

## Massive Hemorrhage Secondary to Bleeding Intracystic Arteries After Cystogastrostomy for Pancreatic Pseudocyst

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The authors report a patient who underwent elective cystogastrostomy for pancreatic pseudocyst and had three episodes of massive gastrointestinal bleeding postoperatively. The patient had bleeding vessels in the pseudocyst cavity of which conservative management of cold saline lavage and octreotide was instituted. Endoscopy was done after the 1st episode of bleeding and showed no active bleeding, no suture site bleeding and with blood clots inside the cavity. After the 2nd episode of gastrointestinal bleeding, there was a note of pinpoint hemorrhages on the pseudocyst wall. The plan was to do angiography but the patient succumbed to hypovolemic shock due to gastrointestinal bleeding hours after endoscopy. On retrospect, early angiography and possible embolization should have been done. Prompt surgical re-exploration is warranted among patients with hemodynamic instability.

**Key words:** pancreatic pseudocyst, cystogastrostomy, post-operative bleed

Pseudocysts representing encapsulated collections of pancreatic juice commonly develop in both acute and chronic pancreatitis. They usually occur 4-6 months after the episode of pancreatitis.<sup>1</sup> Fifteen percent to 40% of patients with pseudocysts develop complications. these include abscess, fistula formation and hemorrhage.<sup>2</sup> Bleeding is the most rapidly lethal complication of established pseudocysts involving less than 5% of patients although carrying a mortality rate of greater than 40%.<sup>3</sup> Postoperative hemorrhage after pancreatic cystogastrostomy may be technical in origin due to suture site bleeding of the anastomosis of the cystogastrostomy. Thus continuous running sutures

applied to the cystogastric stomas are advised.<sup>4</sup> Other causes of postoperative bleeding may be explained by the enzyme digestion of pancreatic secretions leading to erosion of arteries and veins in the pseudocyst wall or the peripancreatic vessels. These lead to pseudoaneurysms of splenic vessels and pseudocyst wall bleeding.<sup>5</sup>

### The Case

This is a case of a 59 year old female who was previously admitted for gallstone pancreatitis and subsequently discharged after resolution of symptoms. The patient during that admission did not consent for cholecystectomy. Six weeks after discharge, she noted a slowly growing epigastric mass. A whole abdominal CT-scan with IV contrast was done showing cholelithiasis and a pancreatic pseudocyst with no note of pseudoaneurysms within the surrounding structures. (Figure 1)

The patient was readmitted to the institution for elective cystogastrostomy and cholecystectomy. Cystogastrostomy was the contemplated procedure because of the close proximity of the stomach to the pseudocyst. Intraoperatively the pseudocyst had an estimated size of 12cm x 15 cm, with clear colorless fluid upon evacuation and note of pancreatic debris within the pseudocyst (Figure 2).

The authors did a cystogastrostomy with anastomosis of the posterior stomach to the pseudocyst. (Figure 3) The pseudocyst wall measured 0.4 cm. The pseudocyst cavity was entered creating an anterior gastrotomy and

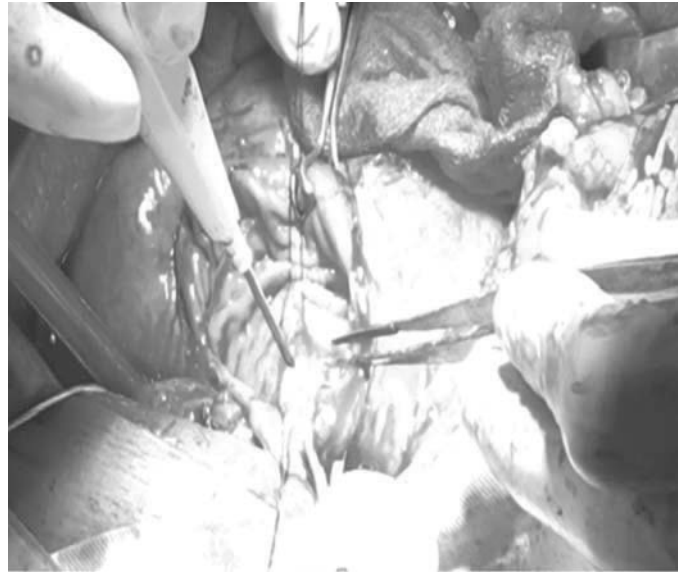
opening of the posterior stomach leading to the cavity. Anastomosis was done using a continuous running technique with Polyglactin 2/0 suture. Cholecystectomy for the gallbladder stones was done after the closure of the gastric incision.



**Figure 1.** Whole abdominal CT-scan with IV contrast showing pancreatic pseudocyst, with posterior stomach closely adherent to the pseudocyst.



**Figure 2.** Pancreatic pseudocyst measuring 12cm x 15cm in size with the posterior wall of stomach in close proximity to the pseudocyst.

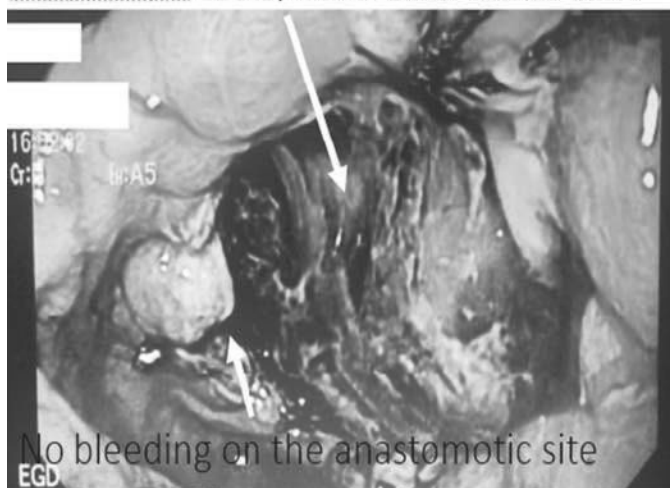


**Figure 3.** Anastomosis of the posterior stomach to the pancreatic pseudocyst.

Patient had an unremarkable first 2 days post-operatively, with stable vital signs, minimal nasogastric tube output and soft non-tender abdomen. On the 3<sup>rd</sup> hospital day, the patient developed hematochezia and was noted to be hypotensive and tachycardic. Four units of packed red blood cell and 5 units of fresh frozen plasma were transfused and Proton Pump Inhibitors were started. Intra-gastric cold saline lavage was also done. Emergency upper endoscopy was done, to rule out suture site anastomotic bleeding. Endoscopy showed no note of anastomotic bleeding. The pseudocyst cavity was filled with clotted blood and there was no active bleeding on the anastomotic site as well as in the cavity. (Figure 4).

The authors started the patient on Octreotide to decrease pancreatic secretions so as to prevent enzymatic erosion of the stomach and the pseudocyst wall. The patient had progressive diet on the subsequent hospital day, with no melena and no coffee ground output on NGT. On the 7<sup>th</sup> hospital day, she had another episode of melena and vomiting of coffee ground material. At this time, she was noted to be tachycardic with episodes of hypotension. Four units of packed red blood cells and 6 unit of fresh frozen plasma were transfused and cold

## Pseudocyst cavity filled with blood clots



**Figure 4.** Upper gastroscopy showed pseudocyst cavity filled with clotted blood and no bleeding on the anastomotic site.

saline lavage was done. After resuscitation, she was redirected for another upper gastroscopy, which revealed minute pinpoint bleeding on the pseudocyst wall that was not amenable to endoscopic hemostasis.

The authors continued giving Octreotide, and scheduled the patient for emergency angiography and possible embolization. However, on the 8<sup>th</sup> hospital day, she had her 3<sup>rd</sup> episode of massive gastrointestinal bleeding. In spite of resuscitation efforts, the patient succumbed to hypovolemic shock.

## Discussion

Pancreatic pseudocyst that is complicated with bleeding carries a high mortality rate of above 50%.<sup>5</sup> Incorporation of one of the visceral vessels into a pancreatic pseudocyst, such that it runs through the cavity has never been previously discussed extensively in literature. Perhaps it can be explained in the usual process of tissue destruction entailed when a pseudocyst enlarges and incorporates vessels in its edge. The variation of the anatomy of such vessels may depend on the size and duration of the pseudocyst.<sup>1,6</sup> In this case, there was no note of bleeding in the pseudocyst cavity during the surgical drainage, and bleeding occurred postoperatively.

Perhaps the mixing of gastric and pancreatic secretions lead to the erosion of the incorporated vessels causing subsequent bleeding.

The use of Octreotide in bleeding pseudocysts theoretically may have had a role. Octreotide, a synthetic analog of Somatostatin, reduces exocrine pancreatic secretion with resultant decrease in the inflammatory process involved in auto digestion of visceral vessels.<sup>7</sup> Much of the literature states that the role of Octreotide in postoperative bleeding after cystogastrostomy is still unsettled.<sup>8</sup> In this particular case, in spite the giving of Octreotide, there were still episodes of recurrent massive upper gastrointestinal bleeding. This highlights a much more aggressive management when faced with these complications.

Hemorrhage can greatly complicate the course of a pseudocyst. Interventional Radiology plays an invaluable role both in locating the source of bleeding and embolization of the bleeding vessel. Surgical exploration can be hazardous and is associated with high mortality rates.<sup>9</sup> Treatment of hemorrhagic pancreatic pseudocyst by selective embolization is the safer option in this kind of patients.<sup>10</sup> The patient bled massively thrice post-operatively and required large amounts of blood products for transfusion. Conservative management with ice water instilled in her stomach, giving of Octreotide and Proton Pump Inhibitors had been temporarily stopped. In this situation, immediate angiography should have been done rather than continuing conservative management. Surgical re-exploration may have had a role especially if the patient had hemodynamic instability. This case highlights the importance of aggressive management in a bleeding pseudocyst.

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