

Endeavors to prevent stent malfunction: new insights into the risk factors for recurrent biliary obstruction

Sung-Jo Bang

Department of Internal Medicine, Ulsan University Hospital, University of Ulsan College of Medicine, Ulsan, Korea

See “Impact of sarcopenia on biliary drainage during neoadjuvant therapy for pancreatic cancer” by Kunio Kataoka, Eizaburo Ohno, Takuya Ishikawa, et al. Clin Endosc 2024;57:112–121.

Most patients with malignant biliary obstruction (MBO), commonly caused by pancreatobiliary malignancies, including pancreatic, bile duct, and periampullary cancers, require biliary drainage to treat jaundice and improve their quality of life. Self-expandable metal stents (SEMSs) have been recommended over plastic stents for the treatment of MBO,¹ and covered SEMSs (C-SEMSs) are preferred for the preoperative drainage of distal biliary obstruction. Cholecystitis and pancreatitis are troublesome complications associated with the placement of fully covered SEMS (FC-SEMS) for distal biliary obstruction.² Moreover, major causes of stent malfunctions include stent occlusion by sludge or food material, tumor ingrowth or overgrowth, and stent migration.³

Considerable efforts have been made to overcome stent malfunction, and diverse solutions have been suggested for the prevention of this complication. Most studies have focused on stent types and procedural modifications.⁴ Representative examples include antireflux stent designs to prevent stent occlusion,

drug-eluting biliary metal stents to reduce stent ingrowth, and plastic stent anchoring to prevent SEMS migration.⁵

Host-related factors may also play an important role in stent malfunction due to the significant variations in the duration of stent patency observed in individuals with the same stent model. In the current issue of *Clinical Endoscopy*, Kataoka et al.⁶ reported that sarcopenia is an independent risk factor for recurrent biliary obstruction (RBO) in patients with pancreatic cancer who have undergone neoadjuvant therapy.

Although sarcopenia has garnered attention as a poor prognostic factor for postoperative survival after the resection of pancreatic cancer and extrahepatic biliary malignancies,⁷ few studies have evaluated the impact of sarcopenia on biliary stents.⁸

Koya et al.⁸ reported that sarcopenia is an independent risk factor for RBO in patients with unresectable MBO. They identified stent occlusion as the primary cause of RBO and also discovered that sludge or stones were common in patients with sarcopenia. The authors explained that low physical activity in patients with severe sarcopenia is associated with impaired gallbladder motility, which increases the formation of biliary sludge or stones. Koya et al.⁸ suggested that antireflux metal stents could be useful in preventing RBO caused by sludge or food impaction.

However, Kataoka et al.⁶ discovered that migration was the most common cause of RBO, the effect of sarcopenia on biliary stent migration remains unclear. The differences in the com-

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Correspondence: Sung-Jo Bang

Department of Internal Medicine, Ulsan University Hospital, 25 Daehakbyeongwon-ro, Dong-gu, Ulsan 44033, Korea

E-mail: sjbang@uuh.ulsan.kr

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mon causes of RBO between the two studies may be related to the different enrollment criteria used. The options for metallic stents include both uncovered SEMS (UC-SEMS) and C-SEMSs, Kataoka et al.⁶ used only FC-SEMS. Although FC-SEMS is generally preferred for preoperative biliary drainage, UC-SEMS can also be used.⁹ If migration is identified as the main cause of RBO in patients with sarcopenia, UC-SEMS can be a viable alternative for biliary drainage among such patients. This is supported by the fact that migration very rarely occurs in UC-SEMS.

Two stent diameters were used in a study by Kataoka et al.⁶ Among the 55 included patients, 50 received an FC-SEMS with a diameter of 8 mm, whereas only five received an FC-SEMS with a diameter of 10 mm. Interestingly, the authors reported no significant difference in the RBO between the two groups (i.e., those who received an FC-SEMS with diameters of 8 and 10 mm). However, considering that migration is a major cause of RBO in patients with sarcopenia, premature conclusions regarding the effects of stent diameter on the results should be avoided, given the limited number of patients who received the 10 mm diameter stent which precluded statistical analysis.

Identifying the causes of stent malfunction is critical for improving stent patency duration. Hilar strictures, duodenal invasion, tight strictures requiring dilatation, high bilirubin levels before stenting, and chemotherapy are known risk factors for frequent RBO.^{1,10} Unfortunately, most of these risk factors are not correctable. Therefore, identifying correctable risk factors is important to prevent RBO.

Previous studies of RBO have focused on stent-related concerns. However, the study by Kataoka et al.⁶ on the issue mentioned above has the potential to draw significant attention to the individual risk factors for RBO. Weight loss is one of the most common symptoms of malignancy, and new-onset or poorly controlled diabetes mellitus is common in patients with pancreatic cancer. Therefore, sarcopenia is likely to be prevalent in patients with pancreatic cancer. Strategies for improving sarcopenia are another problem that must be addressed. Further studies are needed to evaluate whether improving sarcopenia can reduce RBO.

Conflicts of Interest

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ORCID

Sung-Jo Bang

<https://orcid.org/0000-0001-7345-3279>

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