Now that reimbursement for readmission to the hospital is threatened, we are finally focused on readmissions after esophagectomy

Erin A. Gillaspie, MD, and Shanda H. Blackmon, MD, MPH

See related article on pages 1384-91.

Esophagectomy, regardless of the approach or technique (degree of exposure), carries high rate of postoperative morbidity and mortality. Large administrative databases report mortalities ranging from 2.7% to as high as 11%, with morbidity rates in many series exceeding 50%. Some of these are minor complications that do not change a patient's long-term postoperative course; however, major morbidity (reoperation, anastomotic leak, pneumonia, reintubation, ventilation beyond 48 hours) occurs in 24% of patients in the Society of Thoracic Surgeons General Thoracic Surgical Database. The average stay for a patient after esophagectomy is 10.6 days, with this increasing to a mean of 25.6 days in a patient who has had a postoperative complication.¹

Patients undergoing esophagectomy also have a high rate of postoperative readmission. Readmission rates after esophagectomy are reported to range from 12.4% to 18.6%.²⁻⁴ We recently reviewed our readmission rates after esophagectomy for patients with cancer at Mayo Clinic and found a rate of 19% (including patients who were either readmitted at our own hospital or another hospital within 30 days after discharge). Hospital readmissions are now used more frequently as a quality indicator by institutions as they seek to improve patient outcomes and reduce costs.

CAUSES OF READMISSIONS

Outcomes and readmissions can be divided into 3 different time frames: preprocedural interventions, postoperative in-hospital course, and postdischarge care. Preventing postoperative complications begins at the time of initial patient presentation, in identifying and optimizing modifiable risk factors. Multispecialty surgical studies have repeatedly shown chronic obstructive pulmonary

disease, heart failure, chronic renal insufficiency, steroid use, and malnutrition (although this last lacks a standardized definition) to contribute to post-

operative morbidity and mortality. Sundaram and colleagues² studied readmissions after esophagectomy and confirmed that histories of pulmonary disease, diabetes mellitus, and hypertension contributed to higher rates of readmission. Time spent before surgery enrolling a patient into pulmonary rehabilitation, improving glycemic control, maximizing nutritional intake, and weaning from steroids should help to reduce postoperative complications and therefore readmissions.

Adequate length of stay after esophagectomy has also become a debated topic. With rising costs and diminishing Medicare reimbursements, some administrations advocate the discharge of patients as early as possible. Interestingly, some studies have begun to show a link between shorter hospital stay after esophagectomy and the risk of readmission. Any decreased costs saved at initial hospitalization are greatly exceeded as a result of readmission.³ *There should be less emphasis on early discharge and a continued push for optimal care.*

Finally, establishing adequate patient education and follow-up are crucial. In the study of Shah and colleagues⁵ on readmissions in this issue of the *Journal*, it is very worrisome to learn that not only were 67% of patients who had complications readmitted within 30 days, but that half of these patients presented for ongoing management of the known complication diagnosed at the index hospitalization. This opens the question of whether these patients were treated adequately at the outset, had appropriate dismissal education, received appropriate outpatient support, and had adequate outpatient follow-up to ensure resolution or adequacy of ongoing treatment of the complication.

Unfortunately for patients, readmission is associated not only with higher cost but also with statistically significant increases in morbidity and mortality.⁴

HOW SHOULD WE EVALUATE READMISSIONS?

Perhaps a more appropriate way to evaluate and study readmissions would be by classifying them into preventable

From the Mayo Clinic, Rochester, Minn.

Disclosures: Authors have nothing to disclose with regard to commercial support.

Received for publication Feb 20, 2015; accepted for publication Feb 23, 2015; available ahead of print March 24, 2015.

Address for reprints: Shanda H. Blackmon, MD, MPH, Department of Surgery, Mayo Clinic, 200 First St, SW, Rochester, MN 55905 (E-mail: blackmon.shanda@mayo.edu).

J Thorac Cardiovasc Surg 2015;149:1392-3

0022-5223/\$36.00

Copyright © 2015 by The American Association for Thoracic Surgery

<http://dx.doi.org/10.1016/j.jtcvs.2015.02.033>

versus nonpreventable. A focus should be on implementing platforms to reduce the preventable readmissions.

A study recently published in *Diseases of the Colon and Rectum*⁶ reported on readmissions after colectomy and found that the most significant risk factor for readmission was complications identified and treated at the index hospitalization. After physician review, at least one-fifth of these admissions could have been potentially avoidable with different treatment regimens or follow-up. Many of these were related to wound complications. If the same findings are applicable to patients undergoing esophagectomy, then there is certainly room for improvement. Patients who are readmitted after esophagectomy also have a high incidence of superficial and deep wound infections.²

Future studies will need to define variables directly related to readmission and establish a consensus as to which are modifiable or preventable. Unfortunately, many studies only report esophageal readmission at 30 days. Some specialties are now including both 30- and 90-day rates for morbidity, mortality, and readmission. This longer time frame is perhaps more meaningful for patients who have undergone more complex procedures.

Equally important is the source of our data. Our colleagues in Mark Allen's group⁷ recently reviewed morbidity, mortality, and readmission rates captured in the American College of Surgeons National Surgical Quality Improvement Program database and the Society of Thoracic Surgeons General Thoracic Surgical Database and found very discrepant outcomes between data collected from just the beginning of the month versus meticulous data collection. This finding further emphasizes the need for participation in a comprehensive database by all centers.

WHAT DOES THE FUTURE HOLD?

This article by Shah and colleagues⁵ is timely, important and thought-provoking. How should we be measuring success? Historically, an emphasis has been placed on length of admission, but is this truly the right metric? Should we have more comprehensive preoperative and postoperative programs, perhaps like bariatric centers, to focus more aggressively on modifiable preoperative risk factors and have better outreach for patients postoperatively to minimize preventable readmissions? The studies suggest that preoperative preparation, clinical pathways, better definitions and predictors of outcomes, partnering with patients,

and discharge planning are key elements in long-term outcomes, including the incidence of readmission. The Institute for Healthcare Improvement has already taken strides to help improve the discharge process by developing the SMART Discharge Protocol (Signs, Medications, Appointments, Results, and Talk with me). Institutions that have done trials of this protocol report improvement in patient satisfaction scores, with concomitant reductions in readmissions and visits to the emergency department.⁸

A balance must be struck between quality of care, length of stay, readmission rates, patient education, home care, and multidisciplinary patient management. Reducing hospital readmissions after esophagectomy is more than skin deep. Surgeons must stay engaged in all aspects of caring for the patient both before and after the surgery. This involvement stands to benefit everyone.

References

1. Wright CD, Kurcharczuk JC, O'Brien SM, Grab JD, Allen MS, Society of Thoracic Surgeons General Thoracic Surgery Database. Predictors of major morbidity and mortality after esophagectomy for esophageal cancer: a Society of Thoracic Surgeons General Thoracic Surgery Database risk adjustment model. *J Thorac Cardiovasc Surg.* 2009;137:587-95; discussion 596. Erratum in: *J Thorac Cardiovasc Surg.* 2009;137:1581.
2. Sundaram A, Srinivasan A, Baker S, Mittal SK. Readmissions after esophageal resections. In: Society for Surgery of the Alimentary Tract 55th Annual Meeting; 2014 May 2-6; Chicago [Internet]. Available at: <http://meetings.ssat.com/abstracts/2014/463.cgi>. Accessed February 20, 2015.
3. Gulack BC, Englum BR, Meza JM, Wilk AR, Berry MF. Shorter length of stay is associated with increased readmission rates following esophagectomy. In: Western Thoracic Surgical Association 40th Annual Meeting; 2014 Jun 25-28; Dana Point (CA) [Internet]. Available at: <http://meetings.westernthoracic.org/abstracts/2014/10.cgi>. Accessed February 20, 2015.
4. Fernandez FG, Khullar O, Force SD, Jiang R, Pickens A, Howard D, et al. Hospital readmission is associated with poor survival after esophagectomy for esophageal cancer. *Ann Thorac Surg.* 2015;99:292-7.
5. Shah SP, Xu T, Hooker CM, Hulbert A, Battafarano RJ, Brock MV, et al. Why are patients being readmitted after surgery for esophageal cancer? *J Thorac Cardiovasc Surg.* 2015;149:1384-91.
6. Kerwel TG, Leightle SW, Asgeirsson T, Hendren SK, Cleary RK, Luchtefeld MA. Risk factors for readmission after elective colectomy: postoperative complications are more important than patient and operative factors. *Dis Colon Rectum.* 2014;57: 98-104.
7. Allen MS, Nichols FC, Cassivi SD, Shen K, Wigle A. Comparison of the Thoracic Surgeons General Thoracic Surgery Database and the American College of Surgeons National Surgical Quality Improvement Program in a general thoracic surgical practice. J. Maxwell Chamberlain Memorial Paper for General Thoracic Surgery. In: Society of Thoracic Surgeons 51st Annual Meeting Abstract Book; 2015 Jan 24-28; San Diego. Chicago; The Society; 2015:72-73.
8. Butterfield S. One hospital gets smart about discharge paperwork. ACP Hospitalist [Internet]. 2013 Jun; [about 3 screens]. Available at: <http://www.acphospitalist.org/archives/2013/06/success.htm>. Accessed February 20, 2015.