

Treatment of Recurrent Pancreatic Pseudocysts with Proven Communication between Pseudocyst and Pancreatic Duct by Long-term Percutaneous Drainage

Dear Editor,

Patients with communication between pancreatic pseudocysts (PPC) and pancreatic duct (PD) require a longer duration of drainage, due to the short-term drainage resulting in very high recurrence rates. However, with prolonged drainage period, the risk of septic complications is also potentially increased.¹⁻³ The aim of the study was to evaluate the results of prolonged percutaneous catheter drainage (PCD) in the treatment of recurrent PPC with PPC-PD communication, including its outcome and complications.

Materials and Methods

We performed a prospective analysis of 18 patients with recurrent symptomatic PPC and proven PPC-PD communication, and were treated by prolonged PCD. Indications for prolonged PCD are shown in Table 1. All procedures were performed under ultrasound control. Careful localisation of the cyst and proper selection of the entry site were performed. The drainage route depended on the location and available “window” for an optimal access to the cystic collection. The applied percutaneous technique was the trocar method using an 8F multisidehole pigtail catheter, which was introduced into the cyst cavity. Procedure was performed using local anaesthesia, having patients supine. No conscious sedation was applied. Cystic fluid was aspirated through the catheter as much as possible. Evaluation of the cyst size before treatment and during follow-up examinations was based on ultrasound examinations. Patients were followed up for 12 months after the drain retrieval. Primary outcome was long-term success of the procedure. Secondary outcomes were procedure-related adverse events and re-intervention.

Results

The demographic characteristics, clinical and laboratory data of patients, indication for prolonged PCD and duration of the treatment are shown in Table 1. The initial PCD was technically successful in all patients and amount of obtained liquid immediately after catheter placement into the PPC ranged between 140 mL and 660 mL. PPC content culture was negative in all patients. The initial level of amylase (normal serum level 20 U/L to 160 U/L) and lipase (normal

serum level 73 U/L to 393 U/L) in the PPC content was more than 10 times higher in comparison to their normal serum level and did not decrease during drainage. All patients experienced relief of symptoms, remission of clinical signs and improvement of their general status immediately after the procedure. During PCD, catheter was changed in 4 patients due to the inadequate drainage and problems with the catheter (clogging, kinking or displacement of catheter).

During the follow-up, none of the patients had any recurrence of PPC. Overall, the procedure was well tolerated by patients and no major complications were observed. Six patients reported mild abdominal pain during or after the procedure. Slight fever occurred in 5 patients and was successfully treated with antibiotics. These minor complications were managed with bed rest and they all subsided within 24 hours.

Discussion

Our study shows that management of recurrent symptomatic PPC with PPC-PD communication, with prolonged PCD is effective and safe, without complications directly attributable to the procedure. During the follow-up evaluation, there were no major complications or PPCs recurrence.

Several conditions must be met to achieve the complete obliteration of the cyst cavity. Much overlap exists in the treatment options offered by interventional radiologists, gastroenterologists, and surgeons. The recent trend in the management of symptomatic PPCs has moved toward less invasive approaches such as endoscopic drainage (ED) and image-guided PCD.

The major advantage of ED is that it creates a permanent pseudocysto-gastric track with no spillage of pancreatic enzymes in contrast to PCD, thereby reducing the risks of formation of pancreatocutaneous fistulas (PCF). However, with the drainage problems (which could appear with both techniques), monitoring, manipulation or change of stent and the analysis of cystic content are much easier using PCD than ED.^{2,4} Besides, long-term PCD is less aggressive compared to surgical and endoscopic (especially with endoscopic retrograde cholangiopancreatography) methods, suitable for the treatment of all PPCs regardless of their

Table 1. Characteristics of 18 Patients with Recurrent Pancreatic Pseudocysts

Characteristics	Value
Age, years	45.4 ± 9.6
Sex (male/female)	13/5
Aetiology of PPC, n (%)	
Acute pancreatitis	7 (38.9)
Chronic pancreatitis	5 (27.8)
Trauma	3 (16.7)
Unknown cause	3 (16.7)
Pancreatic duct abnormalities, n (%)	
Normal duct/with duct-cyst communication	7 (38.9)
Duct with stricture and duct-cyst communication	6 (33.3)
Chronic pancreatitis/with duct-cyst communication	5 (27.8)
Initial treatment of PPC before recurrence, n (%)	
PCD	7 (38.9)
Endoscopic	2 (11.1)
Laparoscopic	2 (11.1)
Open surgery	7 (38.9)
Indication for prolonged PCD, n of patients (%)	
Abdominal pain	16 (88.9)
Fever	5 (27.8)
Jaundice	5 (27.8)
Gastric outlet obstruction	2 (11.1)
Abdominal tenderness	12 (66.7)
Laboratory data	
Amylase level in PPC content, mean, x10 ³ U/L	13.6 ± 7.9
Lipase level in PPC content, mean, x10 ³ U/L	15.0 ± 14.5
Initial maximal diameter of PPC, median, mm	102.0 (73 – 163)
Initial volume of PPC, median, mL	227.5 (120 – 660)
No. of cysts according to location	
Head of pancreas	7 (38.9)
Body of pancreas	4 (22.2)
Tail of pancreas	7 (38.9)
No. of PPC according to appearance of aspirates	
Clear	8 (44.4)
Dark	10 (55.6)
Duration catheter placement, median, days	59.5 (41 – 111)

PPC: Pancreatic pseudocysts; PCD: Percutaneous catheter drainage

location and can be carried out without general anaesthesia. Therefore, this treatment is especially recommended for patients who are unsuitable for more aggressive methods and those with high risk for general anaesthesia.

Several reports evaluated the efficacy of PCD in the treatment of PPC.¹⁻⁵ PD anatomy is an important factor

impacting on the treatment results. PCD has better results and lower recurrence rates in patients without PPC-PD communication.^{1,2,4} Patients with PPC-PD communication require longer drainage duration as short-term drainage results in very high recurrence rates. However, some authors consider that with prolonged drainage period, the risk of septic complications and PCF is potentially also increased.^{1,3}

We conducted evaluation of our patients with recurrent PPC and proven communication between PD and PPC and subjected them to prolonged drainage (until no catheter output was detected within 7 days of the last procedure) without the introduction of stents in the PD. We started from the fact that long-term PCD with complete removal of PPC content avoids pancreatic-enzyme lytic action, keeping the cyst walls in close contact, and leads to the complete obliteration of the cyst cavity and disruption of PPC-PD communication. During the 12-month follow-up, our results proved supportive of the hypothesis. In our patients, there were no septic complications during PCD although the drainage lasted an average of 60 days. We have theorised that an alkaline environment caused by pancreatic content (levels of amylase and lipase in the obtained content remained high throughout the drainage) was not suitable for the development of infection in the case of prolonged retention of the catheter during pseudocyst drainage. Also, in the case of PCF (after catheter removal), where estimated as necessary, the introduction of a new catheter into the cyst cavity residue was planned only for a short-term until the fistula closed. However, PCF did not show up in any of the patients.

Conclusion

Prolonged PCD is a safe and effective management for symptomatic recurrent PPC with PD communication. Despite the fact that this is a small series of patients, we consider our study to be a good step forward towards clarification of the optimal treatment of PPC with PD communication. Large-scale and multicentre studies are needed to clearly determine whether this method improves efficacy and safety, and provides better outcomes compared to other drainage techniques.

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