EDITORIAL

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Migration of covered expandable metal stents after endoscopic ultrasound-guided hepaticogastrostomy: stent covering versus stent design?

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See "Outcomes of partially covered self-expandable metal stents with different uncovered lengths in endoscopic ultrasoundguided hepaticogastrostomy: a Japanese retrospective study" Takeshi Okamoto, Takashi Sasaki, Tsuyoshi Takeda, et al., Clin Endosc 2024;57:515–526.

Endoscopic ultrasound-guided hepaticogastrostomy (EUS-HGS) was first described over 20 years ago.[1] Techniques for EUS-HGS have not been standardized. Plastic stents and self-expandable metal stents (SEMS) have been used to form the HGS tract. Japanese guidelines recommend that covered SEMS should be preferred over plastic stents to prevent and minimize bile leakage from the stomach and liver into the peritoneum. However, a major concern when placing a covered SEMS is that the coating prevents the stent from embedding into the surrounding tissue, leading to stent migration. Inward (toward the liver) and outward (toward the stomach) stent migration can occur, both of which can lead to life-threatening events, such as perforation and bile leakage, if migration occurs before a fistula can form between the left intrahepatic ducts and the gastric wall (presumed to occur 2 to 4 weeks after placement).

Various covered SEMS have been designed in Asia, specifically for EUS-HGS, some of which have an uncovered portion at the end in the liver.[2] This uncovered portion is embedded in the tissue and anchors the stent while allowing for drainage from other branches. In this issue of *Clinical Endoscopy*, Okamoto et al.[3] examined the outcomes of patients undergoing EUS-HGS for malignant biliary obstruction using partially covered SEMS, whereby the internal portion (liver side) was uncovered for lengths of 5 mm or 20 mm. The patient outcomes were compared in terms of stent migration. It is important to note that aside from the length of the uncovered portion (5 or 20 mm), three distinct stent designs were used in this retrospective study. None of the samples were laser cut, but all had a degree of external flanging or a specific type of coating. This potentially introduces variables other than the degree of the uncovered stent portion.

Sixty-two patients underwent EUS-HGS during the study period. In 32 patients, a partially covered SEMS with a 5 mm uncovered portion (short-uncovered group) was placed on the liver side, and in 30 patients, a 20 mm uncovered portion was placed on the liver side (long-uncovered group). Overall adverse events (AEs) were similar between the two groups. The following AEs occurred only in the short-uncovered group: segmental cholangitis (n=1), inward stent migration (n=2; 1 complete and 1 incomplete), and death (n=1). Interestingly, peritonitis due to bile leak was seen in three patients in the

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long-uncovered group and in only one patient in the short-uncovered group. Also, surprisingly, recurrent biliary obstruction due to the HGS stent was seen more commonly in the long-uncovered group (40% vs. 28%), including early recurrent obstruction (≤3 months) (17% vs. 9%). Stent obstruction is caused by debris and tissue hyperplasia at uncovered ends. The authors concluded that although longer uncovered portions were associated with recurrent obstruction due to tissue hyperplasia, they avoided the fatal AE of complete outward stent migration into the stomach.

This study poses the following questions: When it comes to EUS-HGS, is the correct stent design or choice based on the degree of uncovering, or is it more important to focus on stent design? Should an "anchoring" plastic stent be routinely placed within an HGS SEMS? The authors have experience with EUS-HGS and have performed more than 300 such procedures for benign and malignant indications. At our institution, we nearly universally place a fully covered SEMS that is only Food and Drug Administration approved for intraductal placement for the relief of malignant biliary obstruction.[4,5] This stent has anti-migration fins along its entire length. We routinely place a 7 Fr plastic double pigtail stent in the covered SEMS. We have witnessed a rare partial inward migration such that the stent was noted to be within the gastric wall at the time of removal or endoscopic reintervention. However, clinical peritonitis was not observed, and all SEMS were successfully removed. In addition, stent removal can easily be achieved in patients with benign disease but may not be possible when partially covered stents are used, as in this series. Stent-in-stent removal, in which a fully covered stent is placed coaxially within a partially covered SEMS, may be necessary.

In our experience using a fully covered SEMS with anti-migration features, we have not conclusively observed segmental cholangitis. Delayed development of perigastric/perihepatic abscesses was observed, although this was likely the result of spilled biliary contents at the time of insertion. One of the Achilles' heels of current devices is the lack of an electrocautery-enhanced tip. Thus, HGS stent placement involves a series of steps and device exchanges, as well as tract dilation, during which bile leakage is inevitable and can be prevented by puncture/wire exchange followed by cautery-enhanced placement of SEMS.

Based on my observations and personal experience, I believe that stent development for HGS should focus less on the length of the internal uncovered stent portion and more on developing fully covered SEMS with better delivery systems that incorporate cautery-enhanced tips and stents with anti-migration features to minimize AEs following EUS-HGS.

Conflicts of Interest

Todd H. Baron is a consultant and speaker for Boston Scientific, ConMed, Cook Endoscopy, Olympus, and W.L. Gore.

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