Endoscopic Ultrasonography–guided Drainage of Pancreatic Collections, Including the Role of Necrosectomy

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KEYWORDS

• Acute pancreatitis • Pancreatic necrosis/therapy • Endoscopic therapy
• Minimally invasive • Pancreatitis/adverse events • Drainage/methods
• Therapeutic irrigation

KEY POINTS

- Pancreatic ductal injury often leads to development of pancreatic fluid collections with or without solid necrotic debris.
- Endoscopic intervention is considered the current standard of care for management of symptomatic pancreatic fluid collections.
- Cross-sectional imaging is paramount before any endoscopic intervention to determine the cavity size, location of potential access sites, and relevant adjacent anatomic structures.
- Direct endoscopic necrosectomy can be performed using various techniques but remains a time-intensive procedure.
- The most common adverse events associated with endoscopic management of pancreatic collections are bleeding and perforation.

INTRODUCTION

Injury to the pancreas may occur as a result of varying insults; however, regardless of the cause, resultant parenchymal inflammation occurs, often leading to disruption of the main pancreatic duct and/or secondary branches. Following ductal

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injury, leakage of pancreatic contents promotes formation of fluid-filled pancreatic or peripancreatic collections with or without the presence of solid debris. A minority of patients (approximately 5%–10%) develop evidence of glandular necrosis, often in combination with necrosis of adjacent structures.[1] Clinically severe acute pancreatitis evolves over several weeks, culminating in walled-off necrosis (WON) in many cases (**Fig. 1**).[1,2] The aim of endoscopic therapy in this setting is to provide drainage of liquid contents and mechanical removal of necrotic tissue, if necessary. Endoscopic intervention remains the current standard of care for patients with WON following acute pancreatitis. Minimally invasive approaches, including flexible endoscopic and percutaneous therapy, either alone or in combination, are commonly used by most major medical centers.[3] This article focuses on the indications, techniques, and outcomes of endoscopic therapy and management of pancreatic fluid collections (PFCs).

Indications and Timing of Intervention

Cross-sectional imaging should be performed before initiation of endoscopic intervention to assess the properties of the collection (ie, size, shape, wall thickness, contents), discern adjacent relevant vascularity, and ascertain the relationship between the cavity and true gastrointestinal lumen. Thorough review of cross-sectional imaging is crucial. The computed tomography (CT) and MRI appearance of PFCs can vary widely. Compared with CT, MRI reliably delineates liquid and solid components. On CT, nondependent air seen within a cavity indicates the presence of solid debris but does not represent infection with gas-forming microorganisms, as is often cited. Most commonly, such nondependent air enters through a fistulous connection from the gastrointestinal lumen. As described later, this fistulous tract can be used for transmural entry into the cavity, either for egress of liquefied contents or to enable endoscopic debridement. Coronal CT/MRI images can be useful, often complementing the standard axial images (see **Fig. 1**). Although liquefactive necrosis is generally evident, pancreatic necrosis can appear as nonenhancement of the pancreatic parenchyma and surrounding structures or may be more indistinct, resembling a pseudocyst. This uncertainty often compels therapeutic endoscopists to pursue standard

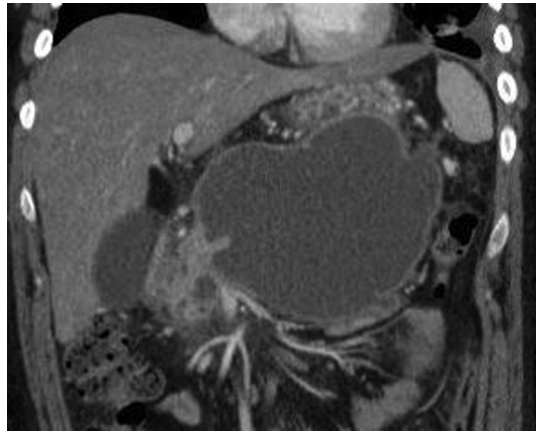

Fig. 1. Coronal computed tomography image of WON. The collection is compressing the stomach, and the patient had clinical gastric outlet obstruction.