Successful conservative management of pancreatico-colonic fistula following videoscopic assisted retroperitoneal debridement of infected pancreatic necrosis. Case report and review of literature.

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Abstract

Colonic involvement is a dreaded rare complication of acute severe pancreatitis. Seen in 3% of cases, it varies from torrential gastrointestinal hemorrhage, intestinal obstruction, septic shock, colonic perforation and pancreatico-colonic fistula formation. Pancreatico-colonic fistula is seen in 30% of cases and is associated with a high mortality risk. We highlight a rare case of pancreatico-colonic fistula following a minimally invasive debridement of infected pancreatic necrosis.

Materials & Methods:

A 40-year-old man presented to the emergency department and was diagnosed with acute severe pancreatitis. CT scan revealed grade E pancreatitis. Percutaneous drainage followed by VARD was performed. Post procedure, feculent material was noted in the drainage catheter. A diagnosis of pancreatico-colonic fistula was made and confirmed by fistulogram.

Results:

Conservative management with TPN and octreotide was adopted for 6 weeks. CT scan with oral, rectal and intravenous contrast done at the end of 6 weeks confirmed closure of the fistulous tract. The drain was removed and patient discharged home. A repeat CT 6 months later was unremarkable. Patient has been well since.

Conclusion:

Pancreatico-colonic firstula has been attributed to spleenic vein thrombosis, external pressure by pancreatic pseudocyst, enzymatic digestion of the colonic wall and post necrosectomy. CT with rectal enema, fistulogram, and ERCP can be used to confirm diagnosis. ERCP is superior and doubles as a diagnostic and therapeutic tool. Lower incidence of pancreatico-colonic fistula is seen with minimally invasive procedures compared to open necrosectomy. Only few successful cases of conservative management of pancreatico-colonic fistula have been reported, making our case an important learning point to those who are just embarking on their surgical career.

Keywords: Minimally invasive techniques; necrosectomy; pancreatico-colonic fistula

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INTRODUCTION

Acute pancreatitis is inflammation of the pancreatic parenchyma. It is a serious clinical entity that can manifest either acutely or in a chronic form. Acute pancreatitis occurs when there is injury to the pancreatic acinar cells that eventually lead to auto-digestion of pancreatic tissue. Prolonged inflammation and irreversible scarring of the pancreas leads to chronic pancreatitis. [1] A wide array of factors have been linked to the development of pancreatitis, with gallstone and alcohol consumption prevailing as the most common cause. [2, 3] The incidence of pancreatitis has risen over the years consistent with rapid urbanization, change in lifestyle and increase in unhealthy dietary habits. The global incidence of pancreatitis is reported to be between 4.9 – 73.4 cases per 100,000. United States of America (USA) has the highest incidence of pancreatitis in the western hemisphere with approximately 275,000 cases requiring hospitalization in 2009. A two-fold increase from merely 20 years earlier, the disease burden cost the US national health care system an additional 2.6 Billion Dollars. To date, it remains the single most common gastrointestinal cause for hospitalization in the USA. [4] Population data on pancreatitis in the East remains largely unknown due to low volume of reporting. While the incidence of pancreatitis in the East is lower than the West, reports from Japan demonstrate a steady increment consistent with the global trend. [5] A local study performed by researchers at Universiti Kebangsaan Malaysia Medical Centre in 1996 also noted a similar trend but with a 4-fold rise in pancreatitis within a 6-year period. [6] The opposite however has been noted in Taiwan with a recent nationwide study revealing a slight reduction in the number of first-attack pancreatitis. [7]

Diagnosis of acute pancreatitis requires fulfillment of two out of three criteria i.e. upper abdominal pain, elevated serum amylase of more than three times the upper limit of normal and computed tomographic evidence of pancreatitis. Atlanta Classification has classified severity of acute pancreatitis as ranging from mild to severe. Absence of local and systemic complication as well as lack of organ dysfunction distinguishes mild from moderate pancreatitis, while persistence of organ dysfunction of more than 48 hours is hallmark of severe pancreatitis. [8] Severe pancreatitis is seen in 15 - 20% of cases. Necrotising pancreatitis occurs in 5–10% of severe pancreatitis and usually manifests within 14 days of initial insult. [9] Secondary infection of the necrotic collection is seen in 30% of sterile necrotizing pancreatitis, increasing the risk of mortality from 15% to 39%. [10] Early interventions in a non-liquefied infected necrotizing pancreatitis (INP) have been shown to be detrimental with increased morbidity and mortality rate up to 50%. [10,11] For this matter, guidelines recommend conservative management for sterile necrotizing pancreatitis and delayed intervention in the presence of infected pancreatic necrosis (IPN). [8,11]

The aim of intervention in INP is to enable the eventual removal of all necrotic tissue and provide free drainage to facilitate resolution of the infective process. For a long time, the goal standard treatment for INP has been open necrosectomy. In recent years however, minimally invasive methods are favored over open surgery in view of lower complication rates. [12]

Among the frequently employed and more established minimally invasive procedures are percutaneous drainage therapy, endoscopic transperitoneal necrosectomy, laparoscopic necrosectomy via transperitoneal approach and videoscopic assisted retroperitoneal debridement (VARD). [13] "Step-up" approach to treatment involving use of percutaneous drainage technique followed by, if necessary, minimally invasive necrosectomy has also been shown to yield positive results.

A recent multicenter randomized control trial called the PANTER trial, patients with INP who were managed with the "step-up" approach using percutaneous drainage followed by videoscopic assisted retroperitoneal debridement (VARD) technique demonstrated lower short and long-term complication rates when compared to those treated with conventional open necrosectomy (RR 0.57; 95%CI 0.38-0.87). Even more interesting was that almost 35% of the patients in the "step up" arm did not require further VARD following success of the initial percutaneous drainage therapy. There was no difference in mortality rates noted between the two arms. [14]

However, it is important to note that while able to reduce the need for laparotomy, minimally invasive techniques are not entirely free from complication. Complications such as hemorrhage, visceral organ injury, fistula formation and failure of drainage have been reported with minimally invasive techniques. [15] The application of minimally invasive procedures also requires highly specialized expertise capable of handling possible complications in a multidisciplinary setting. [12]

We aim to highlight a rare case of pancreatico-colonic fistula following VARD of infected necrotizing pancreatitis.

CASE REPORT

A 40-year-old man presented to the emergency department with severe upper abdominal pain radiating to the back. His serum amylase was five times the upper limit of normal, with raised septic parameters. CT scan with pancreatic protocol revealed a Balthazar classification of grade E pancreatitis (Fig. 1). Close monitoring and fluid resuscitation was commenced in the intensive care unit. CT guided aspiration of the pancreatic collection confirmed the presence of gram-negative bacteria. Intravenous antibiotic was commenced according to culture and sensitivity report. Percutaneous drainage of the infected necrotizing pancreatitis collection was initially instituted and stepped-up to VARD following persistent infection. Following the surgery, feculent material was noted draining through the drainage catheter. A diagnosis of pancreatico-colonic fistula was made and confirmed by fistulogram via contrast injection trough the draining catheter (Fig. 2) Conservative management with total parenteral nutrition (TPN) and octreotide was adopted for six weeks. CT scan with oral, rectal and intravenous contrast done at the end of six weeks confirmed closure of the fistulous tract (Fig. 3). The drain was removed and patient discharged home. A repeat CT scan performed six months later was also unremarkable. Patient has been well since.

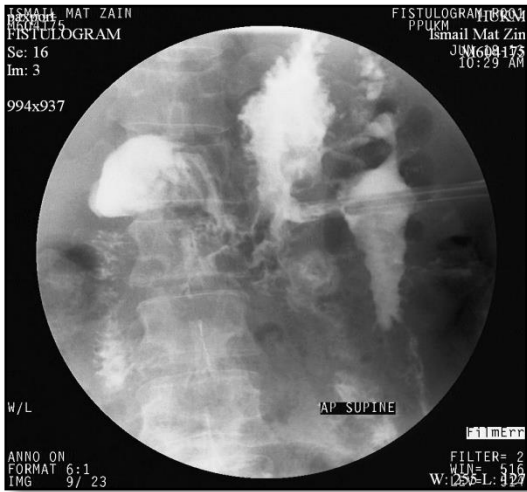**Figure 1.** CT scan of abdomen shows presence of peripancreatic collection.

Figure 2. Fistulogram of the lesser sac via percutaneous drain, note the opacification of the peripancreatic region with immediate opacification of the splenic flexure which indicate an enteropancreatic fistula.

Figure 3. Abdominal CT image showing no evidence of contrast at splenic flexure, suggesting resolution of the enteropancreatic fistula.

DISCUSSION

Acute pancreatitis is characterized by intra-acinar cell activation of digestive enzymes and the subsequent systemic release of proinflammatory cytokines. In around 80% of patients, the disease runs a self-limiting course, but in the remainder, with severe disease, pancreatic necrosis and organ failure develop.[16] Infected necrotizing pancreatitis represents a serious and therapeutically challenging complication. Percutaneous drainage of infected pancreatic necrosis is often unsuccessful. Alternatively, open necrosectomies are associated with high morbidity. [17]

Recently, minimally invasive necrosectomy techniques have been tried with satisfying results; however, they frequently necessitate multiple sessions for definitive necrosectomy. [17] All techniques are associated with a significant mortality and a morbidity of 32% to 88% [19,20,21] Without operation, the mortality of these patients approaches 100%, but with operation this rate can be reduced to 24% to 39%. [18]

Colonic necrosis occurs in 1% to 17% of patients with pancreatic necrosis and appears to have a higher frequency

in series that use an open technique of treatment. [23] Gastrointestinal fistulae, upper gastrointestinal tract or colonic, found to be 5% for open necrosectomy versus 2% for minimally invasive necorsectomy in one study [22] Previous reports showed a wide range of 1% to 43%. [24,25,26] Our patient, developed colo-pancreatic fistula was successfully treated conservative managment in accordance with a previous series study [22] where they reported successful conservative management of all three patients with gastrointestinal fistulae (including one colonic fistula).

The idea behind MIPN is reduction of the effect of a further surgical insult in an already severely unwell patient. This approach is not suitable for all patients with pancreatic necrosis, especially those with disease involving the head and uncinated process, because percutaneous access is not always possible. [22] Another potential disadvantage is that it does not allow assessment or removal of intraperitoneal organs, and thus coexisting disease cannot be treated. Removing the debris from the necrotic cavity can be time consuming because only small amounts can be removed at a time. [22]

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