ENDOSCOPIC TREATMENT OF PANCREATIC PSEUDOCYST

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SUMMARY – Pancreatic pseudocyst, the most common cystic lesion of the pancreas, may occur as a consequence of acute or chronic pancreatitis, pancreatic trauma, or obstruction of the pancreatic duct. Symptomatic, complicated, or enlarging pseudocysts require therapy that can be endoscopic (transmural and transpapillary drainage), percutaneous, or surgical. We present a patient with pancreatic pseudocyst treated by blinded endoscopic transgastric puncture and stenting after an unsuccessful attempt at endoscopic transpapillary drainage, suggesting that this simple approach is safe and effective in a selected group of patients.

Key words: *Pancreatic pseudocyst – diagnosis; Pancreatic pseudocyst – ultrasonography; Pancreatic pseudocyst – therapy; Endoscopy; Drainage – methods; Stents*

Introduction

Pancreatic pseudocyst, the most common cystic lesion of the pancreas, may occur as a consequence of acute or chronic pancreatitis, pancreatic trauma, or obstruction of the pancreatic duct[1]. Published studies suggest that pseudocysts develop in about 10% of acute pancreatitis cases, and in 20%-40% of patients with chronic pancreatitis[2]. Spontaneous resolution of pseudocysts occurs in about 85% of acute pancreatitis cases, and in less than 10% of chronic pancreatitis patients[3]. Most pseudocysts are asymptomatic but may cause symptoms such as dyspepsia, pain, or abdominal fullness. Severe complications such as infection, bleeding, rupture, or compression of adjacent organs may also occur[4]. The diagnosis and evaluation of pseudocysts are generally made easily by imaging studies, including ultrasound (US), computerized tomography (CT), magnetic resonance imaging (MRI) or even endoscopic ultrasound (EUS). Pseudocysts larger than 6 cm or persisting beyond 6 weeks rarely resolve and have a complication rate of up to 50% during continued observation[5]. Symptomatic, complicated, or enlarging pseudocysts require therapy that can be endoscopic (transmural and transpapillary drainage), percutaneous, or surgical[6]. Before endoscopic drainage is carried out, other cystic lesions must be excluded with clinical history, imaging studies, and perhaps cyst fluid analysis[7].

We report a case of a 46-year-old woman with pancreatic pseudocyst treated by blinded endoscopic transgastric puncture and stenting after an unsuccessful attempt at endoscopic transpapillary drainage.

Case Report

A 46-year-old woman with a history of chronic alcohol abuse was admitted to a regional hospital for further evaluation of three-year persistent abdominal pain and 14-kg weight loss over previous 10 months. Abdominal ultrasound scan showed a cystic formation of 75 mm in diameter in the left hemiabdomen. Abdominal CT scan revealed an 80-mm large pseudocyst of the pancreatic body and tail, compressing the surrounding structures, mainly the spleen and greater ventricular curvature (Fig. 1). The patient was managed conservatively. Abdomi-

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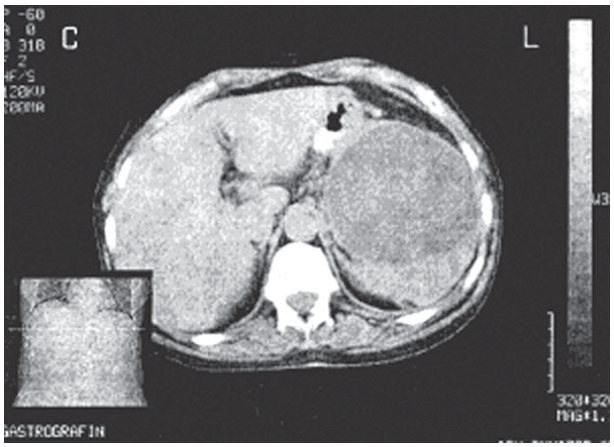


Fig. 1. Abdominal CT scan showing a large pseudocyst of the pancreatic body and tail, 80 mm in diameter, with expansive effect to the surrounding structures, especially the spleen and stomach (six months before drainage).

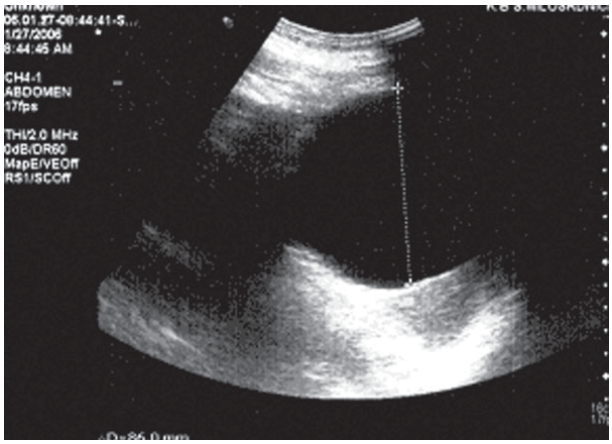


Fig. 2. Ultrasound scan showing a pancreatic pseudocyst, 86 mm in diameter (ten days before drainage).

nal pain became more intense and weight loss was still present in the next 6 months. The follow-up abdominal ultrasound scan performed ten days before admission to our hospital showed further enlargement of the pseudocyst, measuring 86 mm in diameter (Fig. 2). Since the pseudocyst had a tendency to grow, the patient was admitted to our hospital for further clinical evaluation and therapy. Clinical examination revealed a palpable mass in the upper abdomen. Laboratory tests showed macrocytic anemia (red blood cell count $3.50x10^{12}$, hemoglobin 117g/L, hematocrit 0.37, mean corpuscular volume of erythrocytes 104.5 fL) and elevated γ-glutamyltransferase level (109 U/L). Other laboratory values including serum and urine amylase levels were normal. The abdominal ultrasound finding was compatible with that performed ten days before admission. The ultrasound-guided aspiration of the pseudocyst revealed brown colored fluid with very high amylase levels (2000 IU/L) suggesting pseudocyst communication with the pancreatic duct, without malignant cells. Pseudoaneurysm formation was excluded by contrast-enhanced abdominal MSCT scan with early imaging during the arterial phase. At upper gastrointestinal endoscopy, apparent bulge on the posterior wall of the stomach -was identified. There were no signs of portal hypertension.

Upon administration of antibiotic prophylaxis (ciprofloxacin 400 mg i.v.), the patient underwent endoscopic retrograde cholangiopancreatography (ERCP). ERCP showed a tortuous main pancreatic duct that communicated with a large pseudocyst (90 mm in diameter) in the tail of the pancreas, and significant ductal stricture in front of the pseudocyst. Transpapillary stent placement failed due to impossibility of placing a guidewire across the ductal stricture into the pseudocyst (Fig. 3).

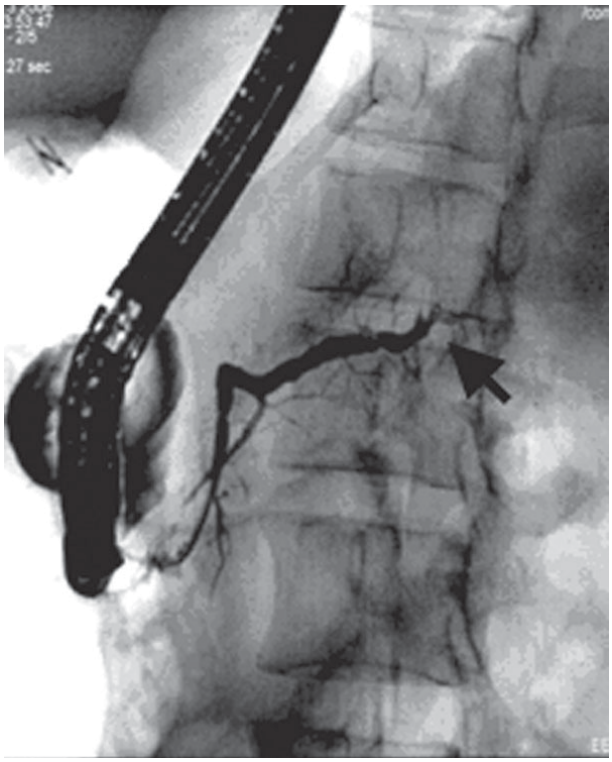
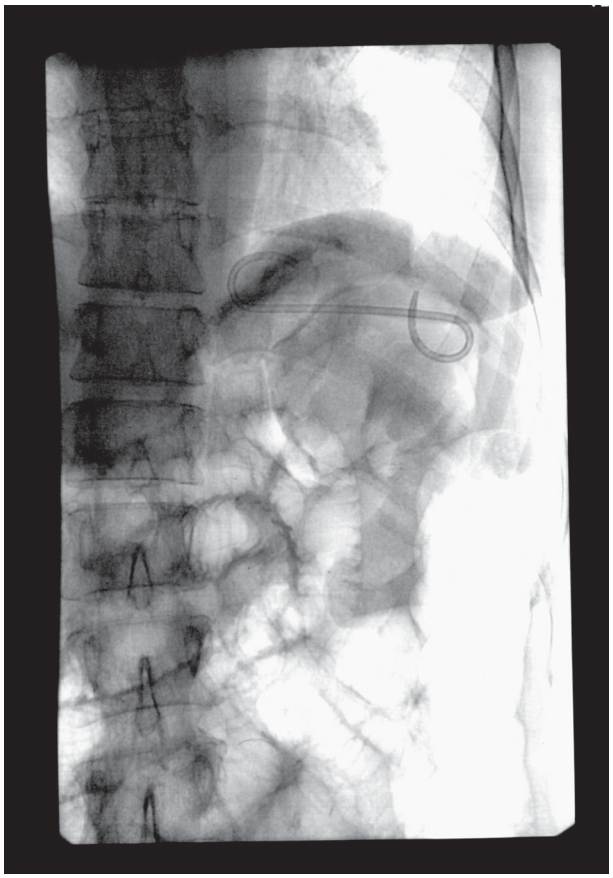


Fig. 3. ERCP showing tortuous main pancreatic duct with stenosis (arrow) in the middle portion of the pancreatic body.



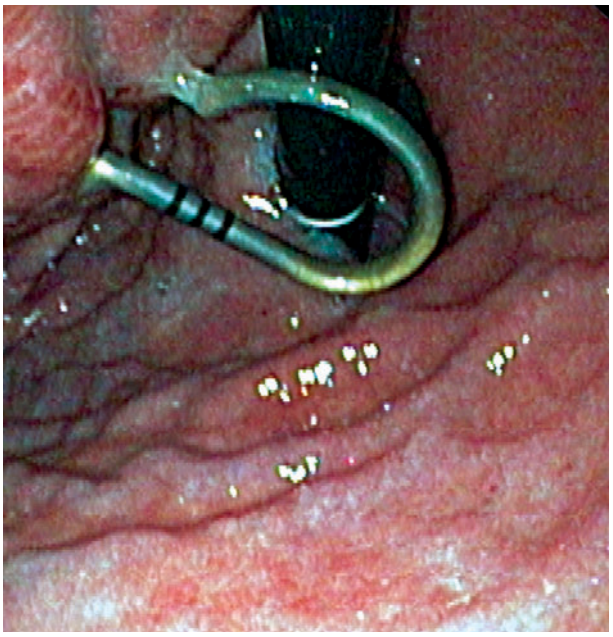


Fig. 4. The final position of the pigtail stent (fluoroscopy and endoscopy).

Transmural pseudocyst puncture and stent placement were then performed using a therapeutic (4.2-mm working channel) duodenoscope (EVIS, TJF-160R, Olympus). The pseudocyst was already marked under fluoroscopy with contrast administered previously, during the attempted transpapillary drainage. The pseudocyst puncture was performed with a diathermic needle catheter (Olympus, KD-1L-1) at the site of maximal bulge on the posterior wall of the stomach. The needle catheter consists of a retractable inner injection catheter contained in the outer Teflon sheath. Current is applied to the needle (1.5 cm long, 0.9 mm thick) through a thin diathermic wire that runs through the inner catheter. The tip of the outer sheath tapers from 6 to 4 French, enabling easier passage into the pseudocyst. With the application of cautery, the needle easily penetrated the interposed tissue. Following puncture, contrast medium was injected under fluoroscopy to confirm entry into the pseudocyst. The pseudocyst content was also aspirated to exclude the potential hemorrhage within the pseudocyst or puncture of a blood vessel in the wall. The outer catheter was advanced into the pseudocyst, and the retractable injection catheter was withdrawn. After passing a 0.035-inch in diameter hydrophilic guidewire (G-205-3545-S, Olympus) into the pseudocyst, the outer sheath was removed. A single 7-French double-pigtail stent with multiple side-holes (40 cm long, PBD-72-1, Olympus) was inserted over the guidewire (Fig. 4). A sudden flow of brown colored fluid from the pseudocyst appeared signifying correct stent position in the pseudocyst. The next day, abdominal ultrasound control scan revealed a residual pseudocyst of 19 mm in diameter (Fig. 5). Four days after the procedure, the patient was discharged from the hospital in good clinical condition. There were no procedure related complications.

Discussion

The principal indications for pseudocyst drainage are abdominal pain and symptoms of compression. Drainage of an asymptomatic but persistent pseudocyst may be indicated to prevent potential complications. Prior to drainage, diagnostic investigation with standard im-

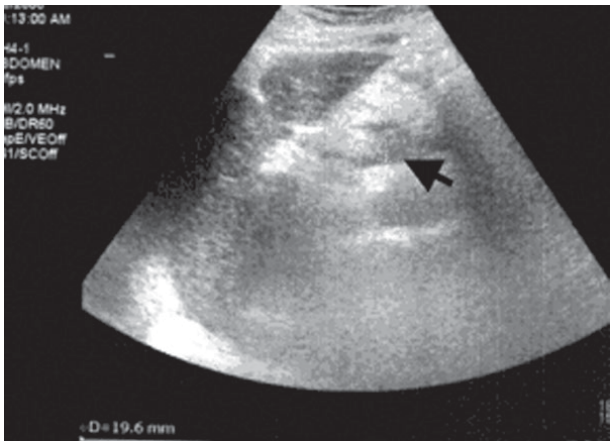


Fig. 5. Ultrasound scan showing the residual pancreatic pseudocyst (arrow), 19 mm in diameter (a day after drainage).

aging techniques (US, CT, MRI), and upper gastrointestinal endoscopy should be performed to define the location of pseudocyst, its anatomic relation to the gut wall, internal cyst content, and to find evidence of portal hypertension. In all patients being considered for a drainage procedure, a contrast-enhanced abdominal MSCT scan with early imaging during the arterial phase should be obtained to detect potential pseudoaneurysm formation. Severe hemorrhage can occur following endoscopic drainage in patients with an unsuspected pseudoaneurysm. MRI is a reliable alternative and digital subtracting angiography remains the gold standard in the diagnosis of pseudoaneurysm[8,9]. -Doppler abdominal ultrasound may be of value but has lower sensitivity[9].

In the past, surgical drainage of the pseudocyst was the only therapy. Now there are two additional treatment options, which have achieved increasing popularity: percutaneous catheter drainage and endoscopic drainage. At present, no randomized comparative studies exist and most institutions use the technique in which they are best experienced. Pseudoaneurysm (unless arterial embolization is performed first), vascular structures in the drainage pathway, and pseudocyst wall of more than 10 mm in thickness represent contraindications to endoscopic intervention. The presence of necrosis within the pseudocyst should serve as a significant deterrent to but does not preclude attempts at endoscopic drainage[10].

If the patient is an appropriate candidate for endoscopic drainage, diagnostic ERCP should be performed. The pancreatogram is pivotal in making the choice between the two major techniques of endoscopic drainage: transpapillary stent placement and transmural drainage that can be cyst-gastrostomy or cyst-duodenostomy.

Transpapillary stenting is suggested for patients with a communicating pseudocyst, particularly if it is solitary, smaller than 6 cm, and remote from the gastric or duodenal wall. Transmural drainage is preferred if the pancreatic duct is completely obstructed, or in patients who have large pseudocysts compressing the stomach or duodenum when there is close apposition seen on CT scan or EUS[10].

Resolution rates after endoscopic drainage procedures range from 65% to 89%[11,12]. The major complications of endoscopic pseudocyst drainage are bleeding (which is severe enough to require surgical control in up to 5% of cases), retroperitoneal perforation, and infection[9,13]. Recurrence rates range from 6% to 18%[14]. More recent studies report a somewhat higher rate of complications and lower efficacy than the initial studies, reflecting in large part the use of the procedure in more complicated patients[15-18]. The incidence of bleeding and retroperitoneal perforation is higher in transmural drainage procedures and can be minimized by assessing the best site for puncture prior to endoscopic drainage procedure. Some endoscopists attempt blind cystenterostomy, particularly when there is a visible intraluminal impression, and some use endoscopic needle localization[19]. Other endoscopists advocate the use of EUS, emphasizing that this technology has the best sensitivity for detecting blood vessels, which might be a contraindication to direct puncture[20,21]. However, a problem with this approach is the relatively small functional channel of many EUS instruments, which limits the ability to dilate the tract and place large-bore stents. This problem is usually solved by exchanging the echoendoscope for a therapeutic endoscope after EUS-guided tattooing of the best puncture site[22]. Newer echoendoscopes with large working channels (3.7 mm) may eliminate this problem, thereby permitting EUS, cyst puncture, tract dilation, and placement of 10 French stents in a single step[23-25]. The specific advantage and application may be in patients without an endoscopic bulge or in the presence of gastric varices[24]. Although there is much interest in utilizing EUS to assist in pseudocyst drainage, there is as yet no conclusive study to support the contention that it lowers complication rates and improves the success of endoscopic drainage.

We present a patient with pancreatic pseudocyst treated by blinded endoscopic transgastric puncture and stenting after unsuccessful attempt of endoscopic trans-

papillary drainage, suggesting that this simple approach is safe and effective in a selected group of patients with pancreatic pseudocyst with endoscopic clear bulge, no signs of portal hypertension, and after exclusion of pseudoaneurysm formation.

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Sažetak

ENDOSKOPSKO LIJEČENJE PSEUDOCISTE GUŠTERAČE

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Pseudocista gušterače kao najčešće cistično oštećenje gušterače može nastati kao posljedica akutnog ili kroničnog pankreatitisa, traume gušterače ili opstrukcije gušteračnog kanala. Simptomatične, kompliciranе ili pseudociste koje se povećavaju zahtijevaju liječenje koje može biti endoskopsko (transmuralna i transpapilarna drenaža), perkutano ili kirurško. Prikazuje se bolesnica s pseudocistom gušterače liječenom endoskopskom transgastričnom punkcijom naslijepo i postavljanjem stenta nakon neuspjelog pokušaja endoskopske transpapilarne drenaže. Ukazuje se na to da je ovaj jednostavan pristup siguran i učinkovit u odabranoj skupini bolesnika.

Ključne riječi: *Pseudocista gušterače – dijagnostika; Pseudocista gušterače – ultrazvuk; Pseudocista gušterače – terapija; Endoskopija; Drenaža – metode; Stentovi*