Case Report

Massive pancreatic serous cystadenomas raise important questions regarding surgical management of incidental pancreatic cystic lesions: a report of two cases

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Background: The widespread use of cross-sectional imaging and ultrasound has led to an increase in the diagnosis of pancreatic cystic neoplasms. These lesions have an estimated prevalence of 2.4% of which approximately 10–16% are serous cystadenoma (SCA). SCA is the most common benign pancreatic lesion; the vast majority are asymptomatic and associated with low risk for malignant transformation. Despite improved insight into the natural history of these tumors, recommendations for their management remain contentious. We present two cases of giant SCA that call attention to shortcomings of the current guidelines for management of benign cystic pancreatic lesions.

Case Description: In both cases, patients presented for surgical evaluation late in the disease course despite multiple medical consultations with generalist and specialty providers. Although both lesions were resected, their late presentation may have increased risk for complication and post-operative morbidity.

Conclusions: These cases highlight possible discrepancies between medical and surgical perspectives in the field and support future investigation into more aggressive surgical management of SCA.

Keywords: Surgical oncology; serous cystadenoma (SCA); pancreatic neoplasm; case report

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Introduction

The widespread use of cross-sectional imaging and ultrasound has led to an increase in the diagnosis of pancreatic cystic neoplasms (1). These lesions have an estimated prevalence of 2.4% of which approximately 10–16% are serous cystadenoma (SCA) (2-4). SCA is the most common benign pancreatic lesion; the vast majority are asymptomatic and associated with low risk for malignant transformation (5,6). Despite improved insight into the natural history of these tumors, recommendations for their management remain contentious (6).

There are five published guidelines for the management of pancreatic lesions. Review of these recommendations reveals a strong emphasis on reducing the risk of morbidity and mortality secondary to malignant disease, leaving a possible gap in the management of benign lesions capable of serious mass effect and location-based complications late in their disease course. Review of the literature suggests that surgeons have historically taken a more aggressive approach in the management of SCA; however, there is no formal recommendation from a surgical society (7-10).

Here we describe two cases of giant SCA in which patients presented with massive, benign tumors despite multiple prior medical consultations. These cases are unique in that they call attention to shortcomings of the current management guidelines, support investigation into more aggressive surgical management of SCA, and highlight possible discrepancies between medical and surgical perspectives on the management of benign pancreatic lesions. We present the following article in accordance with the CARE reporting checklist (available at https://jgo.amegroups.com/article/view/10.21037/jgo-22-220/rc).

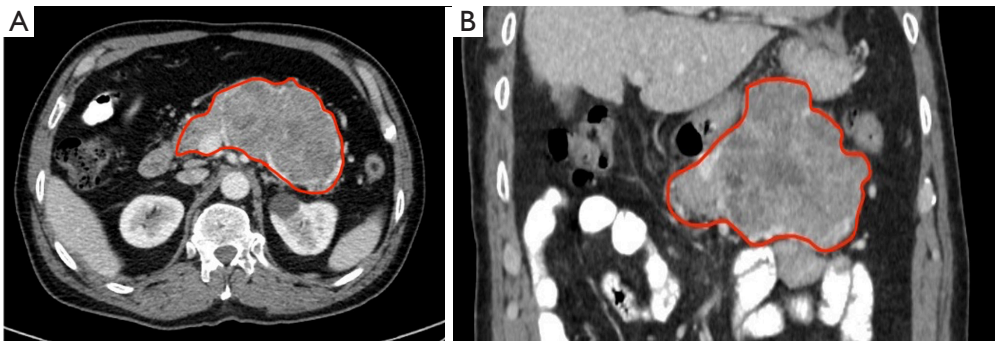

Figure 1 Cross sections from pre-operative abdominal CT scan from Case 1. Axial (A) and coronal (B) cross sections from Case 1 reveal mixed solid and cystic mass which extends from the midpoint of the body of the pancreas to the tail with approximately 10.6×6.7×9.9 cm. Red outlines indicate approximate tumor margin.

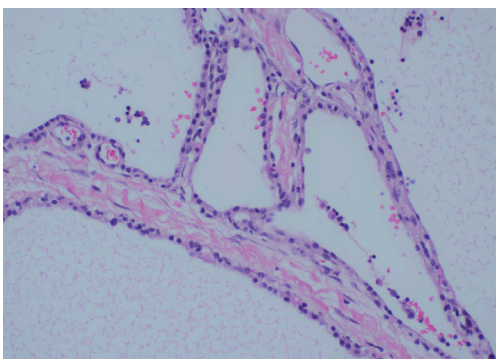

Figure 2 Surgical pathology from Case 1: H&E stained slide at 400× magnification from case 1 demonstrating distinctive glycogen rich epithelial cells with uniform round nuclei and a prominent microvascular network hugging the epithelium consistent with diagnosis of SCA. Morphology is consistent with microcystic SCA. H&E, hematoxylin and eosin; SCA, serous cystadenoma.

Case presentation

Our first patient is a 71-year-old male with past medical history significant for type II diabetes mellitus, hyperlipidemia, chronic kidney disease, and non-alcoholic steatohepatitis who initially presented and was admitted to the inpatient medicine service with COVID pneumonia, later found to have unrelated epigastric pain and early satiety. Subsequent consult and work up by the gastroenterology service revealed a 10.6×6.7×9.9 cm mass in the body and tail of the pancreas suspicious for SCA (*Figure 1A*,*1B*). Endoscopy and endoscopic ultrasound (EUS) were performed, revealing a hypoechoic, multicystic lesion with honeycombing pattern in the pancreatic body and tail with no obvious communication with the pancreatic duct and without evidence of an associated solid mass. Pre-operative CA19.9 level was 2, associated with low risk for pancreatic cancer. Together, these findings were consistent with diagnosis of SCA. Surgical intervention was deemed unnecessary based on American Gastroenterological Association guidelines, which caution against surgical resection given risk for complication and low risk for malignant transformation (11). General surgery was not consulted at this time. However, the patient was later referred to general surgery for evaluation of an inguinal hernia, leading to rediscovery of the large epigastric mass on physical exam. At the time of consultation, the patient complained of early satiety and epigastric abdominal pain. Surgical resection was recommended given the size of the mass, current abdominal symptoms, and concern for tumoral hemorrhage due to engorged feeding vessels (*Figure 1A*,*1B*). The patient underwent subtotal pancreatectomy with *en block* splenectomy. The operation was complicated by significant blood loss of 2.5 L due to the size of the tumor and presence of multiple enlarged feeding blood vessels requiring two units of packed red blood cells intra-operatively. The final pathology report was consistent with a diagnosis of microcystic SCA with cysts ranging in size from 1 to 8 mm in diameter (*Figure 2*).

Our second patient is a 69-year-old female with past medical history significant for uterine cancer status post total abdominal hysterectomy with bilateral salpingo-oophorectomy, followed by adjuvant chemo-radiation therapy, type II diabetes mellitus, and hypertension found to have a mass at the head of the pancreas in 2014 in her home country. She reported that her provider assured her

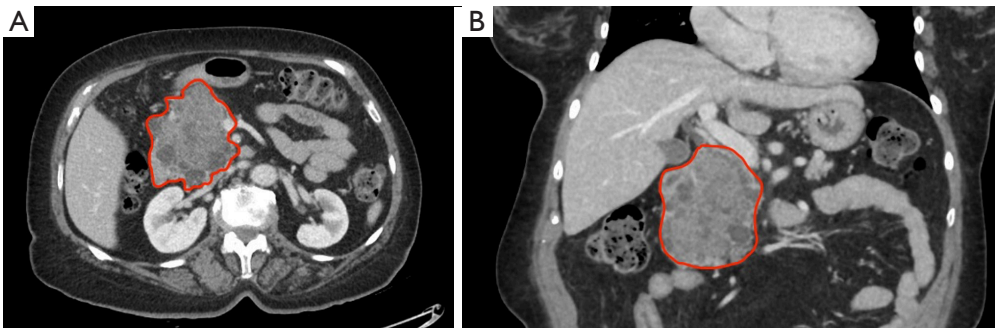

Figure 3 Cross sections from pre-operative abdominal CT scan from Case 2: axial (A) and coronal (B) cross section from patient 2 reveals large, irregular, heterogenous, lobulated pancreatic mass centered at the head and uncinate process measuring approximately 9.1×7.3×9.8 cm without evidence of pancreatic ductal dilation or abdominal/pelvic nodes noted. The remainder of the visualized pancreatic parenchyma appears otherwise unremarkable. Red outlines indicate approximate tumor margin.

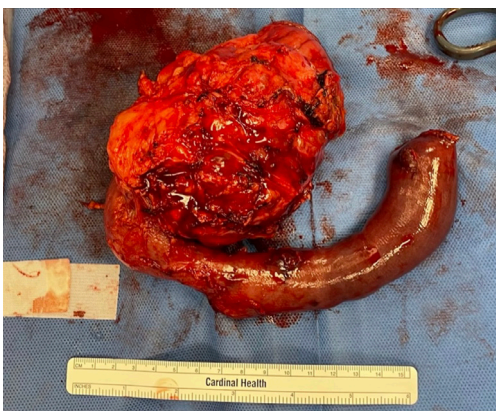

Figure 4 Gross anatomy of giant SCA excised from Case 2: the figure reveals a well demarcated mass lesion surrounding the pancreatic head measuring approximately 9×7×10 cm. Resected portion of the duodenum observed inferiorly. SCA, serous cystadenoma.

that the mass was benign and required no further work up or intervention, but she was unable to clarify the nature of evaluation or the specialty of their service.

She was referred to our clinic in October of 2021 by her obstetrician-gynecologist with complaints of early satiety and abdominal cramping with evidence of a 9.1×7.3×9.8 cm mass at the head and uncinate process of the pancreas on imaging (*Figure 3A*,*3B*). On exam, there was evidence of a large epigastric mass and tenderness to palpation. The patient's pre-operative work up included an EUS, which revealed extrinsic duodenal compression, a CA 19.9 level of 18, and fine needle aspiration (FNA) cytology that was benign. Given the size of the lesion and associated symptoms (i.e., right upper quadrant and epigastric pain, early satiety, and abdominal fullness) the patient was recommended for a Whipple procedure. Resection of this lesion is shown in *Figure 4*. The patient tolerated the procedure well; however, there was evidence of bilious drainage in her Jackson-Pratt drain on post-operative day five consistent with fistula at the hepaticojejunal anastomosis. Conservative management included continued monitoring of drain output and daily physical exams. Ultimately, the drain was removed without any complication. The final pathology report revealed large cystic mass in head of the pancreas measuring 85 mm in greatest diameter consistent with macrocytic serous cyst adenoma with a small 7 mm focus of neuroendocrine cancer (*Figure 5*). As of this report, both patients are more than six months status post-operative and without symptoms.

All procedures performed in the study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

Discussion

In this report, we describe the cases of two patients with giant SCA who presented with massive tumors late in the disease course despite multiple prior medical consultations.

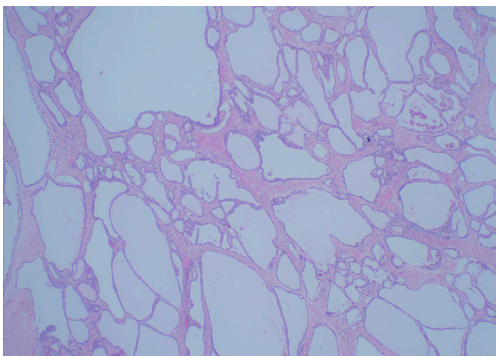

Figure 5 Surgical pathology from Case 2: H&E stained slide at 400× magnification from Case 2. Morphology is consistent with macrocystic SCA. H&E, hematoxylin and eosin; SCA, serous cystadenoma.

Delayed surgical intervention likely contributed to higher risk procedures and possibly increased post-operative morbidity. In an effort to clarify the reason for their delay in surgical intervention, we reviewed the current guidelines for management of benign pancreatic lesions. While these guidelines are published with disclaimers, they serve as an official framework for medical management. There are five guidelines available; the European, American Gastroenterological Association (AGA), and American College of Gastroenterology (ACG) guidelines recommend highly conservative approaches to benign lesions, citing the low likelihood of symptomatic progression, malignant transformation, and slow growth observed in benign cystic lesions of the pancreas (11,12). International Association of Pancreatology (IAP) guidelines are more amenable to an aggressive surgical approach, recommending strong consideration of resection for cysts >3 cm in young fit patients (13). However, these guidelines may prove difficult to apply given that median age for diagnosis of benign lesions is closer to 60 (6). The American College of Radiology (ACR) recommendations work to structure surveillance strategies and do not make recommendations for surgery (14).

This review revealed that, despite the impressive size of our patients' lesions, the current guidelines do not strongly support surgical intervention, putting them at risk for more complex procedures with higher risk for complication. One shortcoming shared by all five recommendations is a reliance on yearly and symptom-based follow-up for benign lesions. These cases demonstrate the challenge of symptom-based follow-up, in which patients do not describe symptoms associated with their lesions until late in the disease course when surgical excision is complicated by tumor size and vascular development. Furthermore, given the slow growth rate of these tumors, it is possible that these patients may have acclimated to their symptoms, delaying reporting and intervention. Yearly follow-up presents an alternative set of challenges associated with increased cost associated with yearly repeat imaging and higher risk for losing patients to follow-up.

Further review of the literature suggests surgeons have historically taken an aggressive approach towards the resection of pancreatic lesions given the low accuracy of diagnostic tools available (7,8). Since the advent of increasingly reliable diagnostics, surgeons have recommended selective resection of benign lesions with faster growth or those that might require more complex resection with higher risk for surgical complication down the road (9,10). However, there is still risk for missed malignancies such as the neuroendocrine carcinoma discovered on surgical pathology of the second patient presented here and similar to one reported by Yadav *et al.* (15). Additional rationale behind early intervention includes reducing risk of non-operative complications such as pain, early satiety, biliary obstruction, atrophy of normal pancreatic parenchyma leading to exocrine and endocrine dysfunction, and erosion of tumor vessels resulting in catastrophic hemorrhage (16-19). When juxtaposed the AGA, ACG, European, and IAP guidelines, this suggests a possible discrepancy in the perspectives of medical and surgical management of benign pancreatic lesions.

Finally, given the potential gaps in the current guidelines, it is necessary to consider opportunities to investigate more aggressive surgical management of benign pancreatic cystic lesions. Integral to improving upon the current framework would be assessing the complications of long-term conservative management at scale. Given their rarity and slow growth rate, a much larger follow-up window is necessary to evaluate the natural history of these lesions. Similarly important is the evaluation of biomarkers to serve as indications for earlier surgical intervention. Tumor size, growth rate, impact on adjacent organs, and structure (e.g., microcytic *vs.* macrocystic) as well as patient age and history of non-pancreatic malignancy have been suggested in the past and would likely prove critical in defining indication for early resection (6).

In conclusion, we present two cases of giant SCA that call attention to shortcomings of current guidelines for management of benign cystic pancreatic lesions, highlighting

possible discrepancies between medical and surgical perspectives in the field and supporting future investigation into more aggressive surgical management of SCA.

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Footnote

Reporting Checklist: The authors have completed the CARE reporting checklist. Available at https://jgo.amegroups.com/article/view/10.21037/jgo-22-220/rc

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://jgo.amegroups.com/article/view/10.21037/jgo-22-220/coif). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in the study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patients for publication of this case report and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

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