

Laparoscopic spleen retains the body and tail of the pancreas resection

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Abstract: Pancreatic serous cystic neoplasm (SCN) is a benign tumor of the pancreas, about two-thirds situated in the tail of the pancreas. The small sized ones usually require only routine follow-ups, and is advised for surgical treatment when clinical symptoms, and mass growth are occurring rapidly, and the traditional treatment is splenectomy. Here, we have finished a laparoscopy resection of the spleen-preserving pancreatic body. A 46-year-old female presents for a follow-up after a physical examination found a tumor mass in the body and tail of the pancreas two years ago. After the tumor had become fast-growing and appeared to have other clinical symptoms, a final laparoscopy surgery was performed to retain the spleen of the pancreas. After the treatment, and a smooth recovery, the patient had been discharged. Spleen preserving laparoscopy, with distal pancreatectomy, in the treatment of benign tumors of the pancreatic body and tail, not only can reflect a minimally invasive treatment of postoperative pain, it provides a light and quick recovery advantage. The preservation of the spleen to avoid the long-term anticoagulation treatment, and the technology being relatively easily available, did not significantly increase the incidence of postoperative complications. It is worth using the clinic.

Keywords: Serous cystic neoplasm (SCN); pancreatic cystic neoplasms; laparoscopy

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Introduction

Pancreatic cystic neoplasms are estimated to be present in 2 to 45 percent of the general population, accounting for 1 to 2 percent of all pancreatic tumors (1). The histopathological features of these tumors are often divided into the mucinous cystic neoplasm (MCN) and serous cystic neoplasm (SCN) categories (2). Due to the low risk of malignant transformation of SCNs, estimated to be 0 to 1.2 percent (3), surgical resection should only be considered when the cysts are causing serious symptoms, or when it is not possible to differentiate from a MCN with concerning features.

Case report

A 46-year-old female presents for a follow-up after a

physical examination found a tumor mass in the body and the tail of the pancreas two years ago. At the time, the tumor size was measured at 15 mm, and subsequently, pancreatic ultrasounds were performed intermittently to monitor growth. On this occasion, the patient reports a recent onset of left upper abdominal distension pain, and early satiety after a meal. There was no associated lower back pain, unaccompanied nausea, vomiting, dizziness, palpitation, clammy skin or other symptoms of low blood sugar. She has had a three-year history of hypertension, with irregular use of amlodipine that maintained systolic pressures between 140–170 mmHg.

Clinical examination was largely unremarkable and nonspecific, with normal hemodynamic parameters, and no jaundice or sclera icterus. There was non-specific

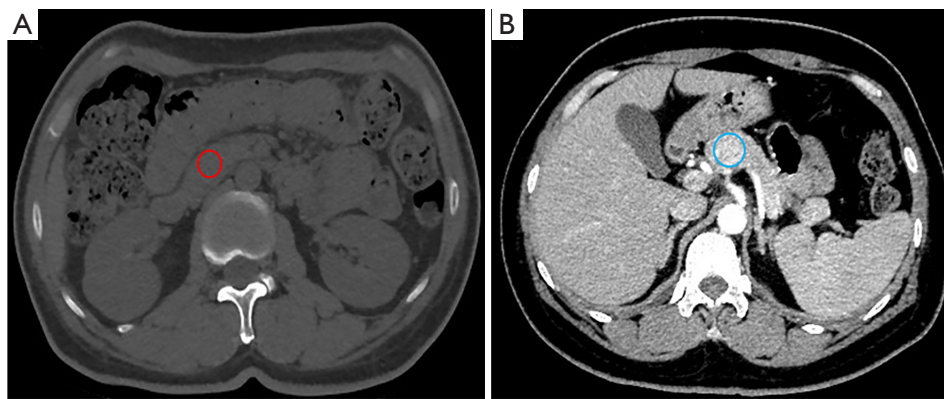


Figure 1 Preoperative CT performance in patients. The pancreas neck is a solid mass, the nature to be determined (A); the pancreatic neck part leaf cystic mass, neither abdominal lymph nodes enlargement nor vascular invasion (B). The two circle represents the location of the tumor.

tenderness over the whole abdomen, with no obvious foci nor distension. The rest of the examination was essentially normal.

The routine investigations were within a normal range, except for slightly increased CA125 47.9 U/mL (normal 0–35.0 U/mL). All blood serology reports were negative. Upper abdomen computed tomography (CT) demonstrated a solid mass at the neck of the pancreas (*Figure 1A*), with features suggestive of a pancreatic neck partial leaf cystic mass. There was no abdominal lymph node enlargement, nor vascular invasion (*Figure 1B*). According to the above CT findings, and CA125 results, the diagnosis of pancreatic serous adenoma was deemed likely.

While the small sized benign pancreatic tumors usually require only routine follow-ups, the patient's symptomatic presentation with distending pain, and left upper quadrant tenderness warranted surgical treatment, as European evidence-based guide of cystic neoplasms of the pancreas suggest surgical management for symptom control. In light of the patient's age, and the non-malignancy of the tumor, pancreatectomy with spleen-preservation under a laparoscopy approach was elected, following discussion with the patient and her family. Informed consent, with risk, benefit and alternatives detailed, was provided.

Operative technique

The patient was anesthetized with general anesthesia, and a sterile field established. Umbilicus puncture was used to establish a carbon dioxide pneumoperitoneum at 15 mmHg.

A partial arc of five trocars were inserted in the abdominal wall surrounding the tumor. After routine exploration of the abdominal cavity failed to find any ascites or intraperitoneal tumor metastases, an ultrasound knife was used to open the gastric and colonic ligaments. Upon exploration of the pancreas, a 3 cm × 2 cm mass was identified in the neck of the pancreas. The upper and lower edges of the pancreas were carefully dissected, exposing the superior mesenteric vein (*Figure 2A*), and opened a tunnel behind the neck of the pancreas (*Figure 2B*), the neck of the pancreas is divided, usually with an ENDO-GIA (*Figure 2C*). Along the splenic artery and vein, a free body, and tail of the pancreas, there was a complete removal of the body tail of the pancreas (*Figure 2D*). A complete hemostasis of the wound, saline irrigation and a cleaning abdominal cavity was performed. Examination was done, to determine no pancreatic leakage and inactive bleeding, as well as determining abdominal drainage in the tube of the pancreas bed. The estimated amount of blood loss was 300 mL. The resected specimen was sent to the pathological laboratory (*Figure 3*).

Clinical outcome

The patient recovered uneventfully, with no postoperative bleeding, pancreatic leakage (*Figure 4*), intra-abdominal infection, gastric emptying disorders, intestinal root obstruction or any other complications. The gastrointestinal decompression tube, indwelling catheter, and abdominal drainage tube was removed on postoperative day 2, day 7, and day 9, respectively. Pathologically, the tumor was

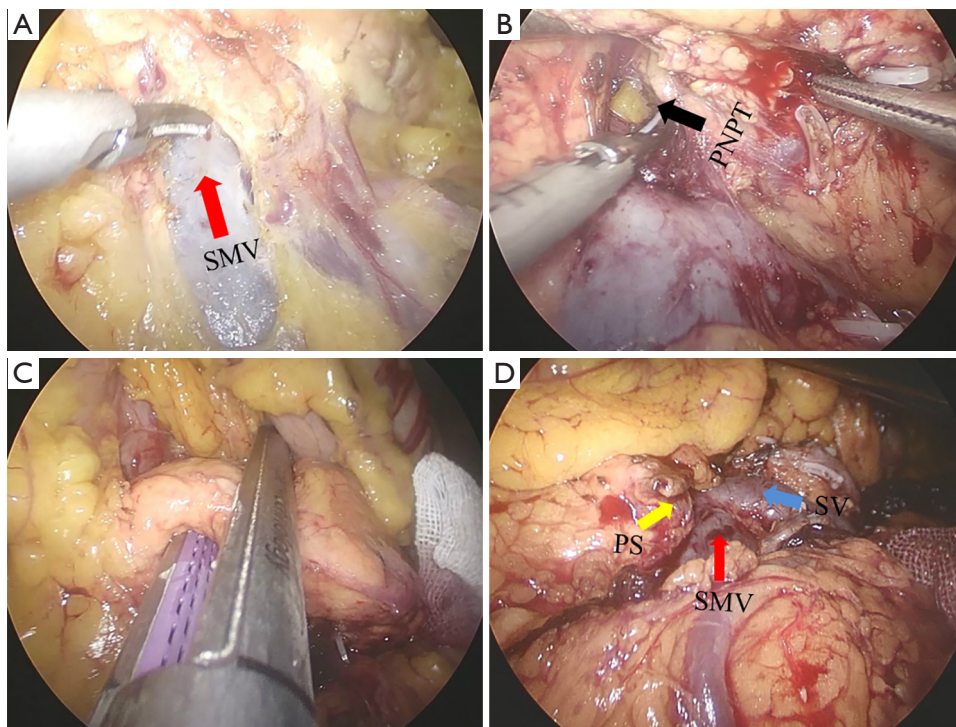


Figure 2 Intraoperative footage. The superior mesenteric vein (SMV) is shown (A, red arrow); going through the pancreatic neck posterior tunnel vein (PNPT) is shown (B, black arrow); the neck of the pancreas is divided, usually with an ENDO-GIA (C). Post-resection image (D), showing the pancreatic stump (PS, yellow arrow), the superior mesenteric vein (SMV, red arrow), and the splenic vein (SV, blue arrow).

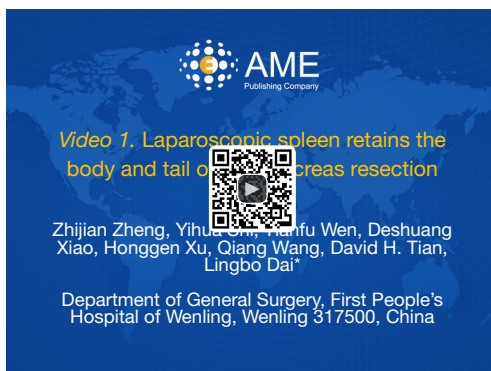


Figure 3 Laparoscopic spleen retains the body and tail of the pancreas resection (4).

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confirmed to be a serous cystic neoplasm.

Discussion

Pancreatic serous cystic neoplasm is a benign tumor of the pancreas, with 44% of the lesions located in the neck, head,

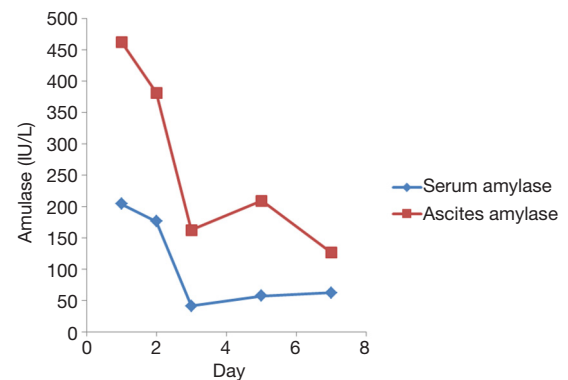


Figure 4 The levels of amylase in the serum and ascites after operation.

or uncinata process of the pancreas, while the remaining are in the body or tail region (5). The typical endosonographic features of SCN include aggregates of several small (3 to 5 mm each) cysts separated by thin septa, creating a honeycombing appearance. The aggregation of very small cystic lesions might be mistaken for a solid mass on CT

scan. In this patient, the CT plain scan was also identified as a solid lesion, but in view of the patient's long-term follow-up history, a benign tumor was considered more likely, and the later an enhanced CT showed a characteristic SCN features.

Excision of the benign tumor of the pancreas was done as far as possible to reduce the organ damage to the tissue and adjacent organs. Surgery is still the goal, but over the years, because the tail of the pancreas and the spleen have blood vessel anatomies that are closely related to the pancreatic body and tail of a large tumor. Therefore, splenectomy may be performed though the tumors on the tail of the pancreas are benign. In recent years new developments have given the medical community a better understanding of the physiological function of the spleen. Experts have proposed preserving the non-malignant pancreatic tail tumors so as to preserve the spleen. In 1996, Kimura *et al.* (6) first reported a spleen-preserving distal pancreatectomy. At the present, the evidence shows that splenic-preserving distal pancreatectomy has been demonstrated to be safe and effective. Combined with the rapid development of laparoscopy techniques and popularization, spleen preserving laparoscopy with distal pancreatectomy is considered a first choice operation for symptomatic benign, or small malignant lesions located at the body or tail of the pancreas (7).

In the case, it was more beneficial for the patient to receive a minimal, non-invasive spleen-preserving operation so as to avoid a lifetime of immune system deficiency and thrombocytosis. The potential advantages are obvious, and include decreased risk of infection or sepsis, while the necessity for long-term anticoagulant treatment, (antiplatelet drugs) and chemoprophylaxis is minimized. The advantages of spleen-preservation laparoscopy, and distal pancreas resection include shorter hospitalization, and recovery time, reduced postoperative pain, reduced adhesions, and better cosmesis.

In conclusion, it is safe and feasible to perform laparoscopic spleen operation that retains the body and tail of the pancreas resection, and it is worth considering for patients with benign, or low-malignancy tumors of the tail

of the pancreas.

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None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Informed Consent: Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

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