

Laparoscopic Cystogastrostomy for Pancreatic Pseudocyst: A Case Report

S. Shimizu, MD, T. Morisaki, MD, H. Noshiro, MD, K. Mizumoto, MD,
K. Yamaguchi, MD, K. Chijiwa, MD, M. Tanaka, MD

ABSTRACT

A 49-year-old man with a history of acute pancreatitis was hospitalized with a diagnosis of pancreatic pseudocyst. Ultrasonography, computed tomography, and magnetic resonance imaging all demonstrated a homogeneous cyst, 9 x 4 cm in size, at the tail of the pancreas without mural nodules or septa. Because an intestinal structure was identified between the cyst and stomach preoperatively by computed tomography and endoscopic ultrasonography, laparoscopic cystogastrostomy was carried out instead of percutaneous or endoscopic cyst drainage. The cyst was exposed by dissecting the lesser omentum and found to have no adhesion to the surrounding tissues. Anastomosis was performed using an endoscopic linear stapler via small cystotomy and gastrotomy openings on the lesser curvature, which were then sutured laparoscopically. The postoperative course was uneventful. Laparoscopic surgery is recommended as a safe, reliable, and minimally invasive treatment for managing pancreatic pseudocyst.

Key Words: Pancreatic pseudocyst, Cystogastrostomy, Laparoscopic surgery.

INTRODUCTION

Although surgery has long been the treatment of choice for the pancreatic pseudocyst, various nonsurgical, minimally invasive techniques for pseudocyst drainage have been described and advocated. These include radiologic percutaneous aspiration, percutaneous catheter drainage, endoscopic transgastric drainage, and endoscopic transpapillary procedures.^{1,2} Although laparoscopic surgery could be another promising alternative, it has not become an established treatment choice for the pancreatic pseudocyst. We report here a case in which laparoscopic cystogastrostomy was applied because contraindications existed for other minimally invasive procedures.

CASE REPORT

A 49-year-old Japanese man was referred to the Department of Surgery I at Kyushu University Faculty of Medicine in June 1998. A pancreatic cystic lesion had been noted on a computed tomography (CT) scan during a follow-up examination because of pancreatitis. He had undergone peritoneal lavage for acute pancreatitis 3 years prior and laparoscopic adhesiolysis for a subsequent ileus 4 months later at a nearby hospital. He had no history of alcohol abuse. Physical and laboratory examinations revealed no abnormalities except for high fasting blood sugar (195 mg/dL). Tumor markers such as CEA and CA19-9 were also within normal ranges.

Abdominal ultrasonography, CT (**Figure 1A**), and magnetic resonance imaging all demonstrated a homogeneous cystic mass, 9 x 4 cm in size, at the tail of the pancreas. An upper gastrointestinal series showed extramural compression along the greater curvature of the upper body of the stomach (**Figure 1B**). Endoscopic retrograde cholangiopancreatography (ERCP) revealed an occlusion of the main pancreatic duct at the tail of the pancreas. CT (**Figure 1A**) and endoscopic ultrasonography revealed a part of the intestine between the cyst and gastric wall. The cyst contained no mural nodules or septa, and the pancreatic juice was cytologically negative for malignancy. The gallbladder was visualized in normal size, and no gallstone was detected in the biliary tract by ultrasonography, CT, and ERCP. A pancreatic

Department of Endoscopic Diagnostics and Therapeutics, Kyushu University Faculty of Medicine, Fukuoka, Japan (Dr. Shimizu).

Department of Surgery and Oncology, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan (Drs. Morisaki, Noshiro, Mizumoto, Yamaguchi, Chijiwa, and Tanaka).

Address reprint request to: Shuji Shimizu, MD, Department of Endoscopic Diagnostics and Therapeutics, Kyushu University Faculty of Medicine, Fukuoka 812-8582, Japan. Telephone: +81-92-642-5442, Fax: +81-92-642-5458, E-mail: shimizu@surg1.med.kyushu-u.ac.jp

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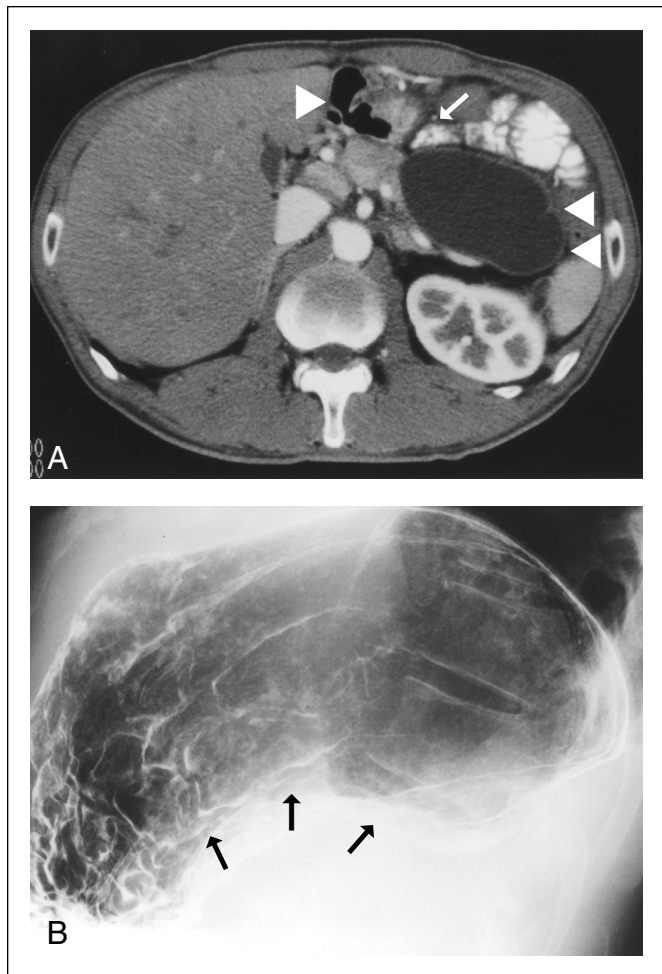


Figure 1. (A) Computed tomography of the abdomen demonstrates a cystic lesion in the tail of the pancreas and an intestinal structure (arrow) between the cyst (arrowheads) and the stomach (single short arrow). (B) An upper gastrointestinal series shows extramural compression along the greater curvature of the upper body of the stomach.

pseudocyst was diagnosed and drainage was indicated because of its size and growth during the prior 2 months. Because the intestinal structure was present behind the stomach, laparoscopic surgery was selected instead of percutaneous or endoscopic drainage.

Laparoscopic cystogastrostomy was performed in July 1998, with the patient in the supine position. A Hasson's trocar was inserted into the abdominal cavity infraumbilically for a 30-degree-angle scope. Two 12-mm trocars for operative manipulation were placed, one in the right

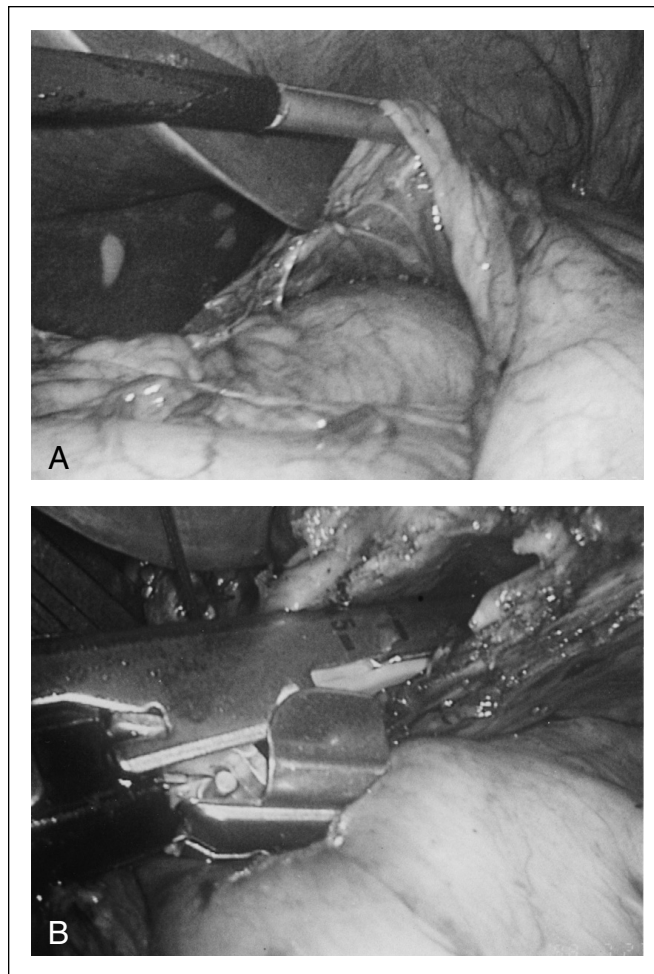


Figure 2. (A) The round, smooth surface of the cyst, which was not adherent to the surrounding tissue, was exposed by dissection of the lesser sac. (B) Each blade of an endoscopic linear stapler was inserted into the small cystotomy and gastrotomy openings on the lesser curvature to create a large anastomosis.

hypochondrium and one in the right lateral abdomen. Two additional 12-mm trocars were inserted at the upper midline after dissecting adhesions of the greater omentum in the left upper abdomen. The jejunum, which had migrated into the omental bursa from a small hole created next to the Treitz ligament, probably during the previous surgery, was pulled out. The pseudocyst was exposed by dissecting the lesser curvature of the stomach (**Figure 2A**). It was a whitish, spherical, fist-sized lesion with a smooth surface. There was no adhesion between the cyst and posterior wall of the stomach.

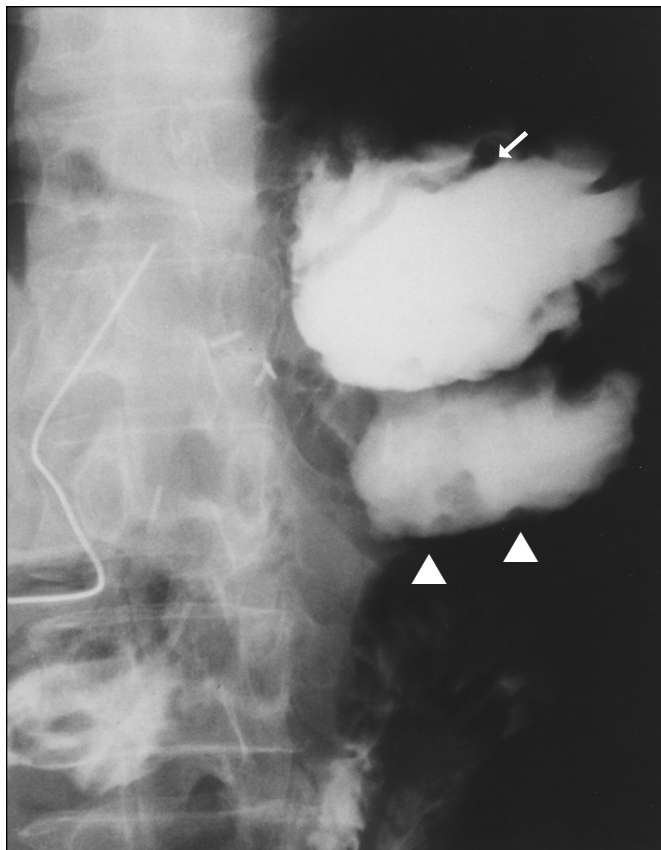


Figure 3. A postoperative upper gastrointestinal series shows the contrast medium in the stomach (arrow) passes quickly into the cyst (arrowheads).

Blood vessels along the lesser curvature were dissected with laparoscopic coagulating shears (Harmonic Scarpel, Ethicon/UltraCision, Smithfield, RI) for anastomosis. A long PTCD needle (18G, Hakko, Tokyo, Japan) was inserted into the abdominal cavity to aspirate the contents of the cyst; 85 mL of greenish, turbid but not viscous fluid was obtained. The concentration of amylase was 2180 IU/L without any atypical cells or bacteria. Small 1-cm openings were made close together on the cyst wall and on the lesser curvature of the stomach by electrocautery. An EndoGIA-II blade (45-3.5, Autosuture Japan, Tokyo, Japan) was inserted into each opening, and a large anastomosis was created (**Figure 2B**). The openings were closed with an Endostitch autosuture device (Autosuture Japan, Tokyo, Japan) using interrupted sutures. The operation time was 4 hours 35 min, and

blood loss was 100 g. A large communication between the cyst and the stomach was shown by an upper gastrointestinal series on day 8 after surgery (**Figure 3**) and the postoperative course was uneventful. Gastrointestinal endoscopy demonstrated resolution of the pseudocyst 3 months later. The 1-year follow-up period was free of complications.

DISCUSSION

Surgical intervention has been the standard of care and is associated with low morbidity and mortality rates, but other less invasive techniques have been developed for pancreatic pseudocysts associated with acute or chronic pancreatitis. Many such pseudocysts fail to resolve spontaneously and require treatment. Percutaneous external drainage is often performed under the guidance of ultrasonography or CT, but such therapy may be complicated by the formation of a pancreatic fistula. Endoscopic internal drainage of the pancreatic pseudocyst is feasible and would be an attractive alternative. Its success rate has been reported to be as high as 89%.³ However, it is sometimes accompanied by serious complications such as bleeding or perforation requiring surgical control. Massive bleeding from the endoscopic incision is often due to the presence of a large vessel, and free perforation is more likely to occur when the cyst is not adhered to the stomach, as in the present case. Another major disadvantage of endoscopic drainage is that the communication created is small and, therefore, the recurrence rate is high, being reported at 15-18%.^{1,2}

Advanced imaging modalities such as CT and endosonography provide the necessary information for selection of appropriate management; the distance between the pseudocyst and stomach can be determined and interposed vascular or intestinal structures can be identified.³ When percutaneous or endoscopic drainage is considered dangerous and inapplicable, laparoscopic cystogastrostomy could be a good therapeutic option. Additionally, the degree of adhesion around the cyst is difficult to anticipate, and laparoscopic treatment always reduces the risk of free perforation. Moreover, cyst wall biopsy should and can be done laparoscopically to confirm the diagnosis.

Laparoscopic surgery for the pancreatic pseudocyst was introduced by Way et al.⁴ Their procedure was intraluminal cystogastrostomy, in which two trocars were introduced into the gastric lumen under laparoscopic guid-

ance, and a small nonsutured window was created between the cyst and gastric wall. Because of the potential for major bleeding from the cut edges, Trias et al⁵ devised the stapled intraluminal gastrostomy, a treatment similar to that of the open procedure via a quick and simple laparoscopic approach. Use of the endoscopic stapler also allowed for a wide opening between the cyst and stomach and reduced the risk of recurrence caused by obstruction of the communication. Similarly to Park et al,⁶ we performed the procedure via the lesser sac by carrying out a simple cystotomy and gastrotomy at the lesser curvature through which the anastomosis was performed using an endoscopic linear stapling device; the openings were closed laparoscopically. Compared with the intraluminal procedure, visualization of the cystogastric interface is enhanced with this approach, and the surgeon is afforded better access for both stapling and suturing, which negates the risk of injury to the tissue possibly interposed between the stomach and pseudocyst.

Our initial experience suggests that laparoscopic surgery is a safe, reliable, and minimally invasive technique for treating pancreatic pseudocyst that is effective when endoscopic drainage is considered inappropriate and that also reduces the complication and recurrence rates.

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