

The Role of Endoscopic Retrograde Cholangiopancreatography in Management of Pancreatic Diseases



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KEYWORDS

- Acute pancreatitis • Autoimmune pancreatitis • Chronic pancreatitis
- Pancreatic divisum • Pancreatic duct leaks • Pancreatic duct strictures
- Sphincter of Oddi dysfunction • Pancreatic cancer

KEY POINTS

- Endoscopic retrograde cholangiopancreatography is an effective platform for a variety of therapies in the management of benign and malignant disease of the pancreas.
- Over the last 50 years, endotherapy has evolved into the first-line therapy in the majority of acute and chronic inflammatory diseases of the pancreas.
- Gastroenterologists must maintain knowledge of procedure indication and sufficient procedure volume to handle complex pancreatic endotherapy.

BACKGROUND

Endoscopic retrograde cholangiopancreatography (ERCP) was first described in 1968 as a diagnostic tool for evaluating disorders of the pancreas or biliary tract.¹ Since then, advances in technique and instruments such as endoscopic sphincterotomy, lithotripsy, and stenting have evolved ERCP from a diagnostic test to a therapeutic platform for a variety of interventions.^{2–5} The usefulness of ERCP in management of malignant obstruction is well-established.⁶ In this article, we discuss the usefulness of endoscopic retrograde pancreatography (ERP) in the management of benign diseases, including acute pancreatitis (AP), recurrent AP (RAP), and chronic pancreatitis

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(CP), as well as pancreatic duct (PD) leaks, fistulas, and fluid collections. In addition, we will address techniques and interventions used for reducing the risk of post-ERCP pancreatitis (PEP).

ACUTE PANCREATITIS

AP is common, with more than 200,000 admissions annually in the United States.⁷ The 2 most common etiologies of AP are heavy alcohol consumption and gallstones, which account for up to 80% of AP.^{8,9} In up to 20% of cases, no etiology can be identified readily after a thorough history, physical examination, and abdominal imaging.¹⁰ In prospective studies of a single episode of idiopathic AP, endoscopic ultrasonography (EUS) has been shown to reliably identify the cause in up to 79% of cases, with common findings including choledocholithiasis, biliary sludge, CP, or tumor not seen on cross-sectional imaging.^{11,12} As such, EUS is recommended in individuals 40 years of age or older with AP and no identifiable etiology.^{13,14}

Given the accuracy of EUS and favorable safety profile, ERCP after a single episode of unexplained pancreatitis is generally not recommended.¹⁵ However, there are certain situations, such as gallstone pancreatitis, wherein early ERCP can facilitate an endoscopic intervention in AP that has favorable outcomes.

Gallstone Pancreatitis

Gallstone pancreatitis accounts for between 35% and 60% of all cases of AP.¹⁶ Most cases are typically self-limiting, but up to 25% of cases can be severe with associated end-organ dysfunction and death, with a mortality rate between 5% and 10%.^{17,18} An increase in the alanine aminotransferase of greater than 3 times the upper limit of normal has a positive predictive value of gallstone pancreatitis of 95%.¹⁹ The exact mechanism by which passage of gallstones results in pancreatitis is unknown. One theory proposes that the pathophysiology of gallstone pancreatitis occurs in 2 phases. The first phase is the passage of a small gallstone through the distal duct, initiating the attack of AP. A patent ampulla allows for flow of pancreatic digestive enzymes and a mild attack. In the second phase, additional stones pass through the duct or a stone becomes lodged in the distal duct resulting in either a transient or a continuous obstruction in the common bile duct and PD. The obstruction prevents outflow of activated pancreatic enzymes, PD hypertension, and increased pancreatic enzyme activation.²⁰ Prior studies have shown an increased incidence of retained stones in severe forms of gallstone pancreatitis compared with mild cases, which forms the theoretic basis for ERCP in AP.²¹

Data on the optimal management of suspected choledocholithiasis in patients with acute biliary pancreatitis are conflicting. Numerous trials have investigated the role of early ERCP (within 72 hours of admission) with or without sphincterotomy compared with conservative management with disparate results.^{22–27} Some studies indicated a benefit for early ERCP, whereas others had worse outcomes compared with conservative management. Given the heterogeneity of these studies, multiple metaanalyses and systematic reviews on this topic have been conducted with different inclusion criteria and, therefore, have arrived at different conclusions.^{28–32} Many of the original studies included a high percentage of patients who underwent ERCP without identification of any common bile duct stone.²⁵ In addition, one of the key confounders in this literature is the presence of cholangitis, which has clear data to support the use of early ERCP for decompression.³³

The most recent metaanalysis on this subject, which specifically excluded cholangitis, showed no significant benefit for early ERCP with or without sphincterotomy on

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