

Step-up Approach for Pancreatic Necrosis: A Case Report and Review of the Technique and Literature

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ABSTRACT

Necrotizing pancreatitis carries a very high rate of mortality and complications for these sick patients. Recent literature supports the delay in operative procedures as long as possible to decrease morbidity and mortality. Minimally invasive procedures can avoid laparotomy, but also introduce specific complications requiring immediate or secondary open operative treatment. Minimally invasive procedures require unique expertise and therefore should only be performed at specialized centers. This is a case report that describes a complicated patient with acute pancreatitis, necrotizing infection of a pseudocyst, intrusion of the pseudocyst to the common bile duct, among other complications. We describe the clinical and operative approach.

Keywords: Pancreatic necrosis, Pancreatitis, Pancreatic abscess.

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ABSTRACTO

Pancreatitis necrosante tiene una tasa muy alta de mortalidad y de complicaciones en estos pacientes enfermos. La literatura reciente apoya el retraso de procedimientos operatorios en un esfuerzo en reducir la morbilidad y la mortalidad. Los procedimientos mínimamente invasivos pueden evitar la laparotomía, pero también introducen complicaciones específicas que requieren un tratamiento abierto operatorio inmediato o secundario. Los procedimientos mínimamente invasivos requieren experiencia única y por lo tanto sólo debe realizarse en centros especializados. Este es un caso que describe un paciente con pancreatitis aguda complicada, infección necrotizante de un pseudoquistes, la intrusión del pseudoquistes con el conducto biliar común, entre otras complicaciones de esta enfermedad. Se describe el abordaje clínico y quirúrgico.

Palabras claves: Pancreatitis con necrosis, Absceso pancreático.

INTRODUCTION

Pancreatitis, especially acute pancreatitis, is still a very common reason for hospitalization in the United States.^{1,2} In approximately one quarter of these patients, the clinical course will be complicated by necrosis of the pancreas, leading to complications, such as infection, multiorgan system failure and ultimately death.^{3,4} Since infection of pancreatic necrosis triggers most of the complications, surgical intervention in this setting is warranted.³⁻⁸

For many years, the operation of choice in patients suffering from infected pancreatic necrosis has been open necrosectomy.⁹ However, performing an extensive debridement in the setting of a potential systemic inflammatory response and malnourishment carries a high morbidity and almost-prohibitive mortality that is quoted at up to 40% in some series.¹⁰ Since this procedure carries an unacceptable risk of death, surgeons and gastroenterologists have explored the possibility of performing less invasive procedures including open or endoscopic gastric drainage, percutaneous drainage and minimally invasive retroperitoneal necrosectomy.¹¹⁻¹³

One technique that has gained favor in the literature is known as the 'step-up approach'.^{14,15} The 'step-up approach' is a two-stage procedure. The first stage consists of percutaneous drainage of the collection.^{16,17} In most cases, the infected pancreatic tissue is thick and will not be completely drained by low caliber drains. The second stage consists of enlargement of the drain tract and performance of a necrosectomy with minimally invasive techniques.¹⁸

In a multicentered randomized trial, the step-up approach was compared with open necrosectomy. End points of comparison included new onset multiorgan system failure, respiratory failure, renal failure, circulatory failure, bleeding complications, enterocutaneous fistula, pancreatic fistula, new onset diabetes and development of incisional hernia. Although the procedure had no significant effect on mortality, patients assigned to the step-up approach had a lower rate of incisional hernias, new-onset diabetes and new onset multiorgan system failure.¹⁴

In a recent consensus statement, experts made recommendations regarding timing and type of procedures for patients suffering from infected pancreatic necrosis. The group recommended that in the patient with acute pancreatitis, presence of infected fluid collections in the setting of clinical deterioration and sepsis warranted operative intervention. The group went on to state that simple deterioration despite intensive medical support including ERCP for cholangitis in the absence of documented infection did not warrant operative intervention, including radiological, endoscopic or surgical drainage or necrosectomy. The group also commented on the high morbidity and mortality of open necrosectomy, favoring the utilization of less invasive techniques, including radiological or endoscopic drainage,

with the goal to postpone or obviate the need for surgical debridement.¹⁹

In summary from the literature search, we can conclude regarding intervention:

1. Noninfected collections do not require intervention unless the patient has severe symptoms as a consequence of these, such as biliary or gastrointestinal obstruction.
2. Infected acute necrotic collections occasionally require intervention. Early open surgery is associated with high morbidity and mortality, therefore, thoughtful consideration should be given to radiological or endoscopic procedures to avoid or temporize surgery until the patient is physiologically stable to tolerate a more involved intervention.

Description of the Technique

The procedure is begun by making an incision around the drain. The tract of the drain is dilated by careful digital

manipulation. Dilation of this tract can be also obtained by high water pressure using the laparoscopic irrigation device.

For optimal results and removal of the undrained pancreatic tissue, a 30° laparoscope can be placed through this tract concurrent with the suction device. This will allow for removal of the necrotic pancreatic tissue under direct visualization.²⁰ There is no need for insufflation, due to the fact that the cavity is not collapsible.

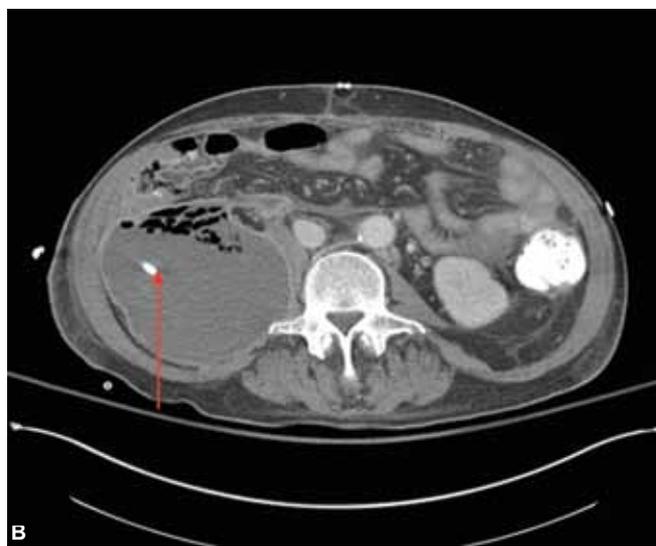
After removal of the tissue, a large drain should be placed to keep the track open and avoid reaccumulation of fluid in the collection.²¹

CASE REPORT

We describe a case of a 65-year-old male who presented with complicated necrotizing pancreatitis. He developed a large pseudocyst that caused obstruction of the biliary tract as well as gastric outlet obstruction. This pseudocyst became infected, as evidenced by extensive gas within the



Figs 1A and B: CT scan: (A) After cystgastrostomy, (B) before cystgastrostomy



Figs 2A and B: (A) Before percutaneous drain placement, (B) after percutaneous drain placement, arrow pointing at the drain

cyst. It was elected to perform a cyst gastrostomy since all the collections seemed to communicate. The pseudocyst got immediately smaller (Figs 1A and B).

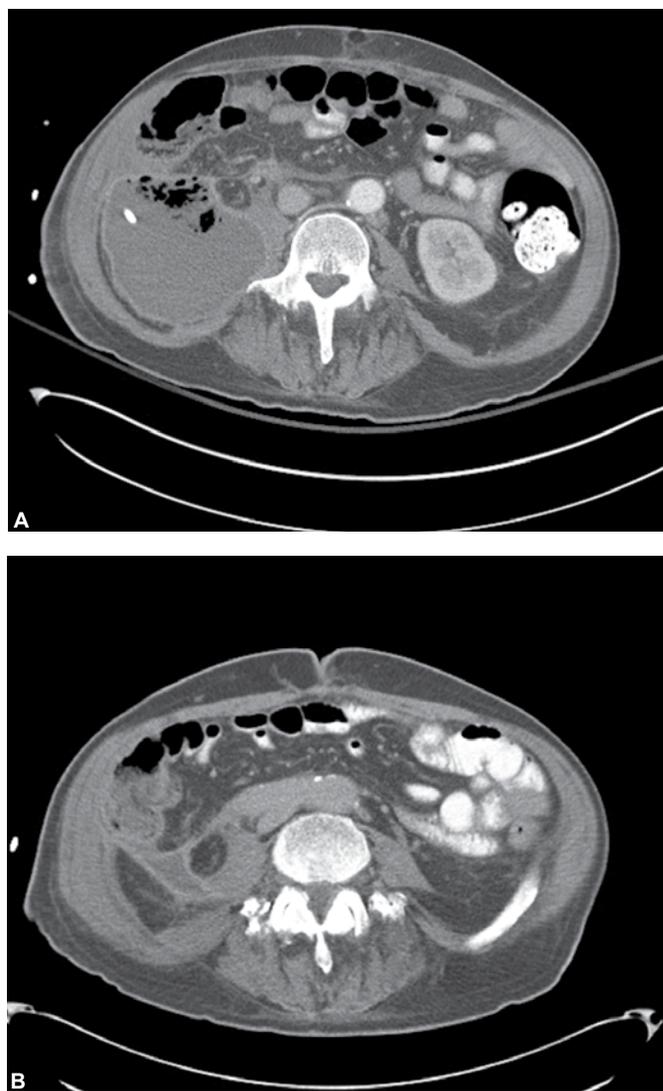
Twenty-one days after this procedure, the patient was admitted again with increased abdominal pain and, on repeat CT scan, there was a new collection on the right side the patient's abdomen.

We proceeded to place a percutaneous drain with minimal output and negligible clinical results (Figs 2A and B). A step-up approach was performed in this gentleman resulting in complete resolution of the abscess (Figs 3A and B).

Since the step-up approach, the patient has had a 6 months follow-up without any complications. He is currently tolerating regular diet and doing well.

CONCLUSION

The step-up approach is a feasible technique allowing for the treatment of pancreatic necrosis.



Figs 3A and B: (A) Before step-up procedure, (B) after step-up procedure

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