Minimally Invasive Retroperitoneal Pancreatic Necrosectomy via Percutaneous Drainage Tract: A Case Report

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Open necrosectomy is the gold standard for treatment of infective pancreatic necrosis but has a very high mortality rate. There are percutaneous methods, but these do not help in removing the necrosis adequately. Minimal invasive retroperitoneal pancreatic necrosectomy drainage is a relatively easy technique with acceptable morbidity and mortality. We report here a 35-year-old male patient who presented with necrotizing pancreatitis and fluid collection in the retroperitoneal space which was successfully treated with minimally invasive retroperitoneal pancreatic necrosectomy using the percutaneous pigtail drainage tract as a guide. This approach reduced the risk of multiple organ failure and respiratory complications.

**Keywords:** Minimally invasive, Pancreatic necrosis, Retroperitoneal necrosectomy

## INTRODUCTION

Open necrosectomy is the gold standard for treatment of infective pancreatic necrosis but has a very high mortality rate. There are percutaneous methods, but these do not help in removing the necrosis adequately. Minimal invasive retroperitoneal pancreatic necrosectomy drainage is a relatively easy technique with acceptable morbidity and mortality.  

## CASE REPORT

A 35-year-old male patient reported to our hospital with complaints of severe epigastric pain, abdominal distension of 2 days duration, high-grade fever and vomiting for 5 days. He had similar complaints and was managed conservatively for acute pancreatitis 1 year ago.

On examination, the patient was sick and pale with tachycardia of 108 beats/min and blood pressure of 110/70 mm Hg. He was tachypneic with a respiratory rate of 26 breaths/min. The abdomen was distended. A tender mass of size 15 cm × 10 cm was palpated in the epigastrium extending into the umbilical region and right hypochondrium. Blood investigations revealed a white cell count of 25,420 cells/cumm, platelets of 2.26 lakh cells/cumm. Blood urea and creatinine and liver function tests were in normal range. Serum amylase and lipase were normal and so a decision for contrast enhanced computed tomography (CT) abdomen was made. CT abdomen showed a picture of acute pancreatitis with edematous head, body of pancreas and fluid collection (Figure 1).

The patient was managed conservatively in a High Dependency Unit. Due to the persistence of pain and fever, CT scan of the abdomen was repeated after 1 week. Repeat CT showed acute necrotizing pancreatitis with fluid collection and necrosis. A CT guided aspiration of the peripancreatic collection was performed, and a pigtail catheter was introduced (Figure 2). Repeated wash was given through the pigtail catheter. Due to worsening of his general condition and pancreatic necrosis of 40%, a decision was taken to perform minimal invasive retroperitoneal pancreatic necrosectomy.

During the operative procedure, a 1 cm incision was made close to the pigtail site and Hassan’s cannula was inserted and the retroperitoneoscope was introduced through it (Figure 3). The lesser sac was successfully entered, and the amount of necrosis in the pancreas was successfully gauged (Figure 4). Subsequently, a 5 mm port was
successfully inserted in the left lumbar region by avoiding the adhesions under direct vision, suction irrigation system was introduced through the 5 mm port, and the necrotic debris was cleared. With the help of a forceps, necrosectomy was carried out. This procedure helped in complete removal of all the necrotic debris (Figure 5). The peritoneal cavity was not breached. Two 32 Fr chest drains were placed in the lesser sac.

The patient made a good recovery postsurgery; he did not require additional debridement. He had one episode of pseudomembranous colitis which settled on treatment.

**DISCUSSION**

About 20% of the cases with acute pancreatitis progress to a severe attack with morbidity and mortality rate ranging between 17% and 39%. Among these patients with pancreatic necrosis 40-70% will become infected and these require debridement. If the debridement is not done on time, there is 100% mortality rate because of multi-organ failure (MOF).

The standard procedure is laparotomy, necrosectomy and continuous peritoneal lavage (CPL). The technique of open pancreatic necrosectomy has been explained by Beger et al. Open laparotomy in an already sick patient has its own complications such as prolonged intensive care unit stay, post-operative MOF, and increased mortality, mortality rates being 40 to 50% even in high volume centers.
The minimally invasive procedures may involve several approaches such as CT-guided insertion of drain, video-assisted retroperitoneal necrosectomy, and endoscopic transgastric necrosectomy.

The indications for minimally invasive necrosectomy would be the same as for open laparotomy and necrosectomy.

Laparoscopic necrosectomy would involve entering the peritoneal cavity and then enter the lesser sac through the greater omentum, carrying out the necrosectomy and placing drainage tubes with wash. The disadvantages of this procedure as well as with open laparotomy is that the walled off compartment is broken leading to contamination of the peritoneal cavity. There is also a risk of pancreatic fistula formation.

As compared to the above procedure, entering the lesser sac through the retroperitoneal route through a previously placed pigtail does not lead to generalized peritoneal contamination. Besselink et al. in case-matched comparison of retroperitoneal necrosectomy with laparotomy and CPL have shown a reduced post-operative MOF and mortality in the retroperitoneal group. However, the sample size in this study is small to come to a definite conclusion.

In our patient, we were able to carry out the procedure safely; there was no peritoneal contamination during operation and postoperatively he recovered from MOF. The route of the percutaneous catheter, using it as a guide, between the spleen and kidney behind the colon was used to introduce the trocar for retroperitoneal necrosectomy. This is a safe technique which allows necrosectomy under magnified vision. By the process of suction irrigation, the superficial pus was evacuated and the deeper blackish debris, the devitalized pancreatic tissue which is loose was removed by the grasping forceps. By this technique, there is a good control of local sepsis. Two drains of 32 size ICD tubes were placed to facilitate continuous irrigation with the peritoneal dialysis fluid.

There is a small risk of intraoperative bleed in this procedure which may require conversion or this will require CT angiography and embolization if it is arterial. The rare complications are colonic fistula, iatrogenic injury to kidney, spleen, etc.

CONCLUSION

Retroperitoneal necrosectomy is a procedure that could be safely carried out without increasing the morbidity and mortality.3,7

REFERENCES


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