Proceed with Caution: Vascular Resection at Pancreaticoduodenectomy

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In this issue of *Annals of Surgical Oncology*, Castleberry et al. publish an important manuscript analyzing the effect of use of vascular resection on perioperative outcomes after pancreaticoduodenectomy. Their study, using the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) database, demonstrates that 30-day outcomes for patients undergoing Whipple for malignant tumor at NSQIP hospitals are worse for patients identified as having Current Procedural Terminology (CPT) codes for direct repair of blood vessel or bypass graft compared with those undergoing Whipple without such codes. This is the first large-scale study to study this important topic.

As the authors comment, the results of this study differ from published results from large single-center series, in which comparable short- and long-term outcomes have been demonstrated after vascular resection at pancreaticoduodenectomy.^{1–3} While the current paper is limited by the NSQIP data to inpatient and 30-day outcomes, the differences in 30-day morbidity and mortality are striking. The potential reasons for this disparity are useful to understand, and can be summarized as entry criteria and vascular resection definition, emergent versus planned reconstruction, and placement of pancreatic resection with vascular reconstruction in the context of multimodality cancer therapy.

The authors define vascular reconstruction at pancreaticoduodenectomy as the concurrent presence of a CPT code for direct repair of intraabdominal blood vessel, with or without grafting. This definition, which is necessitated by use of data available from NSQIP, thus includes

operations with inadvertent venous or arterial injury and subsequent repair as well as planned vascular reconstructions. Unexpected hemorrhage and need for damage control in the operating room are more likely sequelae of the former. Such “urgent” reconstructions might also be more likely to be on patients with larger tumors, a greater degree of periportal inflammation, and potentially by less experienced surgeons at lower-volume centers, all of which have been shown to affect outcomes.⁴

To move forward in the clinical arena, the focus on perioperative outcomes needs to be widened to include the full spectrum of care of the potentially resectable pancreatic or periampullary cancer patient. Because of database limitations, we do not know whether patients in this cohort had imaging that predicted the need for vascular reconstruction, or whether the cases were discussed in a multidisciplinary setting prior to operation. We do not know specifically the rate of neoadjuvant therapy in this cohort, although recent chemotherapy and radiotherapy are included in the authors’ multivariate model. Finally, the cancer- and non-cancer-specific outcomes of margin status, quality of life, recurrence, and survival are critical to evaluation of the effectiveness of appropriately sequenced pancreaticoduodenectomy with vascular resection compared with the alternatives, including nonoperative management. To this date, the best available data demonstrate that surgical resection remains the strongest intervention against pancreatic and related cancers.^{5–7}

Above all, the authors are to be commended for calling our attention to the continued morbidity and mortality of pancreatectomy for periampullary cancer, even in high-volume academic hospitals such as those represented in NSQIP. This paper highlights the increased perioperative risk in patients who require major vascular repair and/or reconstruction. Rigorous multidisciplinary treatment planning prior to attempted operation remains key to reducing the risk of high-stakes cancer surgery.

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