Endoscopic Papillary Large-Balloon Dilatation in Patients with Billroth II Gastrectomy

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Endoscopic sphincterotomy (ES), introduced by Classen et al. [1] as a minimally invasive technique to retrieve common bile duct (CBD) stones in high-surgical-risk patients, has become the foundation of endoscopic therapy for patients with biliary disease, with a ~90 % rate of successfully removing CBD stones with basket extraction or balloon sweeping.

As an alternative to ES, Staritz et al. [2] described in 1983 endoscopic papillary balloon dilatation (EPBD) with the aim of avoiding complications associated with ES in the short term such as pancreatitis, perforation, bleeding, and infection, or in the long term such as papillary stenosis and bacterial biliary contamination.

EPBD is effective for the treatment of CBD stones with retrieval rates of 80–100 % [3]. The efficacy of ES and EPBD in the removal of CBD stones has been compared with multiple prospective studies and with at least two recent meta-analyses [4, 5], which have concluded that EPBD is associated with lower rates of bleeding and perforation than ES [3–6] but with a higher rate of pancreatitis [4, 5, 7, 8]. Moreover, EPBD is also associated with a lower retrieval rate of CBD stones [4, 5] which, combined with higher rates of pancreatitis, are the main reasons why most endoscopists choose ES over EPBD for CBD stone extraction. Thus, EPBD has become second line, mainly

used for endoscopic treatment of CBD stones in patients with liver cirrhosis or coagulopathy.

Ten years ago, one single-center retrospective study reported that ES followed by endoscopic papillary large-balloon dilation (EPLBD) of the papillary orifice (10–20 mm) improved the extraction rate of large CBD stones [9]. Further studies confirmed that ES followed by EPLBD is an effective and safe technique for retrieving large CBD stones after failure of common extraction techniques using balloon or basket [10–12]. EPLBD performed after ES effectively removed up to 87–95 % of large CBD stones in patients after the failure of balloon or basket extraction attempts [9–11]. EPLBD could also minimize the chances of pancreatitis since the existing sphincterotomy enables the dilation to proceed upward rather than circumferentially [10]. The most common complication described with this technique is bleeding that occurs in 8.3 % of patients.

EPLBD after ES has also been successfully used for extraction of large CBD stones in patients with Billroth II gastrectomy [13]. ES in Billroth II gastrectomy patients is more difficult than in patients with normal anatomy due to the need for the inverted papillary approach despite the development of specific sphincterotomes. Thus, EPBD may be particularly suited for Billroth II gastrectomy patients, although the previously mentioned limitations restrict its utility.

Since EPLBD alone is effective and safe in patients with normal anatomy [14], performing EPLBD without previous ES in patients with Billroth II gastrectomy is the next challenge. The outcomes of this procedure in 40 patients are described in this issue of *Digestive Diseases and Sciences* [15]. Jang et al. performed EPLBD alone to treat patients following Billroth II gastrectomy with difficult-to-extract CBD stones. Fourteen patients with four or more

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CBD stones and 26 patients with CBD stones larger than 10 mm were included. The median values of stone size, bile duct diameter, and balloon dilation diameter were 10.5 mm (range, 5–28 mm), 13 mm (range, 10–20 mm), and 12 mm (range, 10–17 mm), respectively. Complete clearance of the CBD was achieved in all patients; in 37 patients (92.5 %), the initial ERCP was successful. Mild acute pancreatitis developed in two patients (5 %) after the procedure, and three more patients (7.5 %) had asymptomatic hyperamylasemia. Remarkably, late complications occurred only in patients with gallbladder stones, including recurrence of CBD stone in one patient and cholecystitis in four patients. Perforation, bleeding or severe pancreatitis did not occur.

Based on these findings, EPLBD improves the outcomes of EPBD, enabling extraction of large CBD stones without increasing the complication rate. Thus, EPLBD without previous ES could be especially helpful in Billroth II gastrectomy patients with large CBD stones in whom clearance of the CBD with EPBD alone is difficult. Therefore, EPLBD can avoid other methods of treating large CBD stones such as mechanical lithotripsy, extracorporeal shockwave lithotripsy, or electrohydraulic lithotripsy to achieve complete clearance of the CBD [10]. In their study [15] and in other reports [10], only one patient underwent mechanical lithotripsy to achieve complete extraction of the CBD stones. These data are in contrast to the outcomes described with EPBD in which the papillary orifice is less distended and mechanical lithotripsy is more often needed [3]. Moreover, as it has been stated previously, EPBD is associated with a higher rate of post-procedure pancreatitis [4, 5, 7, 8], but the complication rate reported by Jang et al. [15] is remarkably low, with only two mild cases of postprocedural pancreatitis (5 %).

The study by Jang et al. [15] has some limitations: firstly, as the authors have stated in the discussion, it is a single-center retrospective analysis with a small sample size. Therefore, the complication rate might have been underestimated. With EPLBD alone, the protective effect attributed to the previous ES [10] is not present. It would be expected that the rate of pancreatitis was at least equal to that of EPBD, which was higher than the risk associated with ES alone [4, 5, 7, 8]. Secondly, the reason why the authors did not perform ES in this subgroup of patients is not stated. This could represent a selection bias. Thirdly, comparison was not made with alternative techniques such as ES followed by EPLBD or EPBD plus mechanical lithotripsy. Randomized trials comparing EPLBD alone with these alternative techniques should be conducted in order to assess the true advantage of one technique over the other.

Until those data are available, EPLBD alone could be considered as a possible alternative technique to achieve

CBD clearance in patients with Billroth II gastrectomy and large CBD stones. It is easy to perform, as well as feasible, effective, and safe without the need for advanced endoscopic skills.

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