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## Can Endoscopic Nasobiliary Drainage Involving Two Catheters Be Used to Treat Various Conditions?

Dong Wook Lee and Ho Gak Kim

Department of Internal Medicine, Catholic University of Daegu School of Medicine, Daegu, Korea

See "The Clinical Usefulness of Simultaneous Placement of Double Endoscopic Nasobiliary Biliary Drainage" by Hong Jun Kim, Sung Koo Lee, Choong Heon Ryu, et al., on page 542-548.

### INTRODUCTION

The bile drainage methods in obstructive jaundice include percutaneous transhepatic biliary drainage (PTBD) via a percutaneous approach and endoscopic biliary drainage (EBD) through endoscopy. Due to the recent developments in endoscopic accessories and concerning reports on the disadvantages of PTBD, EBD is currently being favored over PTBD. Moreover, Kawakami et al.<sup>1</sup> stated that PTBD is an invasive procedure and that it may be associated with not only early complications, such as tube dislocation, hemobilia, hepatic artery pseudoaneurysm, hepatic artery-bile duct fistula, and occlusion of the portal vein, but also late complications, such as catheter tract implantation metastasis caused by bile leakage.

EBD can be classified as either external biliary drainage such as endoscopic nasobiliary drainage (ENBD) or internal biliary drainage such as endoscopic biliary stenting (EBS). Although EBS is associated with less discomfort and better quality of life, it does not permit the assessment of bile color and

output, performance of cholangiography, and sampling of bile culture, and may also be associated with the risk of retrograde infection and stent occlusion, migration, and dislodgement. In contrast, ENBD, which can overcome these limitations, may lead to other problems, such as increased pharyngeal discomfort and nasal discharge, as well as intentional removal of the catheters by the patients.

In the clinical setting, many cases of segmental cholangitis caused by an undrained segment of the bile duct cannot be resolved through only a single drainage, and studies of the effectiveness of multiple ENBD catheter placements have only included patients with hilar cholangiocarcinoma (CCA).<sup>2,3</sup> Hence, the report on the use of double-ENBD catheters by Kim et al.<sup>4</sup> in *Clinical Endoscopy* is groundbreaking and novel. They conducted a study on various patient groups, which included 20 patients with hilar CCA, 12 patients with hepatocellular carcinoma (HCC), three patients with anastomosis site stricture that developed after liver transplantation, and three patients with Mirizzi syndrome.

However, after double-ENBD catheter insertion, statistically significant improvements were observed in liver function parameters such as total bilirubin, aspartate aminotransferase (AST), and alanine aminotransferase, only in the patients with hilar CCA, but not in the patients with HCC, anastomosis site stricture, and Mirizzi syndrome. The lack of statistical significance in the other groups was attributed to the small number of patients in each group and the wide range of data. In fact, only three patients were included in the Mirizzi syndrome group, and the *p*-value was 0.312, despite a major

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Correspondence: Ho Gak Kim  
Department of Internal Medicine, Catholic University of Daegu School of Medicine, 33 Duryugongwon-ro 17-gil, Nam-gu, Daegu 42472, Korea  
Tel: +82-53-650-4041, Fax: +82-53-624-3281, E-mail: hgkim@cu.ac.kr

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decrease in the AST values from  $415.0 \pm 504.4$  to  $28.3 \pm 4.9$  after double-ENBD. Therefore, statistically significant differences could have been observed if data were collected from a larger number of patients and if the measured values were analyzed using log, root, or arcsine transformation.

Moreover, Kim et al.<sup>4</sup> did not report the success rate of the double-ENBD catheter insertion procedure. Recently, in a study involving 62 hilar CCA patients who received EBD for preoperative biliary drainage, Arakura et al.<sup>2</sup> performed additional EBD in 16 patients who had unsuccessful drainage. The endoscopic procedure was successful in eight patients—i.e., 50% of patients.<sup>2</sup> Moreover, studies on endoscopic nasogallbladder drainage (ENGBD) reported that the technical success rates ranged from 64% to 89%.<sup>5,6</sup> In their study, Kim et al.<sup>4</sup> used two types of duodenoscopes—JF-260V and TJF-260V (Olympus Optical, Tokyo, Japan)—for the insertion of two 5-Fr ENBD catheters; the duodenoscopes had working channel sizes of 3.7 and 4.2 mm, respectively. The sum of the outer diameters of the 2 catheters is smaller than that of the working channel, and hence, this could not have affected the technical success rate. However, poor endoscopic operability and kinking of the 2 ENBD catheters could have occurred during the procedures, which could have influenced the technical success rate.

The mean procedure time required for the insertion of the ENGBD catheter alone is reportedly  $35.5 \pm 19.9$  minutes.<sup>7</sup> The procedure time for double-ENBD or combined ENBD and ENGBD would possibly be longer. The insertion of the drainage catheter through selective cannulation in the direction of the desired bile duct is not always successful. Moreover, multiple attempts at cannulation in the direction of the desired bile duct can prolong the procedure time, and could consequently increase in the rate of procedure-related complications.

The authors also reported that post-procedure hyperamylasemia/hyperlipasemia occurred in eight patients (18.4%), and that overt pancreatitis occurred in one patient (2.6%). Of these patients, three underwent endoscopic sphincterotomy (ES) and five had already received ES previously. As the insertion of two 5-Fr catheters into the ampulla can cause obstruction of the main pancreatic duct and compression of the pancreatic orifice, the use of ES should be carefully considered. However, since ES can increase the risk of retrograde cholangitis, as well as the risk of procedure-induced complications such as perforation and bleeding, some endoscopists prefer to perform prophylactic pancreatic stent insertion prior

to double-ENBD catheter insertion.<sup>8</sup> Recently, Artifon et al.<sup>9</sup> reported that routine ES may increase the complication rate in cases where the inserted metal stents had larger diameters than the double-ENBD catheter. This aspect remains controversial and requires further research.

The effectiveness of double-ENBD catheter insertion in hilar CCA patients has already been confirmed through several studies. However, this is the first study that applied double-ENBD to treat segmental cholangitis caused by other diseases. Although a small number of patients were enrolled in this study, it is still significant as it confirms that double-ENBD catheter insertion could be used in various diseases. However, to extend the application of double-ENBD to clinical practice, well-designed prospective multicenter studies are needed.

### Conflicts of Interest

The authors have no financial conflicts of interest.

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