Surgical Treatment of Pancreatic Pseudocysts

Nefis Abdelnacer, Kouira Mouna, Ben Mabrouk Mohamed, Bel Hadj Hmida Mehdi, Mazhoud Jaafar, Derbel Fethi, Ben Ali Ali, Ajmi Salem, Arifa Nadia, Kadri Khaled, Moulahi Hassan, Naija Walid, Bel Hadj Hmida Ridha

ABSTRACT
To evaluate the clinical results of surgical treatment of pancreatic pseudocysts and specify the benefits of this treatment method. This is a retrospective study which collected seven cases of patients treated for pancreatic pseudocysts in Sahloul university hospital Sousse, Tunisia between January 2009 and December 2011. There were five women and two men with a mean age of 49 years (range 27-78). Six patients had a history of acute pancreatitis and one case of acute pancreatitis on chronic pancreatitis. The average time of appearance of pseudocysts was 5 months (range 2-12). Five of our patients underwent a conventional intervention which consisted of a transgastric cystogastrostomy and they had a favourable outcome. One patient had a percutaneous drainage for infection of the pseudocyst, which recurred two months later, the patient was operated in the same way with a favourable outcome. One patient had a percutaneous drainage for infection of the pseudocyst, which recurred two months later, the patient was operated in the same way with a favourable outcome. Postoperative morbidity is zero. The last patient died preoperatively due to cardiac decompensation. Surgical treatment of pancreatic pseudocysts is an effective technique with low morbidity. This technique has two major advantages: excellent control of hemostasis and the possibility of creating a large communication thus minimizing the risk of recurrence and infection.

INTRODUCTION
The pseudocyst of the pancreas (PKP) is a intra or a peripancreatic collection whose capsule has no epithelial lining, and occurring after acute or chronic pancreatitis[1]. The PKP is a complication to up 10 to 30% of all cases of pancreatitis[2]. In case of acute necrotizing pancreatitis, about 85% of PKP resolve spontaneously within six weeks after the acute episode and specific treatment is seldom necessary[3,4]. Beyond this period, the PKP whose size is over 6 cm are unlikely to regress and often cause pain or digestive discomfort by compression, or complications such as bleeding and infection[1,5]. In chronic pancreatitis, it is assumed that the origin of PKP is ductal obstruction due to lithiasis or stenosis, causing distension and rupture of a pancreatic canaliculus[1,6]. Internal drainage is the treatment of choice for symptomatic and uncomplicated PKP. Despite the emergence of new techniques for endoscopic or percutaneous drainage, which are often preferred, conventional surgery is still as important. The purpose of this study is to evaluate the clinical results of surgical treatment of PKP and clarify the benefits of this treatment method.

METHODS
Patients
This is a retrospective study that examined a series of seven patients with symptomatic PKP that were treated in digestive and visceral surgery department at Sahloul university hospital of Sousse between January 2009 and December 2011. There were five women and two men with a median age of 49 years (range 27-78). Half the patients had a history of hypertension, diabetes mellitus and dyslipidemia. Six patients had a history of gallstone acute pancreatitis, a case of acute pancreatitis on chronic pancreatitis was noted. The average time to diagnosis of pseudocyst was 5 months (range 2-12). Topography was: caudal (4 cases), corporeo caudal (3 cases). The average size was 8 cm (range 6-13) (Figure 1). All cysts were symptomatic with abdominal pain without signs of gastrointestinal compression (Table 1).

Surgical Technique
The surgical approach was a median supraumbilical in all cases.
A horizontal anterior gastrotomy is performed on a length of 5 cm, the hemostasis of the submucosal vessels is performed before the incision of the gastric mucosa. First, the cystic content is punctured then it is completed it by an incision of 3 to 5 cm at the posterior gastric wall and then the wall of the pseudocyst is hemmed to the gastric wall with interrupted sutures made of a slowly absorbable wire alongside the entire circumference of the orifice. The procedure is completed by an anterior gastrotomy closure in a extra mucosal plan with a slowly absorbable wire (Figure 2).

**Table 1** summary of the different data concerning the 7 patients.

<table>
<thead>
<tr>
<th>CASE</th>
<th>age</th>
<th>gender</th>
<th>Past medical history</th>
<th>Delay of onset of the pseudocyst (month)</th>
<th>Localisation and size of the pseudocyst (cm)</th>
<th>symptoms</th>
<th>treatment</th>
<th>Follow-up (month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>39</td>
<td>F</td>
<td>*</td>
<td>3</td>
<td>corporeo-caudal 8</td>
<td>Abdominal pain</td>
<td>Cysto-gastrostomy</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>32</td>
<td>M</td>
<td>Blood hypertension</td>
<td>3</td>
<td>caudal 9</td>
<td>Abdominal pain</td>
<td>Cysto-gastrostomy</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
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<td>M</td>
<td>Blood hypertension,</td>
<td>12</td>
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<td>Abdominal pain</td>
<td>Non operated</td>
<td>died</td>
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<tr>
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<td>F</td>
<td>Blood hypertension,</td>
<td>5</td>
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<td>Abdominal pain</td>
<td>Cysto-gastrostomy</td>
<td>18</td>
</tr>
<tr>
<td>5</td>
<td>27</td>
<td>F</td>
<td>*</td>
<td>2</td>
<td>corporeo-caudal 13</td>
<td>Abdominal pain + and vomiting</td>
<td>Cysto-gastrostomy</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>56</td>
<td>F</td>
<td>*</td>
<td>3</td>
<td>caudal 6</td>
<td>Abdominal pain</td>
<td>Percutaneous drainage then Cysto-gastrostomy</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>78</td>
<td>F</td>
<td>*</td>
<td>12</td>
<td>corporeal 8</td>
<td>Abdominal pain</td>
<td>Cysto-gastrostomy</td>
<td>15</td>
</tr>
</tbody>
</table>

**RESULTS**

Five of our patients had a trans-gastric cyst-gastrostomy using the open laparotomy approach. The postoperative course was smooth in all cases. The symptoms related to pseudocysts disappeared within two weeks after surgery in all patients. CT scan control shows a partial pseudocyst sterilization after one month and a complete one within an average of 45 days after surgery (Figure 3). One patient had a percutaneous drainage for infection of the pseudocyst, the subsequent monitoring within two months has showed a relapse, despite the octreotid treatment, the was a persistance of the fistulae. The opacification through the drain did not show any communication with the pancreatic ducts. A pancreato-MRI was programmed but could not be performed (technical resion in our unit). An internal drainage was indicated. The endoscopic procedure was not possible in our department. The patient was operated, he underwent a cysto-gastrostomy with favorable outcome.

No postoperative complications were noted in the six operated patients. The last patient with a heavy past medical history with diabetes mellitus decompensation, blood hypertension, renal failure. The percutaneous drainage was programmed but not performed because the patient died before due to his sickness.

The follow-up of the operated patients after surgery was 13 months (3-24).

**DISCUSSION**

The evolution of PKP depends on their etiology. If they are associated with acute pancreatitis, it is conventionally assumed that cysts larger than 6 cm and persisting longer than six weeks after the acute episode require treatment to prevent complications[3,5]. At this stage of evolution, the cyst wall is sufficiently strong and adherent to allow a cysto-digestive diversion. If PKP associated with chronic pancreatitis, it is often considered that a treatment should be offered more regularly because of the higher risk of complications and the low probability of spontaneous regression[4] and that no treatment is justified in asymptomatic patients when the cyst does not exceed 4 cm[5]. Internal drainage is the treatment of choice for PKP. Resection is proposed only in cases of complicated cyst, especially if it is located on the tail of the pancreas. External drainage is only indicated in case of infected cyst because of the high risk of pancreatic fistula and recurrence after such treatment[6,7,8]. Whatever its location, it is always possible to surgically drain the PKP in a hollow organ (stomach, duodenum or jejunum)[9,10].

The new therapeutic options are currently multiple (endoscopic or percutaneous internal drainage), however, conventional surgery still has its place. In a literature review in 1997, Beckingham concluded that endoscopic drainage of PKP was a minimally invasive treatment that, compared to conventional surgery, was accompanied by an equivalent recurrence rate but a lower morbidity and mortality rate[10].
Still, this treatment option is only possible if the PKP is attached to the stomach or the duodenum or if it communicates with the pancreatic duct, and only 27% of PKP associated with acute pancreatitis and 55% associated with PKP chronic pancreatitis meet these criteria[12,13]. Moreover, drainage is technically feasible by endoscopy in 82% to 89% of patients and failure often requires a laparotomy. The two most common complications of endoscopic cystogastrostomy are hemorrhage (8%) and infection (8%)[12,13]. In such cases, conventional surgery has its indication to control the haemostasis especially for big sized PKP and to create a wide Anastomosis thus minimizing the risk of early closure and secondary infection. The systematic use of prostheses in case of endoscopic drainage has been advocated, but specific complications were observed such as migration, plication, perforation and obstruction by necrotic material[2,11,12,14].

Despite the indications of conventional surgery were reduced in favor of endoscopic procedures and interventional radiology, it still has the so called first-line indications represented by the impossibility of endoscopic treatment or a limited likely effectiveness. The other so-called second-line indications are represented by failures or complications of endoscopic or radiological interventions[9]. The benefits of surgical treatment are represented by the radical nature of the treatment but still weighted with a failure rate of 10% and a recurrence rate of 20%. The main drawback of surgery is its invasiveness. Elements against relative contraindication to surgery can be considered as the patient’s general condition, comorbidities or the presence of segmental portal hypertension[9]. The advent of laparoscopy, with acceptable rates of morbidity (6%) and recurrence or failure (15%), allows to consider a lesser induced surgical morbidity, while preserving the indication of the act itself[15,17].

Currently, laparoscopy bridges the gap that may exist between open surgery and laparoscopic surgery and it is a new and interesting therapeutic option. Ideally, the choice of the drainage technique should result from a collaboration between surgeons, gastroenterologists and radiologists depending on the location of the PKP, its content, the expertise of various mediators and the clinical context[17].

The surgical management of PKP remains an important component especially if the pseudocyst is part of a more complex pathology. The indications are multidisciplinary with the goal of detecting patients who will be operated in any way by avoiding an excess of interventional actions, whether radiology or endoscopy.

REFERENCES

Peer reviewers: Toshiyuki Ishiwata, MD, PhD, Associate Professor, Departments of Pathology and Integrative Oncological Pathology, Niigata Medical School, 1-1-5 Sendagi, Bunkyo-ku, Tokyo 113-8602, Japan; Premashish Halder, Professor, Head Of Department Of Gastrointestinal Surgery, Jagiivanram Hospital, Maratha Mandir Lane, Mumbai Central, Mumbai – 400 008, India.