

# Total laparoscopic central pancreatectomy with Roux-Y pancreaticojejunostomy for solid pseudopapillary neoplasm of pancreas

## A case report

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### Abstract

**Rationale:** There is controversy regarding the optimal surgical approach for pancreatic lesions in the center of the pancreas. Duodenum-preserving pancreatic central resection compared with pancreaticoduodenectomy is technically more challenging, but preserves more functional pancreatic tissue.

**Patient concerns:** A 34-year-old woman was admitted to our department on March 15, 2017. Computed tomographic's and magnetic resonance cholangiopancreatography's diagnosis was a solitary tumor 3.0 × 2.2-cm lesion located in border between pancreatic neck and body. The patient's condition was good and symptomless, without any disease history. Physical examination and routine blood investigations were normal. All pancreatic malignant tumor biological markers were negative.

**Diagnoses:** Solid pseudopapillary neoplasm (SPN) of pancreas.

**Interventions:** Total laparoscopic central pancreatectomy with Roux-Y pancreaticojejunostomy was performed, and unscheduled open surgery was done for abdominal pain caused by intraperitoneal bleeding.

**Outcomes:** The recovery was smooth after unscheduled open surgery. At the end of 20 months follow-up, she was well and showed no signs of recurrence.

**Lessons:** The anatomy of the operation is clearer and easier than open surgery because of the magnification effect of laparoscopy. Total laparoscopic central pancreatectomy is safe, effective, feasible for SPN of pancreas, and it should be equally applicable to some other pancreatic cystic neoplasms and neuro-endocrine tumors. Suture is the best measure to prevent postoperative angiorrhagia of intraperitoneal cavity.

**Abbreviations:** PCNs = pancreatic cystic neoplasms, PNETs = pancreatic neuro-endocrine tumors, POPF = postoperative pancreatic fistulas, SPN = solid pseudopapillary neoplasm.

**Keywords:** laparoscopic pancreatectomy, pancreas, solid pseudopapillary neoplasm

## 1. Introduction

Organ-sparing pancreatic resection is important in prophylactic surgery for cystic neoplasms. There is controversy regarding the

optimal surgical approach for pancreatic lesions in the center of the pancreas.<sup>[1]</sup> Duodenum-preserving pancreatic central resection compared with pancreaticoduodenectomy is technically more challenging, but preserves more functional pancreatic tissue. Because of the prophylactic nature of the surgery and long survival of patients with benign and borderline malignant lesions, surgeons need to stratify greater importance to surgical morbidity and sparing pancreatic parenchyma.<sup>[2]</sup> In the present case, we would like to show a total laparoscopic central pancreatectomy for solid pseudopapillary neoplasm (SPN) of pancreas.

## 2. Case report

On March 14, 2017, a 34-year-old woman came to our hospital for a further treatment of one tumor of pancreatic body found by ultrasonic inspection in one other hospital. On March 15, 2017, she was admitted to our department. Computed tomographic's and magnetic resonance cholangiopancreatography's diagnosis was a solitary tumor 3.0 × 2.2-cm lesion located in border between pancreatic neck and body. The patient's condition was good and symptomless, without any disease history. Physical examination and routine blood investigations were normal. All

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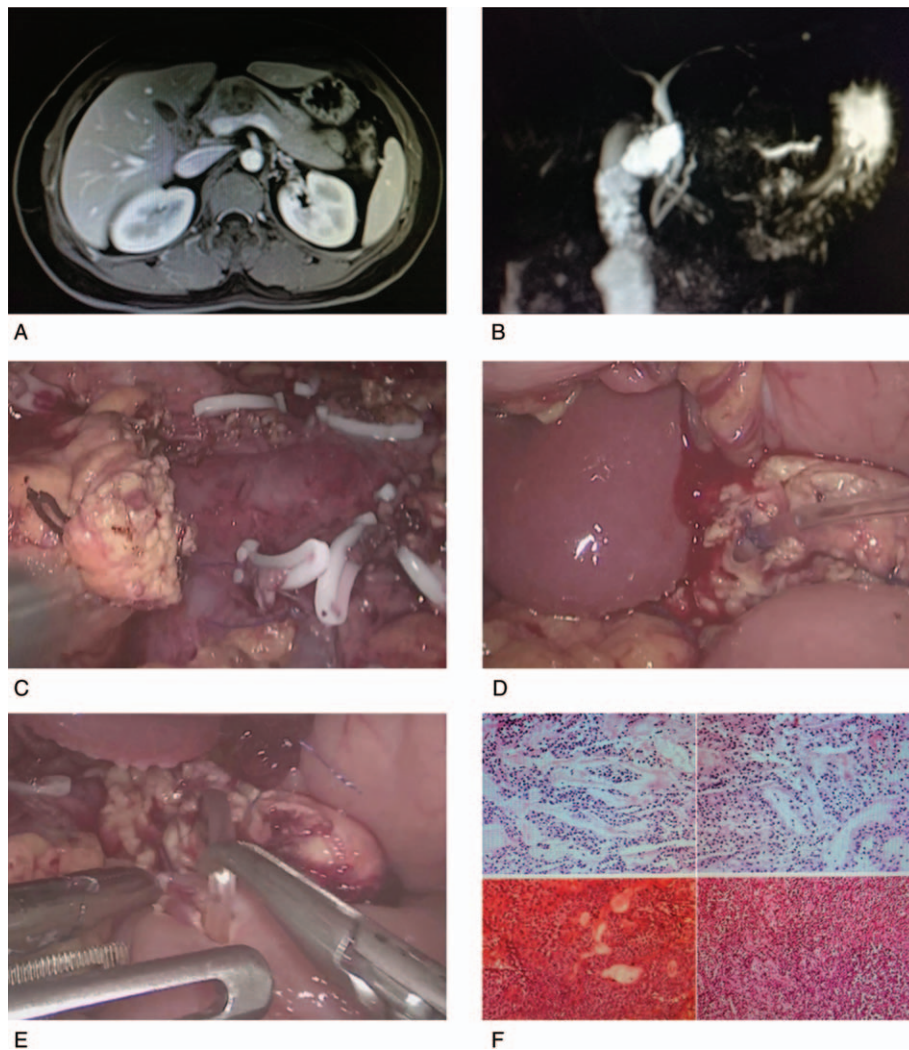
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**Figure 1.** Computed tomographic scans showing the lesion (A). Magnetic resonance cholangiopancreatography showing the lesion (B). Laparoscopic central pancreatectomy with Roux-Y Pancreaticojejunostomy (C, D, E). Solid pseudopapillary neoplasm of pancreas was confirmed by pathological examination with a negative margin (F).

pancreatic malignant tumor biological markers were negative. On March 23, 2017, a total laparoscopic central pancreatectomy was performed (Fig. 1; with operation video in the supplementary file, <http://links.lww.com/MD/C955>). The patient was placed in a supine position. After successful pneumoperitoneum with CO<sub>2</sub> gas insufflated until the abdominal cavity pressure reached 10 to 12 mm Hg, and 5 trocars were placed. A high-definition laparoscopy was inserted. The proposed line of parenchymal incision was circumferentially scored with a sewing a stitch, maintaining an approximate 10 mm margin away from the tumor. The tumor was sharply excised by ultrasonic knife. The diagnosis of intraoperative frozen pathology was pancreatic SPN. Suture to close the cut end of the head of the pancreas, mainly to close the tube of pancreas, and Roux-Y pancreaticojejunostomy was done, and a drain was left nearby pancreaticointestinal anastomosis. The blood loss was 200 mL. At 13 h after operation, unscheduled open surgery was done for abdominal pain caused by intraperitoneal bleeding. A plastic clip loosening of a small artery with 1.5 mm diameter branched from the common hepatic artery, and the bleeding was stopped by one stitch suture of

the blood vessel. The recovery was smooth after unscheduled open surgery. Postoperative pathology confirmed the diagnosis of SPN with a negative margin. At the end of 20 months follow-up, she was well and showed no signs of recurrence.

### 3. Discussion

We treat the pancreatic cystic neoplasms (PCNs) according to our consensus guidelines.<sup>[3–6]</sup> Parenchyma-sparing techniques might be an option, but prospective multicenter studies need to follow.<sup>[7]</sup> In selected patients, parenchyma-sparing pancreatectomy for presumed noninvasive intraductal papillary and mucinous neoplasms in experienced hands is highly feasible and avoids inappropriate standard resections. Early morbidity is greater than that after standard resections but counterbalanced by preservation of pancreatic endocrine/exocrine functions and a low rate of reoperation for tumor recurrence.<sup>[2]</sup> Pancreatic enucleation and central pancreatectomy are feasible techniques for selected patients, but the indications are limited. Morbidity after these resections is high with the major cause being the

development of postoperative pancreatic fistulas (POPF).<sup>[8]</sup> Surgeons, who are requested to treat patients with benign tumors, using standard oncological resections, face the challenge of sacrificing pancreatic and extra-pancreatic tissue. Tumor enucleation, pancreatic middle segment resection and local duodenum-preserving pancreatic head resections are surgical procedures increasingly used as alternative treatment modalities compared to classical pancreatic resections. Use of local resection procedures for PCN and pancreatic neuro-endocrine tumors (PNETs) is associated with an improvement of procedure-related morbidity, when compared to classical pancreatoduodenectomy and left-sided pancreatectomy. The procedure-related advantages are a 90-day mortality below 1% and a low level of POPF B +C rates. Most importantly, the long-term benefits of the use of local surgical procedures are the preservation of the endocrine and exocrine pancreatic functions. The decision-making for PCN and PNETs should be guided by the low surgical risk and the preservation of pancreatic metabolic functions when undergoing a limited, local, tissue-sparing procedure.<sup>[9]</sup> Local resection combined with pancreaticojejunostomy is an option to avoid extensive resection of the pancreatic parenchyma, but is still associated with a high incidence of pancreatic fistula which is comparable to that after enucleation.<sup>[10]</sup>

#### 4. Conclusion

The present case showed that the anatomy of the operation is clearer and easier than open surgery because of the magnification effect of laparoscopy. Total laparoscopic central pancreatectomy is safe, effective, feasible for SPN, and it should be equally applicable to some other PCN or PNETs. Suture is the best measure to prevent postoperative angiorrhagia of intraperitoneal cavity. Further clinical investigation is eagerly awaited to confirm our conclusion.

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#### Author contributions

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**Writing – original draft:** Tianqi Liu.

**Writing – review & editing:** Bin Liang, Tianqi Liu.

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