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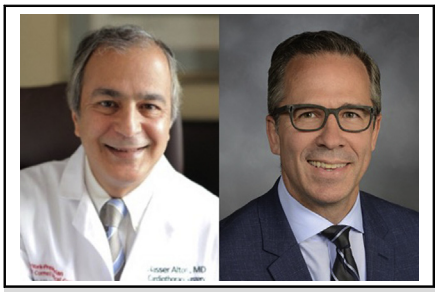
Commentary: Where is the leak? From the anastomosis or the database?

Nasser Altorki, MD, and Brendon Stiles, MD



Nasser Altorki, MD (*left*), and Brendon Stiles, MD (*right*)

CENTRAL MESSAGE

Anastomotic leaks after esophagectomy are associated with high mortality. Implementation of failure to rescue protocols is required to improve patients' outcomes.

Anastomotic leaks keep esophageal surgeons up at night, literally and figuratively. Even the most accomplished thoracic surgeons have leak rates of at least 5% to 10%, if not greater. And, as most surgeons know, the consequences of an anastomotic leak could be detrimental for patients, adversely affecting their length of hospital stay, their ability to eat, their future quality of life, and even their chances of making it out of the hospital alive. Such high stakes have spawned a huge body of literature aimed at determining factors associated with anastomotic leaks. The current manuscript by Chidi and colleagues[1] takes another shot at describing factors associated with anastomotic leaks, specifically asking the question of whether the site of anastomosis, cervical or thoracic, is associated with different leak rates following esophagectomy after neoadjuvant chemoradiation. To do so, the authors used a recent (2016-2017) cohort of matched patients from the American College of Surgeons' National Surgical Quality Improvement Program Esophagectomy Data File. This databases samples approximately 20% of esophagectomies performed at centers throughout the United States and includes esophagectomies performed by thoracic surgeons and general surgeons. Using these data, the authors found no difference in the rate of anastomotic leaks after neoadjuvant chemoradiation, with a leak rate of 12% after thoracic anastomoses and 14% after cervical anastomoses ($P = .09$).

What should we make of these data? Certainly, concern exists among surgeons that radiation to the gastric conduit for lower esophageal and gastroesophageal junction tumors or to the upper esophagus for higher tumors may affect anastomotic healing. The authors therefore seek to answer an important question. However, as with all such big database analysis, the question to ask is whether the database is suited to specifically answer the question at hand or whether "leakage" of key data points—tumor location, dose of radiation, reason for site of anastomosis, standard definitions for anastomotic leaks, institutional practices to evaluate for leaks—affects our ability to draw conclusions from the data. It cannot be underestimated how many subtle choices contribute to anastomotic leaks. For example, were the thoracic anastomoses performed early in the learning curve of surgeons adopting minimally invasive esophagectomy? Was the site of anastomosis chosen preoperatively or did surgeons who were concerned about the appearance of the conduit after gastric mobilization elect to place greater risk conduits in the chest rather than the neck to excise an ischemic gastric tip? Indeed, it is curious that McKeown esophagectomies (presumably planned preoperatively and begun in the chest) had greater leak rates than transhiatal esophagectomies (20% vs 9.5%, $P = .004$). That fact suggests that either a wider radiation field or other surgical choices do indeed affect leak rates and therefore cast some doubt on the authors' conclusions. Furthermore, knowing that an anastomotic leak is considered a surgical quality metric,

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did surgeons underreport leaks? The lack of standardized definitions and grading is a significant limitation of the database, particularly given the broad base of surgeons who are included.

Despite the limitations, the analysis of the National Surgical Quality Improvement Program data yields several interesting points. In the era of increased specialization, it remains remarkable to us that one half of esophagectomies are still performed by general surgeons. Data on surgical volumes are not included in the database, but it would be interesting to see that distribution and its relationship to anastomotic leaks. It also struck us that 33% of patients with a leak underwent "reoperation." It isn't clear from the database whether that means simple drainage of the cervical incision, extensive decortication, repair or resection of the conduit, or something else. However, the rate strikes us as high and is certainly not what is seen in our practice. Finally, a critical point that does not come across in the graphical abstract is the dramatic consequence of a leak. In fact, after any anastomotic leak, mortality increased 6-fold, from 1.4% to 8.4%. It is this message, rather than the frequency of anastomotic leaks at one location or another, that should be firmly grasped and acted upon. The establishment and rapid implementation of failure-to-rescue protocols must be an essential component of all thoracic surgical programs, since they have been proven time and again to improve patients' outcomes.

Reference

1. Chidi A, Etchill E, Ha JS, Bush E, Yang S, Battafarano R, et al. Effect of thoracic versus cervical anastomosis on anastomotic leak among patients undergoing esophagectomy after neoadjuvant chemoradiation. *J Thorac Cardiovasc Surg*. 2020;160:1088-95.

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Commentary: Does the location of the anastomosis affect leak rate after esophagectomy?

K. Robert Shen, MD

K. Robert Shen, MD

CENTRAL MESSAGE

The location of the anastomosis is not the major driver of leak rate after esophagectomy.

The treatment of esophageal cancer has undergone significant change over the past 30 years. The use of neoadjuvant induction therapy has become standard in patients with locally advanced disease, and refinements in both the chemotherapy and radiation therapy modalities have improved the safety and tolerability of induction therapy. Significant changes in surgical technique have also occurred with increasing adoption of endomechanical stapled versus hand-sewn anastomotic techniques as well as development of minimally invasive approaches. Despite of these advances, anastomotic leak remains among the most dreaded complications for esophageal surgeons and an ongoing source of major morbidity and mortality for patients undergoing esophagectomy.

The conventional wisdom when I was a trainee was that a cervical anastomosis had a higher rate of anastomotic leak compared with an intrathoracic anastomosis, but that higher

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