

## Pancreatic Resection Results in a Statewide Surgical Collaborative

Francesca M. Dimou, MD<sup>1,2</sup> and Taylor S. Riall, MD, PhD<sup>1</sup>

<sup>1</sup>Department of Surgery, John Sealy Distinguished Chair in Clinical Research, The University of Texas Medical Branch, Galveston, TX; <sup>2</sup>Department of Surgery, University of South Florida, Tampa, FL

Pancreatic resection is a complex surgical procedure. Although its associated mortality has decreased significantly over time, morbidity remains high. A strong volume–outcome relation has been demonstrated for pancreatic resection, with decreases in the mortality, hospital length of stay, and cost when performed in high-volume hospitals.<sup>1,2</sup> Despite these compelling data, complete regionalization of pancreatectomy to high-volume centers has not been achieved, with 20–40 % of pancreatic resections still being performed at low-volume centers.<sup>2,3</sup> There is evidence that failure of regionalization is driven, in part, by patient preferences and physician referral patterns. In Texas, 19 % of patients traveled a distance farther than the distance to the nearest high-volume hospital to have their operation performed at a low-volume hospital. Finlayson and colleagues found that only 55 % of patients were willing to travel to a high-volume center even if told that their mortality risk was double at their local facility. Also, only 82 % were willing to travel if told that their mortality risk was sixfold higher at their local facility.<sup>4</sup>

Even across high-volume centers, there is significant variability in outcomes.<sup>5</sup> Given the wide variability in outcomes and the challenges and reality of regionalization, it is critical to explore alternative approaches to improving overall outcomes as well as closing the “quality gap” observed between high- and low-volume providers.

Healy et al.<sup>6</sup> provide data to suggest that participation in a regional quality improvement collaborative may provide an alternative model to improving outcomes for patients

undergoing pancreatic resection. Leveraging data from an already existing statewide surgical quality collaborative, the authors demonstrate improvement in risk-adjusted morbidity, mortality, and failure to rescue rates for pancreatectomy between two time periods, 2008–2010 and 2011–2013. Importantly, the majority of the observed improvement in outcomes was due to attenuation of the variation in outcomes across low- and high-volume hospitals. Adjusted mortality rates (from 6.2 to 3.3 %) and major complication rates (from 27.8 to 22.2 %) improved over time in low-volume hospitals. However, there was a slight increase in the mortality rate (from 0.8 to 1.1 %) and morbidity rate (from 17.8 to 20.0 %) at high-volume hospitals, although this increase is likely not statistically or clinically significant. When evaluating these outcomes, the reader should understand that this collaborative effort was not procedure-specific. It did not assess pancreatectomy-specific outcomes across institutions, nor was it a true collaboration between centers to learn from each other and drive further improvement.

Regardless of these drawbacks, the data suggest that a collaborative approach to quality improvement could provide another important piece of the puzzle. Pancreatectomy-specific improvement occurred even when it was not the primary goal of the collaborative design. Therefore, it is reasonable to extrapolate that a procedure-specific collaborative could help hospitals and physicians improve outcomes for complex procedures. Ideally, collaboratives would provide benefit beyond the outcomes reporting by learning from one another and implementing strategic interventions, ultimately improving global outcomes. These results, in turn, could lead to a reduction in the variation between low- and high-volume providers as well as improved outcomes at all centers. For example, instead of improving overall pancreatic fistula rates by bringing the low-volume centers to the current level of the high-volume

centers, the collaborative could identify best practices that, if shared, might engender improvement at all centers, truly raising the bar.

A general quality collaborative, such as that described by Healy et al.,<sup>6</sup> may be most beneficial for addressing broader process measures and complications. These items could include appropriate antibiotic use, prevention of ventilator-associated pneumonia, implementation of enhanced recovery protocols to be used after surgery, and avoiding inappropriate blood transfusions. Such approaches would drive improvement across all procedures. A true procedure-specific collaborative could provide additional advantages for improving outcomes for relatively uncommon complex procedures such as pancreatectomy. It would allow inclusion of a larger number of hospitals performing specific complex procedures, standardization of definitions, and collection of relevant procedure-specific variables (e.g., pancreatic fistula, delayed gastric emptying). Ideally, the participating hospitals would learn from each other and drive improvement by identifying and implementing interventions guided by practices that produce the best outcomes.

Regardless of the obvious advantages, there are challenges to implementing a collaborative approach. It requires a nonpunitive approach, and significant trust must exist between participating hospitals to obtain the full benefit. Differences in hospital systems may prevent large-scale implementation of best practices identified at the highest-performing (and likely highest-volume) centers. As resources such as intensive care, access to imaging, ancillary services, and availability of specialty physicians are probably not going to be equal among the hospitals, such disadvantages must be considered when developing a national collaborative.

To have the greatest impact, institutions participating in true collaboratives (regional or procedure-specific) must learn from each other to drive improvement beyond that seen by simply measuring and reporting outcomes in a blinded fashion. True collaboratives would ideally develop consensus and trust across participating institutions, creating greater buy-in and participation. Not only should we strive to bring poorly performing centers toward the current mean performance through collaboration, we should strive to raise the bar and achieve truly improved outcomes.

**ACKNOWLEDGMENT** UTMB Clinical and Translational Science award UL1TR000071, NIH T-32 Grant T32DK007639, AHRQ Grant 1R24HS022134.

## REFERENCES

1. Birkmeyer JD, Stukel TA, Siewers AE, Goodney PP, Wennberg DE, Lucas FL. Surgeon volume and operative mortality in the United States. *N Engl J Med*. 2003;349(22):2117–27.
2. Riall TS, Eschbach KA, Townsend CM Jr, Nealon WH, Freeman JL, Goodwin JS. Trends and disparities in regionalization of pancreatic resection. *J Gastrointest Surg*. 2007;11(10):1242–51; discussion 1251–2.
3. Colavita PD, Tsirline VB, Belyansky I, et al. Regionalization and outcomes of hepato-pancreato-biliary cancer surgery in USA. *J Gastrointest Surg*. 2014;18(3):532–41.
4. Finlayson SR, Birkmeyer JD, Tosteson AN, Nease RF Jr. Patient preferences for location of care: implications for regionalization. *Med Care*. 1999;37(2):204–9.
5. Tamirisa NP, Parmar AD, Vargas GM, et al. Relative contributions of complications and failure to rescue on mortality in older patients undergoing pancreatectomy. *Ann Surg*. 2015. doi:10.1097/SLA.0000000000001093.
6. Healy MA, Krell RW, Abdelsattar ZM, et al. Pancreatic resection results in a statewide surgical collaborative. *Ann Surg Oncol*. 2015. doi:10.1245/s10434-015-4529-9.