

# Endoscopic Management of Acute Cholecystitis

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## KEYWORDS

- Endoscopy • Acute cholecystitis • Gallbladder drainage
- Endoscopic ultrasonography • Endoscopic ultrasound guided gallbladder drainage

## KEY POINTS

- In high-risk surgical patients with acute cholecystitis, alternative treatment modalities are required for gallbladder decompression.
- For patients in whom temporary decompression is preferred, nasocystic drainage guided by endoscopic retrograde cholangiopancreatography is an effective treatment option.
- For patients who require permanent decompression, transluminal drainage guided by endoscopic ultrasonography is an alternative treatment option.

Cholecystectomy, performed either laparoscopically or through open surgery, is the mainstay of the treatment of acute cholecystitis, which affects nearly 20 million Americans annually.<sup>1</sup> Although the laparoscopic approach is less invasive and is the treatment of choice for a majority of patients, some critically or terminally ill patients may not be able to withstand the morbidity of surgery.<sup>2</sup> Therefore a less invasive procedure, such as percutaneous gallbladder drainage, could be a life-saving treatment option or serve as bridge to elective surgery.<sup>3-7</sup> Percutaneous drainage is technically easy to perform; however, the physical discomfort from the catheter renders this a less desirable option for patients with limited life expectancy from terminal cancer or those patients with contraindications to the procedure.

This article reviews the 2 endoscopic treatment approaches that are feasible for patients with acute cholecystitis, particularly for high-risk surgical candidates who require gallbladder decompression: (1) transpapillary drainage of the gallbladder at endoscopic retrograde cholangiopancreatography (ERCP) by nasocystic catheter or stent placement; and (2) endoscopic ultrasonography (EUS)-guided gallbladder drainage via the transluminal route.

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## PROCEDURAL INDICATIONS AND CHOICE OF TECHNIQUE

Endoscopic decompression of the gallbladder is usually attempted only when standard treatment options fail or are contraindicated. Specifically, endoscopic decompression is considered in patients with acute or acalculous cholecystitis who (1) are critically ill or have severe comorbidity that precludes a surgical cholecystectomy and/or (2) have contraindications for placement of a percutaneous cholecystostomy tube, such as the presence of large amounts of ascites, hypercoagulopathy, or an intervening loop of bowel between the diaphragm and the liver that precludes percutaneous access. Endoscopic management is contraindicated, however, in patients (1) with perforated gallbladder, (2) who are too unstable to undergo endoscopy or sedation, or (3) who are pregnant, because of the risks of radiation exposure from a prolonged procedure.

For patients who require only temporary gallbladder decompression as a bridge to elective surgery, transpapillary drainage by means of stenting or nasocystic catheter placement are effective options.<sup>8-10</sup> The advantage of nasocystic catheters over stents is that they can be flushed periodically, whereas stents tend to clog easily. On the other hand, nasocystic catheters, unlike stents, are prone to dislodgment and can be a source of physical discomfort to patients. Some experts advocate the deployment of nasocystic catheters as a temporizing measure followed by placement of transpapillary internal stents as a bridge to elective surgery.<sup>8</sup> For patients who require a more definitive treatment, such as high-risk surgical candidates, EUS-guided transluminal drainage of the gallbladder by means of internal stenting could offer permanent palliation.<sup>11</sup>

### *Transpapillary Gallbladder Drainage*

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ERCP can aid in gallbladder decompression by facilitating access to the cystic duct.<sup>8-10</sup> After successful cannulation of the common bile duct using an ERCP catheter, a 0.035-inch (0.889 mm) guide wire (stiff or hydrophilic) is advanced into the cystic duct and then the gallbladder (**Fig. 1**). In patients with a difficult cystic duct configuration, the choice of a biliary catheter may vary: for a left-side cystic duct takeoff, a flexible-tip catheter (Swing-tip; Olympus Medical Systems, Tokyo, Japan) or a rotatable sphincterotome may be used; for a right-sided takeoff, a standard sphincterotome may be used because it usually bows toward the cystic duct when it takes off on the right side. Alternatively, the sphincterotome may be advanced deep into the bile duct, bowed, and then withdrawn slowly, so that the tip may position itself into the cystic duct opening on pull-down. When the gallbladder or the cystic duct cannot be opacified because of cholecystitis, a balloon is inflated below the expected takeoff of the cystic duct, and an occlusion cholangiogram obtained to allow cystic duct visualization. Alternatively, the cystic duct can be identified by mere manipulation of the guide wire. In some patients, SpyGlass-assisted cystic duct cannulation has been performed successfully, with good technical outcomes.<sup>12,13</sup> Once the guide wire is advanced and coiled within the gallbladder lumen, the catheter is exchanged for a 5F to 7F pigtail nasocystic drainage tube or a 7F to 10F double-pigtail transpapillary stent. The length of the stent depends on lengths of the cystic duct and gallbladder lumen from the major duodenal papilla. When large-caliber (10F) stents are placed, a biliary sphincterotomy should be performed to minimize the chances of post-ERCP pancreatitis caused by the fulcrum effect.

### *EUS-Guided Transluminal Gallbladder Drainage*

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The therapeutic linear-array echoendoscope is used for EUS-guided transgastric/transduodenal gallbladder drainage. The drainage access point chosen is based on

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