Percutaneous pigtail catheter drainage of pancreatic pseudocysts

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Aim: To evaluate the efficacy of percutaneous pigtail catheter drainage (PCD) in the management of pancreatic pseudocysts otherwise meriting surgical intervention. Methods: Fourteen consecutive patients with pancreatic pseudocysts (five following acute pancreatitis and nine with chronic pancreatitis) were subjected to PCD. For uncomplicated chronic pseudocysts, an algorithm using endoscopic retrograde pancreaticography to demonstrate ductal communication with obstruction was followed. Five patients had complicated pseudocysts and nine uncomplicated cysts persisting > 6 weeks and > 6 cm in size. Results: All uncomplicated and two complicated pseudocysts resolved in 6 - 58 days (mean 19.7). No recurrences were seen. Three patients with complicated cysts had pancreatic fistulae; two of these were treated by surgery and one by pancreatic stenting. Sepsis required sump drainage in two patients. Four patients required early surgery: two for pancreatic fistula and one each for hemorrhage and residual cyst. Two patients were subjected later to pancreatico-jejunostomy for pain of chronic pancreatitis. Conclusions: Patients with acute pseudocysts and uncomplicated noncommunicating chronic pseudocysts respond to PCD. In complicated chronic pseudocysts, sepsis may be controlled by PCD. [Indian J Gastroenterol 1998; 17: 13-15]

Key words: Pancreas, pancreatitis

Pancreatic pseudocysts require treatment when symptomatic. Asymptomatic large (> 6 cm), persistent (beyond 6 weeks) pseudocysts have a low probability of resolution and high complication rate and therefore merit intervention. The value of percutaneous pigtail catheter drainage (PCD) in the management of this condition is controversial. An algorithm based on endoscopic retrograde pancreatography (ERP) has been proposed to differentiate pseudocysts which communicate with the pancreatic duct from those without ductal communication and to offer PCD only for noncommunicating pseudocysts. However, this has not been accepted by all.

The present study was undertaken to evaluate the role of selective PCD in patients meriting intervention for the pseudocyst.

Methods

This prospective study was undertaken between January 1991 and August 1996. Fourteen consecutive patients (all men; aged 28-50 years, mean 34.5) with pancreatic pseudocysts meriting operative intervention were included. Chronic alcoholism was the etiology in all cases. The inclusion criteria were pseudocyst > 6 cm, persisting beyond 6 weeks, or complicated pseudocysts. Patients with uncomplicated chronic pseudocysts with ductal communication (n=3) and those where malignancy was suspected (2) were excluded.

Five patients had pseudocysts following acute pancreatitis (acute pseudocysts); four of these presented with epigastric lump and pain, and one with lump and fever. The other nine patients had evidence of underlying chronic pancreatitis (chronic pseudocysts). Five of these presented with complications; three cysts were infected, one was massive and caused respiratory embarrassment, and the fifth was rapidly enlarging in size with pain. Four chronic pseudocysts were uncomplicated. Six patients had single cysts, four had two each and four had more than two cysts each. The largest cyst in all cases was more than 8 cm in diameter, the biggest being 35 cm.

Treatment protocol

Initial evaluation was done by ultrasonography (US) or contrast-enhanced computerized tomography (CT). Those with chronic uncomplicated pseudocysts were subjected to ERP. If there was no ductal communication, a PCD was done; the other patients were subjected to surgery. Patients with acute pseudocysts or chronic complicated pseudocysts underwent PCD.

PCD was done under ultrasound guidance. The cyst was punctured with an 18G needle. After confirming that its contents could be aspirated freely, a guide wire was passed into the cyst and the tract was dilated using Teflon® dilators. An 8 - 10 Fr pigtail catheter was then passed over the guide wire and allowed to drain. The catheter was irrigated twice daily with 5 - 10 mL of saline. Repeat US was done after a week to visualize the state of the cyst and detect the presence of residual loculi. If an undrained loculus was seen, a second PCD was inserted. If thick pus was encountered, the tract was dilated and a sump drainage system was introduced. After drainage had reduced to less than 25 mL/day, CT scan and cavitogram were done to confirm collapse of the cyst and absence of ductal commu-
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multiple cysts. In five patients, the number of catheters required to drain all the pseudocysts was less than the number of cysts.

Mild pain at the site of insertion was easily controlled with oral analgesics. Slippage requiring repositioning occurred in one patient. Enterocutaneous fistula did not form in any case. Infection of a previously sterile cyst occurred in three cases; two were easily controlled with antibiotics while the required tract dilatation and a large-bore tube. After removal of drain, the tract closed within 72 hours in all cases. There was no recurrence during a mean follow up of 14.4 months (range 6 - 48).

Discussion

Pancreatic pseudocysts have been traditionally subjected to surgery. However, significant morbidity may occur after surgical drainage. PCD offers a minimally invasive alternative. We evaluated PCD for the drainage of pancreatic pseudocysts following an algorithm advocated selective ERP. All cysts without ductal communication and amenable to drainage resolved with no recurrence in various studies recurrence or failure rates range from 9% - 33%. These studies often have not differentiated between acute and chronic pseudocysts, complicated and uncomplicated pseudocysts, and included drainage of acute peripancreatic collections as well.

The duration of drainage for acute and uncomplicated chronic pseudocysts of 15.5 days and 13.8 days, respectively, is comparable to that reported by others for all types of pseudocysts. In our study, drainage periods over 22 days were required only in complicated pseudocysts. The number of catheters required to drain all the pseudocysts is usually less than the number of cysts, probably due to small communications between cysts.

Sepsis related to PCD was seen in three cases. In only one case was tract dilatation necessary. Continual drainage and antibiotics took care of infection within 7 days in all cases.

The common causes of failure of PCD are incomplete evacuation due to unrecognized location, undetected and undrained remote collections, and subsequent development of new collections. The use of pre-drainage CT scan and imaging after PCD insertion and before removal, along with a cavitogram, resulted in resolution of all noncommunicating cysts in this series and prevented premature catheter withdrawal.

Some authors base the mode of drainage on an algorithm based on ERP finding of ductal communication, resulting in some unnecessary procedures, while others do not consider a need for this procedure, resulting in prolonged drainage and hospitalization. Acute pseudocysts are unlikely to be in communication with obstructed ducts and so may be subjected to PCD with no risk of fistula formation; there is no need to subject them to ERP.

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Table: Results of percutaneous drainage in pancreatic pseudocysts (n=8)

<table>
<thead>
<tr>
<th>Acute</th>
<th>Chronic</th>
<th>Complicated</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. with &gt;1 pseudocyst</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>No. requiring 2 PCDs</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Resolved</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Residual cysts</td>
<td>nil</td>
<td>nil</td>
</tr>
<tr>
<td>Pancreatic fistula</td>
<td>nil</td>
<td>nil</td>
</tr>
<tr>
<td>Duration of drainage (days)</td>
<td>15.5 (6-22)</td>
<td>13.8 (10-20)</td>
</tr>
</tbody>
</table>

*Residual small intrapancreatic cysts not accessible for PCD
# One patient with infected acute pseudocyst required sump drainage for 58 days

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Chronic pseudocysts, on the other hand, often have ductal communication. Though PCD has been reported to achieve complete resolution of such cysts, the duration required is long. ERP prior to PCD will identify those who have ductal communication, so surgery may be offered as an alternative. In chronic pseudocysts without communication, PCD achieved early resolution.

Complicated pseudocysts need early management. Emergency surgery in infected pseudocysts is hazardous. PCD can be performed safely in these patients, as was done in this study. Though three of the five patients were left with pancreatic fistulae, these were easily handled with surgery in two and pancreatic duct stenting in one. If cure cannot be offered, sepsis may be brought under control so that elective surgery may be performed in stable patients. Vitas and Sarr reported a morbidity of only 10% in patients undergoing elective surgery. None of the patients in our study had any postoperative complication.

Although PCD results in the avoidance of definitive surgery for pseudocysts in some patients (10 of 14 in this study), surgery may be necessary in the early period for complications such as hemorrhage and in the intermediate period for pancreatic fistula or residual cyst. Later, surgery may be done for pain of chronic pancreatitis, unrelated to the pseudocyst.

In summary, patients with acute pseudocysts and uncomplicated noncommunicating chronic pseudocysts respond successfully to PCD. In complicated chronic pseudocysts, sepsis may be effectively controlled by PCD.

References

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