

EDITORIAL

Improving Surgical Outcomes for Cancer in the United States

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During the past few years, there has been increasing evidence that the quality of surgical outcomes is linked to volumes of cases being done at hospital centers [1]. This has caught the attention of patients as well as payers of health care (i.e., employers, insurance groups). “Quality” has become the mantra of the health industry. Some payers of health care are either actively directing patients who require specific procedures to go to high-volume centers; reward good performance by hospitals with financial bonuses; or underwrite quality improvement activities by contracting with hospitals [2]. When it comes to surgical outcomes for cancer care, there has been a significant body of data that has been reported that is very compelling. These studies demonstrate that significant variations exist in cancer surgery outcomes that are associated with the volumes seen at hospital centers, the volumes seen by individual surgeons, and how cancer care is coordinated within an institution.

EVIDENCE THAT OUTCOMES VARY

With respect to complex surgical procedures for cancer, the data linking improved outcomes to higher hospital volumes has been highly consistent [3]. These studies have predominantly measured 30-day postoperative mortality rates as a primary endpoint and have demonstrated a volume-outcome relationship in patients undergoing complex intra-abdominal and thoracic resections of cancers. Besides decreased operative mortality rates, high-volume centers have been reported to have decreased long-term complications as well as improved late survival rates in certain tumor types. Begg et al. [4] reported that men undergoing radical prostatectomies had fewer postoperative complications when done in high-volume hospitals compared to low-volume hospitals. Using national Medicare data, Fong et al. [5] found that there was superior long-term survival benefit for cancer patients undergoing hepatectomies or pancreatectomies at high-volume centers compared to other institutions.

From a different perspective, Birkmeyer et al. [6] have compared surgical outcomes at institutions designated by

the National Cancer Institute (NCI) as cancer centers to control hospitals with the highest volumes. NCI designation is not made based upon clinical volumes or outcomes, rather, it is based upon the quality of research (i.e., basic, population sciences, or clinical research) being conducted at the institution. NCI-designated centers were found to have significantly lower surgical mortality rates for patients undergoing colectomy, pulmonary resection, gastrectomy, and esophagectomy; with significant trends of improved rates for cystectomy and pancreatectomy. Potential explanations for the favorable outcomes in NCI-designated centers may include better selection of patients through multidisciplinary consultations or the presence of surgeons who are more specialized than surgeons in high-volume hospitals. The latter raises the question of whether surgeon volumes or specialization have a direct relationship to outcomes.

There is an emerging body of evidence documenting favorable outcomes with surgeon volumes and/or specialization. In patients undergoing prostatectomy, postoperative morbidity was found to be lower when done by very high-volume surgeons versus low-volume surgeons [4]. Surgeon volume has been found to be a predictor of postoperative complications and long-term survival in colorectal cancer [7,8]. In Great Britain, studies have reported that surgeons who specialize in breast surgery have significantly better survival outcomes compared to nonspecialists [9,10].

THE CASE FOR ACCREDITATION

It is apparent from these studies that in an ideal world, cancer patients requiring complex surgical procedures

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Received 23 May 2006; Accepted 23 May 2006

DOI 10.1002/jso.20605

Published online in Wiley InterScience (www.interscience.wiley.com).

should be treated at centers of excellence as deemed by either their volumes and/or quality of outcomes. An effort by one health payer coalition, the Leapfrog Group, has initiated a program to direct patients to centers of excellence for certain surgical procedures (pancreatectomy, esophagectomy, percutaneous coronary bypass, coronary bypass, and abdominal aortic aneurysm repair) to improve quality of care [2]. This is a laudatory effort, but only a drop in the bucket. The state of health care financing in the United States is so fragmentary that one would surmise that most health care payers would not have the leverage to dictate surgical referral patterns on a large scale. Public payers such as the Centers of Medicare and Medicaid Services (CMS), which cover the elderly population most at risk of developing cancers, may have the leverage, but currently has no mechanism to identify centers of excellence.

A system to accredit hospitals for complex surgical procedures for cancer would be useful. Currently, the Commission on Cancer (CoC) of the American College of Surgeons certifies hospitals for cancer care. This system has been in place since 1930 and focuses on whether the hospital has certain elements in place such as an oversight cancer committee, multidisciplinary tumor boards, cancer registry, quality improvement program, and a comprehensive program of cancer-related services. Approximately 80% of all newly diagnosed cancer patients in the United States are seen in CoC-certified facilities. Recognizing volumes of cancer cases, determining complexity of cases, and documenting the experience of the surgeons have not been elements of the evaluation process. The CoC should consider adding to their certification process a determination of the level of surgical care that can be managed at the institution, in a similar fashion to what the American College of Surgeons is now doing with bariatric surgery.

This year, the American College of Surgeons has established the Bariatric Surgery Center Network Program [11]. The goals of the program are to recognize and commend those facilities which implement defined standards of care, document their outcomes, and participate in periodic reviews and verifications of their programs in bariatric surgery. The program will certify centers based upon the volumes of practice seen at the center and the volumes performed by the centers' surgeons. Different levels of certification are designated based upon volumes of cases at each center. Benefits of such an accreditation designation will allow patients to seek surgery at centers with high volumes and experienced surgeons; and distinguish centers of excellence that can qualify for coverage by CMS, or other payers. This type of program, specifically identifying centers of surgical excellence, should be applied to complex cancer surgical procedures. This could be incorporated as one of

the elements in the certification process conducted by the CoC. Different levels of certification can be determined by this accreditation process. Those institutions with higher case volumes and surgeon volumes for complex surgical cancer procedures can be designated a level that signifies that the institution can manage the most challenging patients with effective outcomes. Another important benefit of such an accreditation program would be to motivate hospitals to track their cancer care outcomes on a periodic basis and to identify what infrastructure or process changes are needed.

The handwriting on the wall seems evident. Improving surgical outcomes of cancer care can be accomplished by directing appropriate patients to centers of excellence. The American College of Surgeons' CoC should consider a mechanism to accredit institutions for complex surgical procedures. This accreditation can be used by health payers, such as CMS, in directing surgical cancer care. Importantly, the development of this certification process would be established by clinicians rather than governmental or health care payer entities.

ACKNOWLEDGMENTS

The author thank Dr. John Birkmeyer for his helpful input and review of this editorial.

REFERENCES

1. Birkmeyer JD, Siewers AE, Finlayson EVA, et al.: Hospital volume and surgical mortality in the United States. *NEJM* 2002;346:1128–1137.
2. Birkmeyer NJO, Birkmeyer JD: Strategies for improving surgical quality—Should payers reward excellence or effort? *NEJM* 2006; 354:864–870.
3. Hillner BE, Smith TJ, Desch CE: Hospital and physician volume of specialization and outcomes in cancer treatment: Importance in quality of cancer care. *J Clin Oncol* 2000;18:2327–2340.
4. Begg CB, Riedel ER, Bach PB, et al.: Variations in morbidity after radical prostatectomy. *NEJM* 2002;346:1138–1144.
5. Fong Y, Gonen M, Rubin D, et al.: Long-term survival is superior after resection for cancer in high-volume centers. *Ann Surg* 2005; 242:540–547.
6. Birkmeyer NJO, Doodney PP, Stukel TA, et al.: Do cancer centers designated by the National Cancer Institute have better surgical outcomes? *Cancer* 2005;103:435–441.
7. Schrag D, Panageas KS, Riedel E, et al.: Surgeon volume compared to hospital volume as predictor of outcome following primary colon cancer resection. *J Surg Oncol* 2003;83:68–79.
8. Schrag E, Panageas KS, Riedel E, et al.: Hospital and surgeon procedure volume as predictors of outcome following rectal cancer resection. *Ann Surg* 2002;236:583–592.
9. Sainsbury R, Haward B, Rider L, et al.: Influence of clinician workload and patterns of treatment on survival from breast cancer. *Lancet* 1995;345:1265–1270.
10. Gilles CR, Hole DJ: Survival outcome of care by specialist surgeons in breast cancer: A study of 3786 patients in the west of Scotland. *BMJ* 1996;312:145–148.
11. American College of Surgeons: Bariatric Surgery Center Network Accreditation Program. <http://www.facs.org/cqi/bsc/overview.html> (Online March 22, 2006).