encountered during endoscopy for nonspecific symptoms or unrelated conditions. However, the same neoplastic processes that occur in normal pancreas also can occur in pancreatic heterotopias. **Case report** We report two cases of intraductal papillary mucinous neoplasms arising in pancreatic heterotopia within the duodenum of two patients. These cases are among the first reports of neoplasia occurring in pancreatic heterotopia of the duodenum. Both patients are being managed expectantly, as there is currently no consensus regarding the proper follow up in these cases, particularly those that have been incompletely excised. **Conclusion** These cases highlight the potential for neoplasia in pancreatic heterotopia and emphasize the importance of careful evaluation of these lesions. Close clinical follow up and possible excision may be warranted in patients with concerning pathologic or clinical findings.

INTRODUCTION

Heterotopic pancreas is a relatively rare and generally asymptomatic condition defined as the presence of pancreatic tissue without anatomic or vascular connection to the pancreas. It is believed to arise either from ectopic deposition of pancreatic tissue during rotation of the foregut in embryogenesis or possibly as a metaplastic phenomenon [1]. The incidence of heterotopic pancreas tissue is variably reported as one in 500 laparotomies and 0.6%-14% of autopsies [2, 3]. The most common sites of distribution are stomach and duodenum, followed by jejunum. Other sites, such as colon, liver, gallbladder, and omentum are very rarely involved. In most cases, the patients are asymptomatic although these lesions, especially the larger ones, can ulcerate, bleed or cause obstructive symptoms [4]. However, generally speaking, these are incidental findings on endoscopy, characteristically presenting as broad-based, umbilicated, submucosal lesions. Heterotopic pancreas

is susceptible to the same pathologic processes that affect the normal pancreas, including neoplasia with malignant transformation. Cases of intraductal papillary mucinous neoplasms (IPMNs) in the stomach and jejunum have been previously reported [5, 6, 7], as well as a single case in the duodenum [20]. Here, we report two additional cases of intraductal papillary mucinous neoplasms (IPMNs) arising from heterotopic pancreas in the duodenum.

CASE REPORTS

Clinical Findings

Case #1: A fifty-four-year-old female with metastatic neuroendocrine tumor and multifocal small pancreas cysts presented for a second opinion. She had a 1.2 cm submucosal duodenal bulb mass on prior endoscopy. At endoscopy a submucosal polyp measuring 1 cm in size was found in the duodenal bulb (Figure 1A). After submucosal injection of 3 cc of methylene blue tinted saline, endoscopic mucosal resection (EMR) with snare cautery was performed. There was a single 1-2 mm focus of unstained tissue in the blue-stained submucosal resection bed that had the appearance of a "pseudotarget sign" and suggested involvement of the process deeper than the mucosal layer.

Case #2: A seventy-two-year-old male presented with symptoms of reflux. On upper endoscopy with ultrasound, a single smooth broad-based polyp, measuring between 10 and 20 mm in size, was noted within the 2nd portion of the duodenum (Figure 1D). On ultrasound, it was

Received April 13th, 2015-**Accepted** May 29th, 2015

Keywords Choristoma; Pancreas

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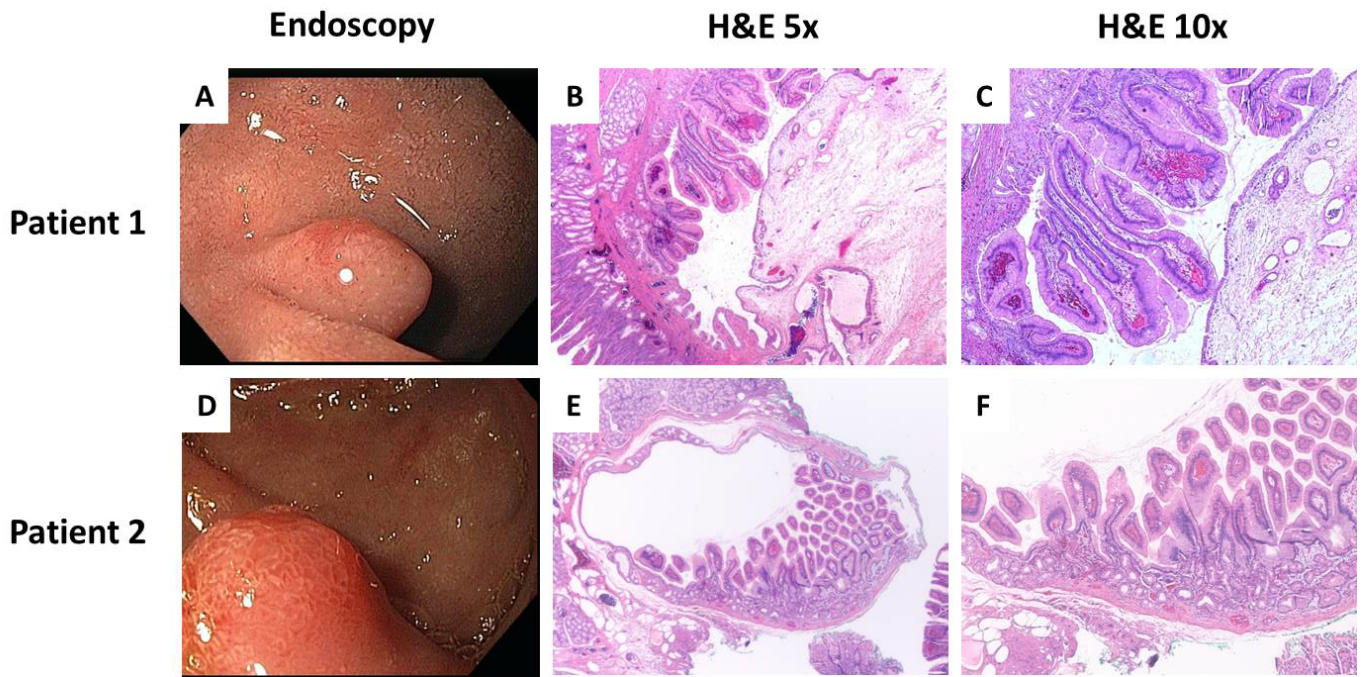


Figure 1. Endoscopic and pathologic findings of two cases of IPMN arising in heterotopic pancreas of the duodenum

hypoechoic and solid with hyperechoic foci. Invasion into the muscularis mucosae of the surrounding tissue was seen. This appearance was felt to be due to Brunner gland hyperplasia. The polyp was removed by snare cautery.

Histologic Findings

Case #1: Histologic examination showed a cystically dilated space, lined by simple cuboidal epithelium, within the submucosa of the duodenum with surrounding smooth muscle proliferation, consistent with an adenomyoma. Arising within the adenomyoma were papillary projections lined by distinct mucinous epithelium, consistent with an IPMN with low grade dysplasia (Figure 1B, 1C). The IPMN involved the submucosal margin of resection. No invasive carcinoma was seen. Endosonography of the pancreas revealed multifocal sub-centimeter cysts consistent with side-branch IPMNs without aggressive features.

Case #2: Histologic examination showed a cystic lesion within the submucosa of the duodenum. This lesion was lined on one side by bland cuboidal epithelium, similar to the previous case, which transitioned into mucinous epithelium with papillary architecture, consistent with an IPMN with low grade dysplasia (Figure 1E, 1F). This lesion was completely excised. No invasive carcinoma was seen.

DISCUSSION

Both cases presented with endoscopic findings of a broad based submucosal polyp or mass which were excised to evaluate for additional pathology. Upon excision, the appearance of the resection site in the first case was notable for a “pseudotarget sign” suggesting deeper involvement that was confirmed histologically. This patient was identified to have multifocal IPMNs throughout her pancreas in addition to the lesion arising in her duodenal bulb. This case brings to mind the idea that IPMNs are not solitary lesions, but represent a “field

defect” that predisposes the entire ductal epithelium to the formation of IPMN [8].

The finding of neoplasia in heterotopic pancreas is a rare finding. In one study of 109 patients with pancreatic heterotopias [9], 2 patients (1.8%) had carcinoma. Goodarzi *et al.* [10] highlights 29 cases in the literature of carcinoma arising in pancreatic heterotopias. Six cases of IPMN arising in pancreatic heterotopias have been reported, four in the stomach and one in a Meckel’s diverticulum [11, 12, 13, 14]. The last case was in the jejunum and displayed concomitant invasive ductal adenocarcinoma. Though a single case of duodenal IPMN arising in heterotopia has been described [20], our findings of two additional cases may indicate a higher incidence at this location than previously thought.

Guillou *et al.* proposes a set of diagnostic criteria for these tumors [15]. First, the tumor must be found within or close to the heterotopic pancreas. Second, there must be a direct transition between the pancreatic structures and tumor. Third, the nonneoplastic pancreas must display fully developed acini and ductal structures. Fourth, direct extension or metastasis must be excluded. Three of these criteria are definitively met in our two cases. No acinar structures are identified, but clear ductal structures are seen. Von Heinrich *et al.* describe three types of pancreatic heterotopias [16]. Type I has ductal, acinar and endocrine elements. Type II only has ductal and acinar elements. Type III has only ductal elements which are generally cystically dilated, which fits our two current cases.

In general, heterotopic pancreas does not require resection, however, in these rare cases where neoplasia is encountered, there is currently no consensus regarding whether resection and of what type is appropriate or necessary. Some reports suggest that local excision, such as endomucosal resection, may be appropriate when

the lesion is not initially completely excised, rather than a radical resection [17, 18, 19, 20]. In our first patient, due to extensive metastatic disease from a small bowel neuroendocrine tumor, her IPMN lesion(s) was of secondary concern and as such, her treatment is focused primarily on her neuroendocrine disease. The second patient, whose pathology indicated complete resection, will return for direct inspection of the minor papilla with dedicated endoscopic ultrasound of the entire pancreas to exclude multifocal IPMN.

These cases emphasize the potential for neoplasia in heterotopic pancreas, a not uncommon lesion found primarily in the gastrointestinal tract. Therefore, careful evaluation of heterotopic lesions should occur because these patients will be followed closely and possibly undergo additional excision depending on their pathologic findings and clinical evaluation.

Conflicting Interest

The authors had no conflicts of interest

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