



Challenge for establishment of international benchmarks for complications associated with esophagectomy

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Surgery has been the standard treatment for esophageal cancer, regardless of histology. Esophagectomy for esophageal cancer is technically challenging procedures, including resection of esophagus and restoration of gastrointestinal continuity. Therefore, esophagectomy is associated with high postoperative morbidity rate, which depends on many factors such as operative approach, patient's comorbidities and hospital and surgeon volume but vary widely among publications. It is also well-known that invasive surgical procedure or postoperative complications can lead to adverse effects on both short and long-term outcome for esophageal cancer. However, many hospitals and surgeons have trouble tracking postoperative complications and may lack the data necessary to analyze and take appropriate steps to fix problems. We cannot improve our surgical quality if we do not measure it, therefore it is essential to establish a nationally validated, risk-adjusted, outcomes-based system to measure and improve the quality of surgical care. Blencowe *et al.* summarized the short-term outcomes after esophagectomy by systematic literature searches between 2005 and 2009 and concluded that outcome reporting after esophageal cancer surgery has heterogeneity of target populations and procedures and inconsistent due to methodological rigor (1). To standardize outcomes reporting in esophagectomy, Esophagectomy Complications Consensus Group (ECCG) developed and proposed system for defining and recording postoperative complications associated with esophagectomy, which provides an infrastructure to standardize international

data collection and facilitate future comparative studies and quality improvement projects (2).

Most recently, Low *et al.* prospectively collected the data regarding postoperative complications according to the definition of the ECCG in high volume centers from different countries in an article published in the *Annals of Surgery* (3). Between 2015 and 2016, 2,704 esophagectomies were enrolled in the ESODATA database website. The overall incidence of postoperative complications in this study was 59.0%, which was twice compared to the previous comprehensive study. The authors suggested that this high complication rate is more likely to be true rate of complications after esophagectomy because they found remarkable little variation of complication between the contributing 24 high volume centers. The specific definition like ECCG platform can help us to report comprehensively the postoperative complications after esophagectomy, leading to provide a useful international benchmark for reporting outcomes after esophagectomy.

However, this study has several limitations to be considered. First, we should consider that the difference of the patient's characteristic and treatment strategy enrolled in this study exist between countries because it is likely that almost contributing institutions are composed of western countries. Treatment strategy especially depends on country and institution in addition to histological type, tumor location. Consequently, difference of surgical procedures such as transhiatal or transthoracic esophagectomy, minimally invasive procedure and the

extent of lymph node dissection were observed. Indeed, data relating to surgical procedures was highly variable (transhiatal *vs.* transthoracic: 79.9% *vs.* 20.1%, open *vs.* minimally invasive esophagectomy: 52.1% *vs.* 47.9%). Second, this study does not include the long-term survival data. Further analysis of the impact of benchmark on long-term outcomes after esophagectomy is required, because postoperative complications can lead to adverse effects on cancer survival. Finally, the definition for benchmark should be discussed as Gutschow *et al.* commented on this article (4). Benchmarking is used as a popular quality-improvement tool in economic practice because it is objective, anonymous, universally applicable and simple to interpret. Generally, benchmark describes a “best possible” outcome under ideal circumstances. Staiger *et al.* introduced a structured approach on how to establish the optimal outcome of a surgical procedure or any invasive intervention and addressed that several key steps are needed to establish benchmarks for a specific surgical procedure (5). Staiger *et al.* propose that a large scale of patient with low risk are suitable for creating benchmark. Based on this proposal, Schmidt *et al.* previously generated benchmarks for the patients with low comorbidity undergoing total minimally invasive transthoracic esophagectomy (6). The data in this study were derived from a selected “optimal” group of patients with low comorbidity that underwent total minimally invasive transthoracic esophagectomy in expert institutions only. Therefore, more detailed results such as surgical approach and patient selection in each institute should be presented and compared with previous report to confirm robust benchmark.

Regardless of this limitation, a nation-wide population study was conducted in the Netherlands and the outcome are reported according to definition of the ECCG and reporting postoperative complications according to ECCG platform is feasible useful as international benchmarks (4). This system is expected to provide routine international application in each audits and clinical trials in terms of uniformity of outcomes after esophagectomy. However, it is to be noted that the validation in previous studies were conducted by high volume center. We previously reported that lower hospital case volume was identified as independent risk factors for surgery-related mortality by reviewing the Japanese National Clinical Database (7). Fransen *et al.* concluded that centralizing esophageal cancer surgery can improve morbidity, mortality and the overall survival of patients with esophageal cancer from literature

review (8). Given greater centralization of esophagectomy worldwide, we also believe that this benchmarks for postoperative complications after esophagectomy will be accepted widely in daily clinical practice, leading to improve surgical care, techniques, and training. However, furthermore prospective analysis is required to establish a valid benchmark for outcomes after esophagectomy.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

References

1. Blencowe NS, Strong S, McNair AG, et al. Reporting of short-term clinical outcomes after esophagectomy: a systematic review. *Ann Surg* 2012;255:658-66.
2. Low DE, Alderson D, Ceconello I, et al. International Consensus on Standardization of Data Collection for Complications Associated With Esophagectomy: Esophagectomy Complications Consensus Group (ECCG). *Ann Surg* 2015;262:286-94.
3. Low DE, Kuppasamy MK, Alderson D, et al. Benchmarking Complications Associated with Esophagectomy. *Ann Surg* 2019;269:291-8.
4. Gutschow CA, Staiger RD. Comment on: "Low DE, Kuppasamy MK, Alderson D, et al. Benchmarking Complications Associated With Esophagectomy. *Ann Surg* 2019;269:291-298". *Ann Surg* 2019. [Epub ahead of print].
5. Staiger RD, Schwandt H, Puhon MA, et al. Improving surgical outcomes through benchmarking. *Br J Surg* 2019;106:59-64.
6. Schmidt HM, Gisbertz SS, Moons J, et al. Defining Benchmarks for Transthoracic Esophagectomy: A Multicenter Analysis of Total Minimally Invasive Esophagectomy in Low Risk Patients. *Ann Surg* 2017;266:814-21.

7. Yoshida N, Yamamoto H, Baba H, et al. Can Minimally Invasive Esophagectomy Replace Open Esophagectomy for Esophageal Cancer? Latest Analysis of 24,233 Esophagectomies From the Japanese National Clinical Database. *Ann Surg* 2019. [Epub ahead of print].
8. Fransen LFC, Luyer MDP. Effects of improving outcomes after esophagectomy on the short- and long-term: a review of literature. *J Thorac Dis* 2019;11:S845-50.

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