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**Multimodal treatments of “gallstone cholangiopancreatitis”**

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**Abstract**

Gallstone cholangiopancreatitis is a potentially life-threatening pathology which requires quick intervention involving endoscopists, interventional radiologists, anesthesiologists and surgeons in relation to clinical conditions. Treatment possibilities are varied, especially with current progress in advanced endoscopy, interventional radiology, and minimally invasive surgery. The following treatments are available: endoscopic sphincterotomy (ES) with stone extraction followed by laparoscopic cholecystectomy; simultaneous endoscopic stone extraction with laparoscopic cholecystectomy (rendezvous technique); combined laparoscopic cholecystectomy and common bile duct (CBD) exploration; open CBD exploration; ES post-cholecystectomy; percutaneous placement of biliary drains for unstable patients, followed by percutaneous cholangioscopy; and lithotripsy with different approaches, including a laser and balloon dilation of the sphincter of Oddi. Each technique has its strengths and weaknesses, and there is great discussion in the literature on choosing the ideal approach based on the patient's clinical conditions.

**Key Words:** Cholangiopancreatitis; <sup>1</sup> Common bile duct stones; Endoscopic retrograde cholangiopancreatography; Endoscopic sphincterotomy; Laparoscopic common bile duct exploration; Percutaneous treatment

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**Core Tip:** Urgent biliary decompression represents the treatment of gallstone pancreatitis associated with cholangitis. There are different techniques for common bile duct (CBD) clearance. Endoscopic retrograde cholangiopancreatography is not always feasible, as in the case of poor clinical conditions, large stones, or biliodigestive derivations. We analyzed the different approaches for decompression of the CBD in the case of “cholangiopancreatitis.”

#### TO THE EDITOR

We read with interest the article by Isogai<sup>[1]</sup> about the definition of “gallstone cholangiopancreatitis,” and the assessments regarding the aetiology and prognosis.

Although the study is very well worded, we would like to add a few comments.

We think that it is complex to distinguish, with the only dosage of alanine aminotransferase, between a liver disease or the onset of multi-organ failure and cholangitis associated with pancreatitis<sup>[2]</sup>. However, the reflections expressed in the document stimulate the research activity to realize diagnostic methods that allow distinguishing “cholangiopancreatitis” from other adverse events that can worsen the clinical course of acute pancreatitis.

Moreover, we would like to integrate the different CBD obstruction management techniques even if this was not the main focus of the article.

Acute pancreatitis complicated by cholangitis due to CBD obstruction must be approached with an urgent decompression of the biliary tract to improve the pathology course. There are different approaches to decompress CBD, such as endoscopic retrograde cholangiopancreatography (ERCP), concerning the clinical conditions, the diameter of the stones, and any previous biliodigestive derivation.

Urgent ERCP is recommended in patients with gallstone pancreatitis and concomitant cholangitis. The guidelines suggest that ERCP can improve the course in patients with CBD obstruction even in the absence of cholangitis<sup>[3-5]</sup>.

In the study by Schepers *et al*<sup>[6]</sup>, it appears that urgent ERCP associated with sphincterotomy may help in cholangitis complicating acute pancreatitis or in persistent obstruction of CBD. ERCP results in excellent clearance of CBD; nevertheless, in a certain proportion of patients, it may be necessary to resort to multiple procedures. ERCP associated with sphincterotomy is an aggressive approach which can lead to complications in up to 10% of patients<sup>[7,8]</sup>, including bleeding, cholangitis, pancreatitis, duodenal perforation, and CBD lesions. A previous study showed that ERCP could lead to an increase in respiratory complications<sup>[9-13]</sup>. Sedation and possible aspiration can lead to respiratory complications in clinically critically ill patients. In the study of Schepers *et al*<sup>[6]</sup>, in the urgent ERCP group there were more intensive care unit admissions.

Our clinical approach to patients with severe clinical conditions, unable to withstand general anesthesia or deep sedation is to subject these patients to percutaneous decompression of the CBD with a drain placed under local anesthesia and possible subsequent clearance of the CBD with the use of percutaneous cholangioscopy and laser.

Percutaneous biliary drainage can also have complications such as infections, and it can become blocked or displaced. However, it allows performing cholangiographies that can evaluate the possible presence of residual stones or the complete clearance of the biliary tract throughout their entire course. Once the patient's clinical condition has been improved, surgery and rendezvous ERCP can be carried out; if endoscopic treatment is not feasible, a laparoscopic exploration of CBD (LCBDE) could be performed.

In the study of Aawsaj *et al*<sup>[14]</sup> the LCBDE has been used in both elective and emergency contexts. A transcystic approach is preferable whenever possible. It is preferable to perform cholecystectomy during the same hospitalization to avoid recurrent gallstone pancreatitis.

A previous review by Dasari *et al*<sup>[15]</sup> showed no difference in clearance, morbidity, and mortality between open surgery and ERCP. In the ERCP group there were significantly more retained stones than in the open surgery group (16% *vs* 6%;  $P = 0.0002$ ).

Laparoscopic cholecystectomy (LC) + LCBDE had fewer retained stones (8%) than two-staged pre-operative ERCP plus LC or LC plus post-operative ERCP (14%) ( $P =$  not significant). In the study by Ding *et al*<sup>[16]</sup>, there were more recurrent CBD stones in the two-stage group at longer-term follow-up (9.5% *vs* 2.1%;  $P = 0.037$ ). In the endoscopic group, there were more procedures per patient ( $P < 0.001$ ) and most costly expenses ( $P = 0.002$ ).

The study of Bansal *et al*<sup>[17]</sup> showed a shorter hospital stay in the single-stage group but no differences in major complications between the two groups.

Percutaneous or endoscopic balloon dilation represents a valid alternative to ES. It is simpler, has fewer complications in terms of bleeding and sphincter of Oddi lesions but has a lower performance in CBD clearance than ES<sup>[18,19]</sup>. In the current era, endoscopic approaches guarantee excellent results in the management of the biliary tract. Surgical management of CBD can be a viable option for patients in good condition with large diameter stones, previous biliodigestive derivations, and in case of failure of the endoscopic approach<sup>[20-22]</sup>. In addition, laparoscopic treatment can be performed with single anesthesia. Exploration of CBD by intraoperative choledochoscopy and simultaneous biliary clearance in a single time is not very aggressive and safe, with excellent results for treating "gallstone cholangiopancreatitis" and should only be performed in high volume centres with surgeons with proven experience. The laparoscopic management of CBD stones also reduces the average hospital stay, the anesthetic risks associated with two different procedures, and the cost of multiple hospitalizations.

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