

Case Report

Laparoscopic distal pancreatectomy with preservation of the spleen and splenic vessels for pancreatic adenocarcinoma

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Background: A laparoscopic surgery can be beneficial in a spleen-preserving distal pancreatectomy. Aims: This report shows a 60-year-old woman who presented with persistent upper abdominal and bilateral lumbodorsal distending pain for one year. A computed tomography scan demonstrated a 4cm×5cm×5cm solid space-occupying mass in the distal pancreas. The patient was referred to minimally invasive surgery service for resection of the pancreatic lesion. **Methods:** A laparoscopic spleen-preserving distal pancreatectomy was performed. **Results:** The mass was completely excised, the pathological examination revealed grade II pancreatic adenocarcinoma. The postoperative advantages of this approach were the early return of bowel function, minimal complications, and early resumption of normal activities. **Conclusions:** This case illustrates that minimally invasive surgery in the performance of a spleen-and-splenic-vessel preserving distal pancreatectomy is a feasible procedure without compromising the splenic function. (Wang WJ, Li JG, Li ZT, Fang Q, Zheng YG. Laparoscopic distal pancreatectomy with preservation of the spleen and splenic vessels for pancreatic adenocarcinoma. *North Am J Med Sci* 2009; 1: 25-27).

Key words: Laparoscopy; pancreatectomy; distal pancreatectomy; pancreatic cancer; splenic vessels; adenocarcinoma; laparoscopic spleen-preserving; space-occupying; pancreas.

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Introduction

A 60-year-old woman presented with persistent upper abdominal and bilateral lumbodorsal distending pain for one year. On examination, no positive abdominal sign was found. A computed tomography (CT) scan was ordered, and a 4cm×5cm×5cm solid space-occupying mass was observed in the distal pancreas (Fig. 1). The patient was referred to our center and scheduled for a laparoscopic spleen-preserving distal pancreatectomy.

Materials and Methods

After entering the operating room, the patient was placed in the supine position on the operating table. After induction of general endotracheal anesthesia, the abdomen was accessed using a 12mm Optiview trocar (Ethicon Endo-Surgery Inc., Cincinnati, Ohio) below the umbilicus. A pneumoperitoneum was created using 13 mmHg insufflations of carbon dioxide. Three trocars were positioned on the right midclavicular line 3-4cm below the costal margin, right and left anterior axillary lines below the costal margin, respectively. The patient was placed in 30° reverse Trendelenburg and rolled 15° to her right side.

A laparoscope was used to survey the abdomen. The body and tail of the pancreas were exposed by opening the lesser

sac. The gastrocolonic, gastrosplenic, and partial splenocolonic ligaments were divided with an ultrasonic scalpel, followed by resection of the short gastric vessels. After exposure of the pancreas, the tumor was visualized. Next, the splenic artery was carefully mobilized in superior margin of the pancreas, and the dissection between the pancreas and splenic vessel was continued in the inferior margin of the pancreas. Following the creation of a sufficient posterior window, the body of the pancreas was transected with 60mm Endo-GIA. The distal part of the pancreas was further mobilized. The resected mass was placed in a bag and brought through the laparoscope port incision. A Jackson-Pratt drain was placed at the distal pancreatic bed and brought out through the left posterior port incision.

Results

Operative time was 210min with total blood loss of 400 cc. Bowel function returned 48h postoperatively, and normal activity resumed 72h postoperatively. The Jackson-Pratt drain was removed on postoperative day 5. The patient was discharged on postoperative day 8. The pathology revealed a completely excised grade II pancreatic adenocarcinoma.

A CT scan obtained three weeks after surgery showed no evidence of fluid collection or spleen infarction with well-preserved blood flow in the remaining splenic artery and

splenic vein. The patient has been followed up with for 4.5 months after surgery and thus far shown no evidence of recurrence.

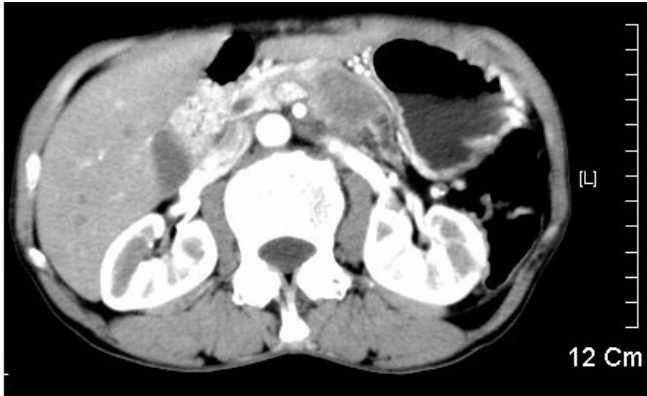


Fig. 1 A computed tomography scan identifies a distal pancreatic lesion.

Discussion

With the improvement in laparoscopic instrumentations and the maturity of technical procedure, increasing laparoscopic pancreatic surgeries have been performed. However, laparoscopic distal pancreatectomy with preservation of the both spleen and splenic vessels is highly challenging and susceptible to complications, including intraoperative hemorrhage and pancreatic leakage. Few cases were reported so far in the laparoscopic distal pancreatectomy with preservation of the spleen and splenic vessels [1].

The indication for laparoscopic resection of pancreatic cancer remains controversial. Previous studies indicate that laparoscopic distal pancreatectomy is mainly for benign distal pancreatic tumors [2], while some studies show that indication for laparoscopic distal pancreatic surgeries is similar to the traditional open procedure [3]. In our point of view, laparoscopic spleen-preserving distal pancreatectomy is only one of many techniques that may be employed to treat the lesions of the pancreatic body or tail. As long as the operator has enough experience with performance of the open-procedure and laparoscopic skill, the indications for laparoscopic therapy should be widened. That is, it should be performed whenever the technique is available.

Pancreatic cancer continues to be a major source of cancer mortality. There were 33,370 deaths attributable to this disease in 2007 in the United States [4]. In fact, the mortality rate almost approximates the annual incidence rate, which reflects the generally short survival time associated with pancreatic cancer: most often less than one year [4]. The patients can either be asymptomatic or have unspecific symptoms such as anorexia, weight loss and abdominal pain. The CT scan serves as the primary imaging study for most patients with potentially resectable pancreatic cancer. Less invasive options may include aspiration and biopsy, observation of the cysts, particularly serous collections, or enucleation of small cysts or islet lesions.

With regard to distal pancreatectomy, the spleen can be resected en bloc or preserved. Increasing awareness of splenic function and its role in the immunologic defense system has driven the trend of splenic preservation in association with distal pancreatectomy. Splenic preservation is the primary strategy of each surgeon. Shoup et al. [5] analyzed a series of 79 distal pancreatectomies, 46 with splenic preservation, concluding that spleen-preserving distal pancreatectomy was associated with lower rates of infections and serious complications. Therefore, splenic preservation should be performed whenever technically possible to decrease the morbidity caused by laparoscopic distal pancreatectomy.

Splenic preservation can be accomplished via either dissection or preservation of the splenic artery and vein. Kinura et al [6] in 1996 was the first to report laparoscopic distal pancreatectomy with preservation of the splenic artery and vein. This is technically challenging with longer operative times and greater potential for bleeding. To minimize those risks, Warshaw et al [7] advocated dissection of the splenic artery and vein with preservation of the short gastric and left gastroepiploic vessels. This simplified the procedure, but splenic infarction occurred frequently. This outcome was confirmed by Fernandez-Cruz et al [8], who purposely compared the two procedures by following up with 19 patients who underwent laparoscopic distal pancreatectomy with preservation of the spleen (11 cases with Kinura's procedure and 8 with Warshaw's procedure) and concluded 3 cases associated with postoperative splenic infarction, all with Warshaw's procedure.

As shown in our case, important technical details in the distal pancreatectomy with preservation of the spleen include dissection of the pancreas and preservation of the splenic vessels. Even though this method is technically challenging with longer operative times and greater potential for bleeding—in our experience, the pancreas and splenic vessels are identified early in the dissection, in order to assure hemostatic control in the event that the subsequent dissection results in inadvertent bleeding—preservation of splenic vessels is relatively safe and feasible [9].

Pancreatic fistula after distal pancreatectomy is a topic of ongoing debate and the major source of postoperative morbidity. The previously reported literature indicated 11~16% of pancreatic leakage (5%~23%) [3, 8-10]. Management of the pancreatic stump is critical in the prevention of pancreatic fistula. Major issues regarding the application of this approach include the optimal visualization with the use of the laparoscopic retractor.

In conclusion, our experience suggests that laparoscopic distal pancreatectomy with preservation of the spleen and splenic vessels are a feasible option for lesions in the distal pancreas with many benefits, including being less invasive, a more rapid recovery and fewer complications. However, long-term outcome of this technique for patients with proven malignancy should be investigated further.

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