

# Minimally Invasive Approaches in Necrotizing Pancreatitis

Marinis A

According to the revised Atlanta classification [1] severe acute pancreatitis (SAP) is defined as the presence of persistent organ failure (>48 hours), with or without local complications. In this classification local complications are categorized based on the presence of necrosis (with or without) and the time from presentation (< or > 4 weeks) These include: i) acute peripancreatic fluid collection, ii) acute necrotic collection, iii) pancreatic pseudocyst, and iv) walled-off necrosis. Infection of each of these complications increases dramatically the mortality, which is 20-30% in patients with infected necrosis and organ failure [2].

Acute collections of fluid usually resolve spontaneously. If they persist, a disrupted or disconnected pancreatic duct should be considered. With time, maturation of the inflammation leads to encapsulation of the fluid to form a pancreatic pseudocyst, which is managed surgically according to widely accepted indications.

Surgical treatment of pancreatic necrosis is usually avoided in the early phase (acute <4 weeks) because of the high morbidity and mortality of intervention, and is indicated only when secondary infection ensues, leading to clinical deterioration of the patient. Intervention is preferred when necrosis has developed a well-defined inflammatory wall ("walled-off"), which allows more easy separation of the necrotic debris from the adjacent, well demarcated, healthy tissues.

In contrast to the past era of open necrosectomy, a variety of minimally invasive approaches have been developed. These include percutaneous, endoscopic and laparoscopic techniques for debridement and necrosectomy, with the development of a graded step-up approach:

- i. Percutaneous drainage (PD), as a bridge to debridement,
- ii. Minimally invasive retroperitoneal (MIRP) necrosectomy,
- iii. Video-assisted retroperitoneal debridement (VARD),
- iv. Endoscopic transgastric necrosectomy (ETN), and

v. Laparoscopic cystogastrostomy.

In this issue, two very interesting original articles deal with this approach: a. Polydorou et al [3], report successful treatment of three patients with culture-confirmed infected pancreatic necrosis and sepsis. Percutaneous drainage catheters were used as guides to insert a guidewire, over which the path was dilated and two trocars were inserted and, finally, necrosectomy was performed with video assistance, and b. Dronacharya et al [4] report the results of retrospective study managing patients with necrotizing pancreatitis with percutaneous catheter drainage (PCD), using the step-up-approach. Approximately half of these patients avoided surgery and failure of PCD was associated with high BISAP and APPACHE-II scores, the extent of pancreatic necrosis and the CT severity index.

The concept of the 3 Ds (delay, drain and debride) is the basis of the step-up approach. Many studies confirm the superiority of the minimally invasive techniques over the open necrosectomy techniques, in terms of decreased morbidity and mortality, earlier resolution of sepsis and multiple organ failure and lesser ICU and hospital length of stay [5]. Finally, the technique is chosen based upon the location of the necrotic area and requires endoscopic and laparoscopic skills.

## References

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Marinis A MD, PhD, FACS  
Consultant General Surgeon, 1<sup>st</sup> Department of Surgery,  
Tzaneion General Hospital, Piraeus, Greece

Corresponding author: Marinis Athanasios, MD, PhD, FACS  
Consultant General Surgeon, 1<sup>st</sup> Department of Surgery,  
Tzaneion General Hospital, Zanni & Afentouli 1, 18536, Piraeus, Greece  
e-mail: drmarinis@gmail.com