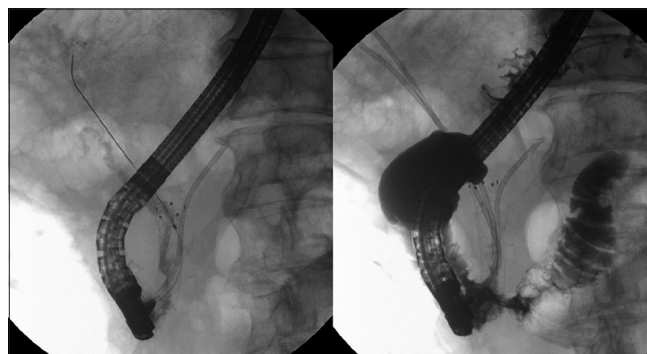


# The large-balloon occlusion technique: A new method for conversion to EUS-guided hepaticogastrostomy in patient with prior self-expanding metal stent placement

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EUS-guided hepaticogastrostomy (EUS-HGS) is sometimes performed as re-intervention in patients who have transpapillary biliary stent dysfunction associated with conditions such as gastric outlet obstruction. We describe a 92-year-old man in whom a covered self-expanding metal stent (SEMS) had been placed because of distal biliary obstruction caused by unresectable duodenal papilla cancer. The tumor invaded the distal portion of the duodenum, causing food retention and recurrent cholangitis due to duodenobiliary reflux. Although stent-in-stent placement of a plastic stent was performed, stent dysfunction soon occurred, requiring frequent replacement of the stent [Figure 1]. The SEMS was difficult to remove because of tumor ingrowth. We, therefore, designed a new method for large-balloon occlusion and successfully performed EUS-HGS [Video 1 and Figure 2]. After EUS-HGS, cholangitis did not occur until the patient died of duodenal papilla cancer. We previously designed and reported the large-balloon occlusion technique designed for patients with many bile-duct stones that are difficult to remove.<sup>[1]</sup> The new technique

is based on this procedure. A balloon catheter is inserted into the bile duct upstream to the site of malignant biliary obstruction to induce occlusion.



**Figure 1.** Left: In another hospital, the patient had undergone the placement of an SEMS to manage distal biliary obstruction caused by unresectable duodenal papilla cancer. A pancreatic plastic stent had been inserted to prevent pancreatitis. Cholangiography showed that contrast media flowed into the duodenum. The SEMS was patent. Right: Duodenal papilla cancer invaded the distal portion of the duodenum, causing gastrointestinal stricture

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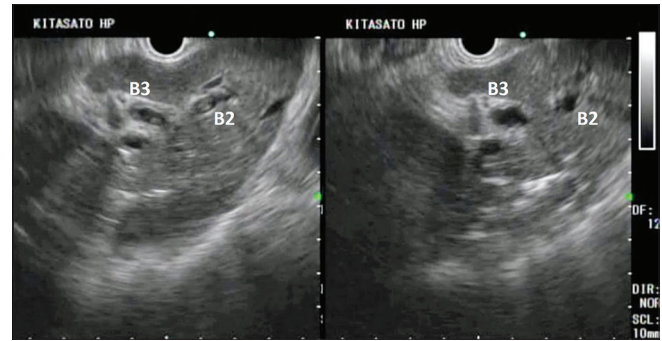


**Figure 2.** A 13- to 15-mm balloon catheter (REN, Biliary Balloon Dilation Catheter, Kaneka Co, Inc.) was used to perform EUS-HGS in the presence of biliary obstruction

Contrast media and physiological saline solution are then injected into the bile duct to artificially dilate the intrahepatic portion of the bile duct [Figure 3] and perform EUS-HGS [Figure 2]. If the SEMS can be removed, endoscopic nasobiliary drainage is temporarily performed.<sup>[2]</sup> However, endoscopic nasobiliary drainage is not feasible if the SEMS has been placed in the extrahepatic bile duct, similar to our patient. Adjustment of the expansion site of the balloon can prevent the injection of unnecessary contrast media into the gallbladder. This new technique is a useful procedure for performing EUS-HGS in patients who have undergone the placement of a SEMS for the distal malignant biliary obstruction that is difficult to remove.

#### *Declaration of patient consent*

The authors certify that they have obtained all appropriate patient consent forms. In the form the



**Figure 3.** Left: Before injecting physiological saline solution, the diameter of the B3 segment was 3 mm. The wall of the bile duct was thickened because of repeated cholangitis. A hyperechoic lesion suggestive of biliary sludge was found in the bile duct. Right: About 60 ml of physiological saline solution was injected, dilating the diameter of B3 to 5 mm

patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initial will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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#### *Conflicts of interest*

There are no conflicts of interest.

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