

## Percutaneous drainage of a pancreatic pseudocyst into the stomach

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*This paper reports on a patient who had a pancreatic pseudocyst, drained externally operatively in May 1995. The pseudocyst wall was too thin to make pseudocystogastric internal anastomosis. Since this treatment failed, a percutaneous cystogastric double pigtail catheter was introduced with the assistance of ultrasound and gastroscopy. Two days after intervention the patient left the hospital without troubles. We followed him every month by clinical, biochemical, and US control. At first US control the pseudocyst was not seen. Percutaneously US guided internal drainage is an elegant and less traumatic alternative method to the patient compared with surgical procedure.*

*Key words:* pancreatic pseudocyst; drainage; stomach

### Introduction

Pancreatic pseudocyst is localized collection of fluid retroperitoneally confined by fibrous membrane without endothelial lining. It appears in 2 to 8 percent after acute pancreatitis. The patient complains of upper abdominal pain, early satiety and vomiting. Clinically there is a palpable mass in epigastrium. Diagnostic accuracy of ultrasonography is over 90 per cent. There are three nonsurgical alternative methods of drainage:

- a) percutaneous external drainage
- b) endoscopic internal (cystogastro-, cistoduodeno) drainage
- c) internal cystogastric drainage with double "J" catheter (see Figure 1).

Cystogastric drainage with double pigtail catheter under ultrasonographic and gastroscopic control in selective cases is less traumatic to the patient and more comfortable than external drainage. There

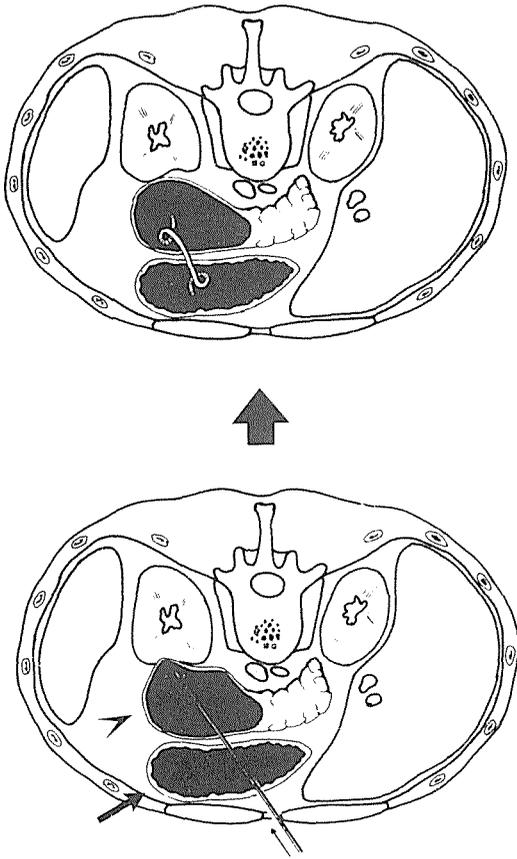
is greater intraluminal pressure of pseudocyst that enables flow of its contents through catheter to stomach or duodenum. This method was published by Hancke in 1985.<sup>1</sup> Nowadays interventional radiology developed many procedures alternative to classical, patient less friendly surgical procedures. Cooperation between different medical disciplines facilitates less aggressive procedures.

### Case report

A 58-year-old man (P.J.) was operated earlier due to gallbladder stones.

In August 9<sup>th</sup> 1994 he was operated due to acute pancreatitis in another hospital. Postoperatively there was pancreatic fistula, and secretion spontaneously stopped. Control US showed collection of fluid 6.1 x 5.5cm area in October 10<sup>th</sup> 1994. In January 11<sup>th</sup> 1995 control US due to abdominal pains confirmed 14 x 9cm great pseudocyst. Percutaneous US guided puncture was not successful, and the patient was operated on May 12<sup>th</sup> 1995. The wall of pseudocyst was too thin to perform pseudocystogastric anastomosis. It was drained externally through mesocolon. Twelve days after operation the patient left the hospital. One month later

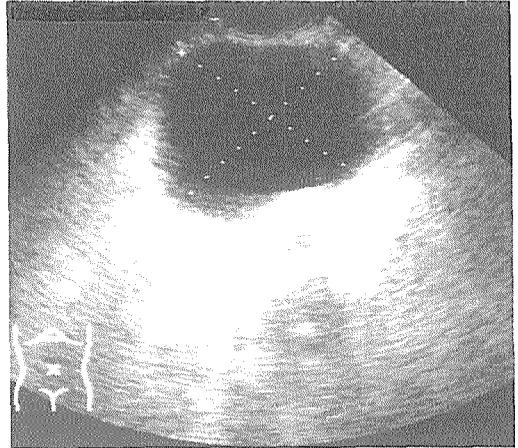
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**Figure 1.** Schematic illustration of introducing percutaneous cystogastric double pigtail catheter.

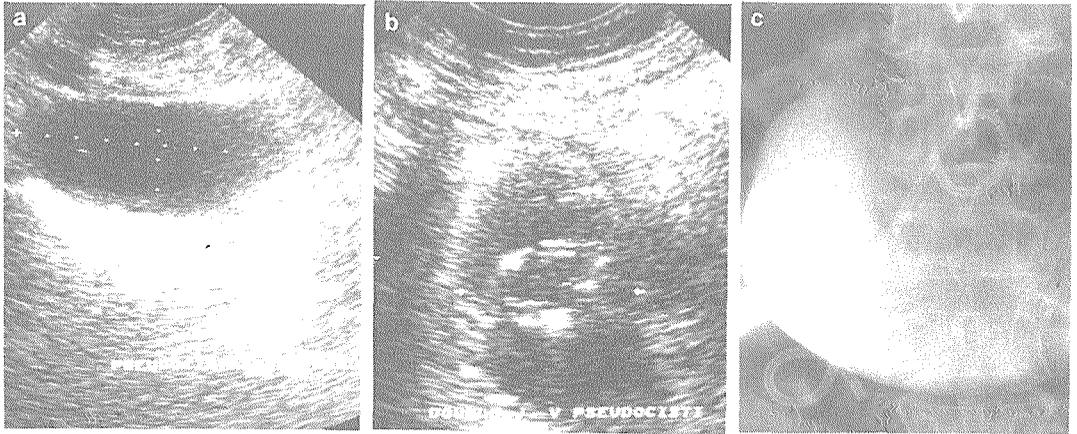
the pains returned with palpable resistance in epigastrium. Control US showed fluid collection in bursa omentalis (see Figure 2). Our radiologists decided to make percutaneously US guided internal cystogastric drainage with double pigtail catheter and endoscopic assistance.

The purpose and the manner of performing the procedure was explained to the patient in detail, so that the patient's consent was obtained and the patient was reassured. The procedure was performed in an intervention-radiology room. The patient was lying supine on an X-ray table. Prior to the procedure, the patient was re-examined using ultrasound in order to determine the location and direction of access. The patient was then given 5 ml of nora-minophenazone and 5 mg of diazepam i.v.. A flexible gastroscope was introduced into the patient's stomach. The chosen area in the epigastric region



**Figure 2.** Ultrasonogram (US) of fluid collection in bursa omentalis.

was washed sterile and lined with sterile surgical sheets. The location and direction of puncturing were finally determined with a sterile-enclosed 3.5 MHz probe with an attachment for puncturing. The skin on the anterior abdominal wall was infiltrated with 10 ml of 2% Xylocaine and a small incision was made. Puncturing was performed with a 20 cm long 18-gauge needle with mandrel. The penetration of the needle into the pseudocyst through the anterior and posterior stomach walls was observed on an ultrasound monitor and through a gastroscope. Gastric access is a condition for the connection of the pseudocyst with the stomach through a double-pigtail catheter in order to allow drainage. The success of puncturing was checked by aspiration of cystic contents and a short fluoroscopic control after the administration of the contrast medium, while its passage through the stomach was checked with a gastroscope. A J-type 0.035" teflon guide wire was introduced through the needle cannula. The cannula was removed and dilation of the channel was performed with 7F and 8F plastic dilators. A double-pigtail catheter (8.5 F thick and 8 cm long) with side openings at both ends was introduced. It was placed at the tip of a 3.5 cm long needle with 16-gauge thick mandrel. On the needle behind the pigtail is a pusher with which the tip of the pigtail catheter was pushed from the cannula into the pseudocyst, while its base remained in the stomach. The needle cannula, the wire and the thread which serves for the regulation of the position (depth) of the drainage catheter, and the pusher were removed.



**Figure 3.** (a) US shows smaller pseudocyst diameter after percutaneous drainage and (b) final position of the drainage catheter seen on US, and (c) Xray.

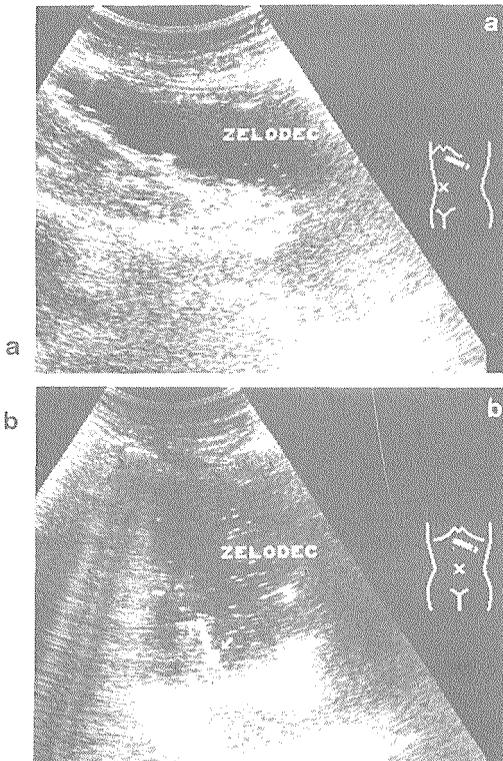
The position of the pigtail catheter is monitored with an endoscope and adjusted, and the thread is cut if its spontaneous removal is impossible. Ultrasonography revealed rapid drainage of the pseudocyst (see Figure 3a). The position of the drainage catheter could be seen on an X-ray taken after the

completion of the procedure (see Figure 3 b, c). One month after the procedure the pseudocyst was not visible on ultrasonography (see Figure 4 a, b), and the patient showed no clinical symptoms.

### Discussion

In the past pancreatic pseudocyst was treated only operatively. The introduction of ultrasonography and various catheters enabled other less invasive methods of treatment. Percutaneous catheter external drainage is less comfortable to the patient than endoscopic drainage (cystogastro - or - cystodudeno - ) or internal cystogastric drainage with double "J" catheter. Percutaneous double pigtail catheter internal drainage of pancreatic pseudocyst to stomach with ultrasonographic and gastroscopic guidance described first by Hancke<sup>1</sup> is less traumatic to the patient, than operative procedure by laparotomy.<sup>2</sup> There must be proper selection of patient: the cyst must be mature (6-8 weeks old to get thick wall) and in close contact with duodenum or stomach. Too small residual of stomach following surgery and bleeding to pseudocyst or infection of its contents does not permit double "J" catheter drainage. The diameter of pseudocyst must be at least 5 cm. This selection is possible by US examination. High concentration of amilase and lipase of pseudocyst content prevents occlusion of catheter lumen.

This procedure is reported to be tolerated by patient better than external drainage.<sup>3</sup> The condition of success is good cooperation between interventional radiologist and endoscopist.<sup>4</sup> There are reports of worth results in infected pseudocyst and



**Figure 4a, b.** The pseudocyst is not visible on US one month after the procedure.

immature pseudocyst.<sup>5,6</sup> After the procedure we control the patient every month (blood amilase, clinical status, US). The drain is usually removed by gastro-scope after 1-6 months.

The results are good if there is a proper selection of patients. There are reports of reactivation of inflammation, due to alcohol drinking that demanded earlier extraction of catheter, which stimulated inflammation as a "foreign body".

Internal drainage with double pigtail "J" catheter is minimal invasive method which can be made in local anaesthesia, especially in patients with prohibitive operative risk.

Surgical treatment should be performed when endoscopic and percutaneous procedures are impossible or if malignancy is suspected.

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