Self-Expanding Covered Metallic Stent as a Bridge to Surgery in Esophageal Cancer: Impact on Oncologic Outcomes

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BACKGROUND: Self-expanding metallic stents (SEMSs) have been used as a bridge to surgery, relieving dysphagia and maintaining nutrition, in patients with operable but obstructive esophageal cancer (EC). However, the impact of SEMSs on oncologic outcomes is unknown. The aim of this study was to evaluate the impact of SEMS insertion before EC surgery on oncologic outcomes.

STUDY DESIGN: From 2000 to 2010, two thousand nine hundred and forty-four patients who underwent an operation for EC with a curative intent were included in a multicenter European cohort. Through propensity score analysis, patients who underwent SEMS insertion (SEMS group, n = 38) were matched 1:4 to control patients who did not undergo SEMS insertion (control group, n = 152).

RESULTS: The SEMS and control groups were comparable according to age, sex, tumor location, clinical stage, American Society of Anesthesiologists score, dysphagia, malnutrition, neoadjuvant treatment administration, histology, and surgical procedure. Self-expanding metallic stent insertion was complicated by tumoral perforation in 2 patients. The in-hospital postoperative mortality and morbidity rates for the SEMS vs control groups were 13.2% vs 8.6% (p = 0.370) and 63.2% vs 59.2% (p = 0.658), respectively. The R0 resection rate (71.0% vs 85.5%; p = 0.041), median time to recurrence (6.5 vs 9.0 months; p = 0.040), and 3-year overall survival (25% vs 44%; p = 0.023) were significantly reduced in the SEMS group, and the 3-year locoregional recurrence rate was increased (62% vs 34%; p = 0.049). The results remained significant after excluding SEMS-related esophageal perforations. After adjusting for confounding factors, SEMS insertion was a predictor of poor prognosis (hazard ratio = 1.6; p = 0.038).

CONCLUSIONS: Self-expanding metallic stent insertion, as a bridge to surgery, has a negative impact on oncologic outcomes in EC. Clinicaltrials.gov ID: NCT 01927016. (J Am Coll Surg 2015;220: 287—296. © 2015 by the American College of Surgeons)

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Esophageal cancer (EC) patients commonly present with substantial dysphagia and malnutrition because they often have advanced tumors at the time of diagnosis.[1] Malnutrition during multimodal therapy can lead to treatment delays, higher morbidity and mortality, poorer treatment response, and a compromised long-term prognosis.[2] There are several options for ensuring adequate caloric intake in malnourished EC patients, all of which have potential drawbacks. Gastrostomy placement can compromise the stomach before surgery and expose patients to infection.[3] Nasogastric or nasojejunal feeding is uncomfortable, can lead to aspiration pneumonia, and can decrease the patient's quality of life.[4] Operative or radiologic jejunostomy has a risk of infection, displacement, obstruction, or surgical complications.[5] Parenteral nutrition is inferior to enteral nutrition because of the risks for thrombophlebitis, sepsis, and gut bacterial translocation, as well as increased costs.[2] Endoscopic dilation offers only a transient benefit and can increase the rate of tumoral perforation.[6]

Oral nutrition can be restored with the use of self-expanding covered metallic stents (SEMSs), and the use of SEMSs is established for the palliation of dysphagia in unresectable EC.[6] The indications for SEMS use have expanded to include relief from dysphagia in patients with resectable EC and for those who require neoadjuvant treatment before resection.[7-16] Self-expanding covered metallic stent insertion can immediately relieve dysphagia and allow for the maintenance of oral nutrition,[17] and a series of articles highlight that their use is associated with safe early results.[7-16] However, the impact of SEMS insertion on oncologic outcomes in the neoadjuvant setting is unknown. The objective of this multicenter study was to evaluate the impact of SEMS insertion before EC surgery on oncologic outcomes.

METHODS

Patients

Data from 2,944 consecutive adult patients undergoing surgical resection for EC (including Siewert type I and II junctional tumors) with curative intent, in 30 French-speaking European centers between 2000 and 2010, were retrospectively collected through a dedicated website (http://www.chirurgie-viscerale.org). The collected data included demographic parameters, details on the perioperative and surgical treatments, postoperative outcomes, histopathologic analysis, and long-term oncologic outcomes. Missing or inconsistent data were obtained from e-mail exchanges or phone calls with the referral center. Patients were not included if the surgical, tumoral and/or nutritional data required for the analysis were missing. Additionally, only patients with squamous cell cancer or adenocarcinoma were included, resulting in 2,279 available patients. As part of an initial exploratory analysis, we established the relationship between SEMS and the patient's age, sex, American Society of Anesthesiologists score, dysphagia, malnutrition (weight loss >10% of physical weight during a 6-month period), pretherapeutic clinical tumor stage (cTNM) and location, histologic subtype, neoadjuvant treatment and radiotherapy administration, and the extent of surgery. All patients who underwent SEMS insertion (SEMS group, n = 38) were matched, through a propensity score analysis, 1:4 to a control group of patients who did not undergo SEMS insertion (control group, n = 152). Investigators were blinded to the postoperative and oncologic outcomes during the selection process. The study was accepted by the regional IRB on July 15, 2013, and the database was registered on the Clinicaltrials.gov website under the identifier NCT 01927016.

Pretherapeutic workup

Pretherapeutic investigations were performed according to national guidelines (www.tncd.org) and were reported elsewhere.[18] The pretherapeutic cTNM classification, performed before any stenting, was based on endoscopic ultrasound and/or CT scan in cases where tumor stenosis precluded full endoscopic ultrasound examination.

Therapeutic strategy

All patients were evaluated by a multidisciplinary team and treated with curative intent according to French national guidelines (www.tncd.org).

Neoadjuvant treatment

Patients with cT3/T4 tumors and/or cN+ disease received neoadjuvant treatment. Neoadjuvant chemotherapy was based on 5-FU and platinum-based drug administration for 2 to 4 cycles, and neoadjuvant chemoradiation—usually combined with 5-FU and platinum-based drugs as well as concomitant 45 Gy radiotherapy—was used for locally advanced tumors for which preoperative staging suggested that R0 resection would be questionable as well as in squamous cell carcinomas.

Surgical resection

Details of the resection technique have been described elsewhere.[19] Briefly, curative resection consisted of a transthoracic en bloc esophagectomy, including abdominal and mediastinal lymphadenectomy, as well as anastomosis placement above the level of the azygos vein. For supracarinal tumors, cervical lymphadenectomy was performed, and the anastomosis was placed in the neck. A transhiatal