Editorial Commentary

The impact of postoperative complications after minimally invasive esophagectomy on long-term survival

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We read with great interest the recent publication by Fransen *et al*. evaluating the impact of postoperative complications on long-time survival after Ivor-Lewis or Mckeown minimally invasive esophagectomy (MIE) for esophageal cancer (EC) (1). They found that overall postoperative complications didn't influence long-term survival, whereas the occurrence and severity of anastomotic leakage (AL) after a MIE negatively affected long-term survival of EC patients (1).

In the current study, 915 patients were identified for further analysis (Mckeown MIE, n=419; Ivor Lewis MIE, n=496), mostly located at the distal half of the esophagus and adenocarcinoma as the dominant tumor histology (1). They didn't address the fact that esophageal adenocarcinoma (EAC) and esophageal squamous cell carcinoma (ESCC) are two distinct entities and, thus, treating them as a single entity may decrease the analytical power.

Esophagectomy with extended lymphadenectomy remains the mainstay of treatment for localized EC. Meanwhile, it is one of the most invasive procedures with high morbidity, even if MIE is no exception. The impact of postoperative complications on long-term survival of EC remains unclear. The optimal operative approach, anastomotic technique and location of anastomosis has been debated, which may affect operative morbidity and survival. It is usually thought that the association of intrathoracic esophagogastric anastomoses (IEA) with a low leakage rate but potentially high morbidity and mortality, lower rate of left recurrent nerve injury and the association of cervical esophagogastric anastomoses (CEA) with a higher leakage rate but more manageable complications. The severity of AL ranges from asymptomatic to death after sepsis followed by multiple organ failure. It is important to separately report outcomes of intrathoracic and cervical anastomotic leaks (2). MIE maybe sometimes increase the risk of complication compared with open esophagectomy. The explanation is that surgeon's learning curve of introducing MIE, even in high-volume centers (3). In this study, all participating centers had a case load of 20 esophagectomies per year, either minimally invasive, hybrid, or open procedures (1). There is disagreement about the definition of high-volume centers, and such events are generally associated with complication and prognosis. Authors did not know at what stage in the learning curve these patients were included and which patients were selected to undergo MIE (1). Since the early 2000s, MIE has become increasingly prevalent in the treatment of EC. New surgical procedures and other invasive therapies are complex interventions, the assessment of which is challenged by factors that depend on operator, team, and setting, such as learning curves, etc. Patient safety and oncological outcomes can be substantially compromised during learning curves (4). Surgeons' overall experience and comfort with each surgical modality may be more important than the modality itself in determining short-term outcomes and long-term outcomes for EC (5).

Additionally, the different anastomotic techniques used may also have affected anastomotic stricture, reflux, pyloric stricture postoperatively and quality of life (QOL). Fransen *et al.* (1) reported pulmonary complication was no significant association with long-term Survival, and data of superior mediastinal lymph node was lacking. Lymph nodes around the recurrent laryngeal nerve (RLN) is common and should be resected because of their having the most frequent metastasis especially in thoracic ESCC. Although it depends on the extent of lymph node dissection, the reported incidence of recurrent laryngeal nerve paralysis (RLNP) after esophagectomy varies from 8.3% to 40.9%. The risk of pulmonary complications is greatly increased in patients with RLNP because of an increased likelihood of aspiration pneumonia (6). Those patients with severe hoarseness due to permanent RLNP, resulting in poor quantity of food intake at 24 months or less postoperatively and restricted daily activity and difficulty in talking at 60 months or more after the operation (7). Deterioration of the general condition may have negatively affected QOL, delay or cessation of additional therapy, and long-term survival. In a previously published meta-analysis, patients with pulmonary complications or more complication had significantly decreased 5-year overall survival (8).

Multimodality therapy for locally advanced EC is associated with a significant survival benefit. Most patients received neoadjuvant treatment (chemotherapy alone, radiotherapy alone, or chemoradiotherapy) before MIE, and baseline differences in the administration of neoadjuvant therapy between the uncomplicated, Clavien-Dindo grade I–II and grade ≥III could lead to an obvious bias in this analysis (1). In fact, optimal neoadjuvant mode is a more controversial issue in different histological type or stage. No adjuvant therapy was given in the present study (1). Relative to surgery alone, among patients received preoperative chemoradiotherapy with postoperative length of stay ≤10 days and no unplanned readmission, adjuvant chemotherapy (AC) was associated with approximately 40% lower risk of death among patients with residual nodal disease (9). It is unclear whether the outcomes of the present study were influenced if AC was used.

All in all, we congratulate the authors for the results of their study, and acknowledging serious AL would affect long-term outcomes. With the development of surgical techniques and relevant research, we believe that there will be more eligible cases included. Until then, the other outcomes should be interpreted with caution.

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