Editorial

Self-expanding metal stents for preoperative biliary drainage in patients receiving neoadjuvant therapy for pancreatic cancer

Amanpal Singh, Jeffrey H. Lee

Department of Gastroenterology, Hepatology, and Nutrition, M D Anderson Cancer Center, Houston, Texas, USA

Corresponding to: Amanpal Singh, MD, MS. Department of Gastroenterology, Hepatology, and Nutrition, M D Anderson Cancer Center, Houston, Texas, USA. Email: asingh3@mdanderson.org.

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Improving outcomes in management of pancreatic cancer remains a challenge, owing to advancement of the disease at presentation. Only 15-20% patients are diagnosed at a resectable or borderline resectable stage (1). During the past 1-2 decades, adjuvant chemotherapy with surgery first approach did not bring a significant survival benefit (2-4). Recent studies have shown that neoadjuvant chemoradiation therapy results in better post surgical outcomes for potentially resectable pancreatic cancer (5-7). This has led to change in management strategy in many pancreatic cancer centers from initial surgery to now neoadjuvant therapy followed by surgery, especially in borderline resectable pancreatic cancer. In this approach, preoperative therapy lasts approximately 3 months and is followed by a 1-month recovery period before surgery. Therefore, patients who have biliary obstruction due to cancer in the head of the pancreas need drainage while receiving the treatment and waiting to undergo surgery. Effective biliary drainage is essential to prevent liver toxicity due to chemotherapeutic agents. Furthermore, during the period of neoadjuvant chemoradiation, patients may become immuno-compromised, and the patients may not tolerate recurrent biliary obstruction with cholangitis, or any complications from repeated endoscopic procedures. Therefore, it is crucial to avoid unnecessary interventions including endoscopic procedures during this period. Among various kinds of biliary stents, self-expanding metal stents (SEMS) have been increasingly used in treating malignant distal biliary obstruction because of their long duration of patency. By design, SEMS have a large diameter and minimal surface area on which bacterial biofilm can form, thus reducing the risk of obstruction.

In the study by Adams *et al*. published in this issue of Journal of Gastrointestinal Oncology, the authors have compared outcomes of placing self-expanding metal stents (SEMS) *vs*. plastic stents for pancreatic cancer patients undergoing neoadjuvant therapy. In this retrospective study, 52 patients with pancreatic cancer underwent ERCP and had placement of either SEMS or plastic stents before or during the treatment. Keeping in line with prior studies, the complications were 7 times higher among patients with plastic stents than with metal stents. Not only the complications were more common, their occurrence was also significantly earlier in the plastic stent group. In addition, the study showed a higher rate of hospitalization in patients with plastic stent group. Finally, the authors concluded that SEMS, not plastic stents, should be used in this setting, due to a lower rate of complications, hospitalizations, and longer stent patency.

Similarly, multiple retrospective and prospective studies have proven superiority of SEMS to plastic stents in drainage of malignant bile duct obstruction. Three studies published by our group found that, compared with plastic stents, SEMS placement reduced the number of ERCPs and the episodes of cholangitis in patients who underwent preoperative chemoradiation (8-10). We found no increase in pancreaticoduodenectomy related morbidity or mortality among patients who underwent SEMS placement for pre-operative drainage. Likewise, other centers have published their experience comparing the outcomes of biliary SEMS to plastic stents. In a retrospective study of 29 patients with pancreatic cancer undergoing pre-operative biliary drainage, authors found no stent dysfunction or complications during the pre-operative period in patients who underwent SEMS placement compared to 39% patients requiring re-interventions in the plastic stent group (11). Congruently, in a prospective study evaluating the outcomes of SEMS in 55 patients receiving neoadjuvant therapy for pancreatic cancer, stent malfunction occurred only in 15% of patients by 260 days (12). There were 27 patients in the study who later underwent pancreaticoduodenectomy, and the presence of stent did not interfere with surgery in any patient. SEMS has also been proven to be more cost-

effective.

In summary, with recent advances in neoadjuvant chemoradiation therapy, there seems to be a significant improvement in overall survival among potentially resectable patients who undergo pancreaticoduodenectomy after the treatment. Consequently, the approach for neoadjuvant chemoradiation therapy prior to pancreaticoduodenectomy is gaining wider acceptance and more patients with pancreatic cancer will require pre-operative biliary drainage in the future. Current data unequivocally supports the use of SEMS for patients presenting with malignant biliary obstruction due to potentially resectable pancreatic cancer undergoing neoadjuvant chemoradiation therapy. On the other hand, for patients who have resectable pancreatic cancer, many centers may consider to proceed with curative surgery upfront. In such cases where patients may be undergoing curative surgery without neoadjuvant therapy, SEMS or any other stents may not be warranted. Lastly, when the stage of disease and treatment plan are not completely defined at the time of diagnosis, the vast majority of patients with symptomatic malignant distal bile duct obstruction may be best served by placement of SEMS rather than a plastic stent at the initial endoscopic intervention, due to the superior patency, lower rate of complications, and cost-effectiveness of SEMS.

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