Lymph Node Regions of Consequence in Distal Pancreatectomy: Can We Be Selective By Tumor Location?

Tara S. Kent, MD

BIDMC Department of Surgery, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA

Ishida et al., from the Saitama Cancer Center in Japan,¹ present a case series of distal pancreatectomies for cancer, with the goal of evaluating the optimal region of lymph node dissection by tumor location. By way of background, the authors note that extended lymph node dissection has not been found to be beneficial for pancreatic head cancers,² but that standards for distal pancreatectomy have not been established. Complicating decision making for nodal harvest in distal pancreatectomy is the fact that there are several described standards for this operation. Addressed here are the Japan Pancreas Society (JPS) standards for D2 lymph node dissection with distal pancreatectomy for cancer³ and the 2014 International Study Group on Pancreatic Surgery (ISGPS);⁴ the JPS standard calls for lymphadenectomy of both peripancreatic and non-peripancreatic lymph nodes, whereas the ISGPS calls for a standard lymphadenectomy to include the peripancreatic lymph nodes plus lymph node basin #9 if the tumor is in the pancreatic body. Thus, the authors sought to determine, via a single-center, retrospective study, the optimal region of lymph node dissection for left-sided pancreatic adenocarcinoma, hypothesizing that the resection of tail tumors might not need to include the full lymph node dissection and could focus on the lymph node basins more to the left ('peripancreatic' lymph nodes), and that the more extensive lymphadenectomy could be reserved for resection of pancreatic body cancers.

Their methodology included utilizing preoperative imaging to measure the distance from the left side of the portal vein (PV) to the right-most aspect of the tumor, thus defining the pancreatic body (between the PV and left border of the aorta) and tail (to the left of aorta), and then assessing the predictive value of this distance for the presence of positive lymph nodes in the more proximal stations. These patients underwent distal pancreatectomy and splenectomy with a JPS-defined standard. Overall and recurrence-free survival were also assessed.

While the patient and disease characteristics varied, thus making the group somewhat heterogeneous for analysis, and considering the modest sample size, the generalizability of this study is limited; however, the concept is important and worthy of further investigation. The feasibility of this study, despite its limitations, highlights the critical importance of having national and/or international standards. Without these benchmarks, here set by the JPS³ and the ISGPS,⁴ defining standards for lymphadenectomy across centers and even countries, the authors would lack the common language or understanding to undertake this study. The presence of these standards *facilitates* the evidence-driven forward progress of the field of hepatopancreaticobiliary (HPB) surgery and care for patients impacted by pancreatic cancer. Furthermore, single-center studies are more likely to be able to be developed to next-step multicenter collaboratives when standards exist, creating this common language allowing cross-center comparisons or combination of data.

The authors have aimed to quantify this issue with strict measurements of the tumor–vein distance, as well as with detailed delineation of the nodal stations. The level of detail here is intriguing. Lymph node involvement of the non-pancreatic (more proximal) lymph node stations was uncommon overall and was only observed for patients with a distance from the PV to the tumor of <2 cm. Patients

with distal body or tail cancers did not present with positive lymph nodes in the non-pancreatic stations. This finding supports the restriction of lymphadenectomy according to the location of the identified cancer. Certainly, if a less extensive nodal harvest can predict outcomes as well as a more extensive lymphadenectomy, it is sensible to avoid the additional risk of the more proximal dissection, since the additional nodal stations include the common hepatic, gastroduodenal, left gastric stations, with additional bleeding risk and operating room time in harvesting these. More is not always better^{2,5} and, in fact, more is sometimes worse.

The information provided here regarding prognosis as defined by the location of positive lymph nodes is also of interest, with median survival best, as expected, for those with negative lymph nodes, but among those with positive lymph nodes, survival was better for those with pancreatic lymph node involvement than for those with non-pancreatic (more proximal) positive lymph nodes. Can we interpret from this information that more proximal (body) cancers are more likely to either develop local extension or potentially to metastasize, given the proximity to these additional nodal stations and major vessels, or by virtue of differences in tumor biology? Or rather, are there additional factors at play influencing these markers of prognosis, since the authors also indicate that only proximal body cancers were found to be associated with positive proximal lymph nodes? The authors' model indicates that poor prognosis is associated with a larger tumor size, presence of positive lymph nodes in the more proximal stations, and an inability to receive chemotherapy.

The present study, although retrospective and with a small sample size, describes a methodology to determine the required lymph node stations to resect based on tumor location in the body versus the distal body or the tail of the pancreas, quantified by distance from the left side of the PV to the right aspect of the tumor. Prior work has shown that lymph node involvement of the non-pancreatic lymph nodes is uncommon for left-sided cancers, but the study referenced here provides a quantifiable means of assessing an absolute cut-off for the possibility of nodal involvement in these stations.

The implications of this present study by Ishida et al.¹ are potentially important for surgical technique considerations, perioperative complication risk, and assessment of prognosis. Several questions arise from this early work in this area. Can the findings be replicated with a larger sample size? Are the findings impacted by the inclusion here of patients with and without neoadjuvant therapy? How practical is this approach; will surgeons be able to execute this approach prospectively with similar outcomes? These questions support future research in this area, looking at the feasibility and accuracy of intraoperative nodal station delineation, and then at whether these findings are replicable in a larger sample size and with multiple surgeons.

DISCLOSURE Tara S. Kent declares no conflicts of interest.

REFERENCES

1. Ishida H, Ogura T, Takahashi A, et al. Optimal region of lymph node dissection in distal pancreatectomy for left-sided pancreatic cancer based on tumor location. *Ann Surg Oncol*. 2021. <https://doi.org/10.1245/s10434-021-11108-5>.
2. Kotb A, Hajibandeh S, Hajibandeh S, Satyadas T. Meta-analysis and trial sequential analysis of randomized controlled trials comparing standard versus extended lymphadenectomy in pancreatoduodenectomy for adenocarcinoma of the head of the pancreas. *Langenbecks Arch Surg*. 2021;406:547–61.
3. Japan Pancreas Society. Classification of Pancreatic Carcinoma (Fourth English edition). Tokyo: Kanehara & Co., Ltd; 2017. Available at: http://www.suizou.org/pdf/Classification_of_Pancreatic_Carcinoma_4th_Engl_ed.pdf. Accessed 5 Nov 2021.
4. Tol JA, Gouma DJ, Bassi C, et al. Definition of a standard lymphadenectomy in surgery for pancreatic ductal adenocarcinoma: a consensus statement by the International Study Group on Pancreatic Surgery (ISGPS). *Surgery*. 2014;156:591–600.
5. Jiang L, Yang KH, Chen Y, et al. Systematic review and meta-analysis of the effectiveness and safety of extended lymphadenectomy in patients with resectable gastric cancer. *Br J Surg*. 2014;101:595–604.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.