



The extent of the distal pancreatectomy determines the surgical risk

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Comment on: Loos M, Mack CE, Xu ATL, *et al.* Distal Pancreatectomy: Extent of Resection Determines Surgical Risk Categories. *Ann Surg* 2024;279:479-85.

Keywords: Distal pancreatectomy (DP); outcomes; surgery; pancreas

Submitted Dec 14, 2023. Accepted for publication Feb 27, 2024. Published online Apr 22, 2024.

doi: 10.21037/gs-23-511

View this article at: <https://dx.doi.org/10.21037/gs-23-511>

We are going to comment on the excellent article by the Heidelberg University Hospital group entitled “Distal pancreatectomy: Extent of resection determines surgical risk categories” (1). The article is based on two previous articles published by this group (2,3), dedicated to the different results obtained when pancreatoduodenectomy and total pancreatectomy are categorized into different complexity groups, and distal pancreatectomies (DP) are classified according to complexity (1).

However, as the authors of the manuscript describe, not all DP are the same. A standard DP, understood as the resection of the body/tail of the pancreas with splenectomy or not, is not the same as a DP with vascular resection (venous or arterial) or with resection of other organs. These procedures have different surgical complexity that usually leads to an increase in postoperative morbidity and mortality (4). Therefore, a new classification of the different techniques would allow a better definition of the results.

The classification of DP proposed in the manuscript is clear and simple. Authors divided DP into four groups of increasing complexity: standard DP with or without splenectomy (type 1), DP associated with portal vein resection/superior mesenteric and/or resection of the left

renal vein (type 2), DP with resection of an organ other than the spleen (type 3) and DP associated with major arterial resection other than the splenic artery (type 4) (1). We believe this classification improves the one proposed by Hartwig *et al.* in 2014 (5).

We believe that it could be interesting to redefine more accurately the organ and the number of organs resected in type 3. A partial liver resection may not have the same complexity or implications in morbidity and mortality as a colonic resection with colon anastomosis. Thus, the authors show that major complications, the percentage of grade B–C pancreatic fistula, and the percentage of patients with type C bleeding are higher in type 2 DP than in type 3. Previous studies have shown that resection of more than two organs in pancreatic surgery is an independent factor in performing relaparotomy, and colonic resection shows a trend towards increasing reoperations (4,6).

A remarkable fact is the long period of patient inclusion (October 2001 to December 2020). However, a long inclusion period may constitute a bias for the analysis of surgical morbidity and mortality since advances in technique surgery and perioperative management have been considerable in recent years (7). This long period has

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allowed them to study a huge number of patients because Heidelberg is one of the European centers with the highest volume of pancreatic surgery. As it has been demonstrated in previous publications, the volume of patients operated on by each center is essential for obtaining better outcomes (8).

Among the advances, minimally invasive surgery (MIS) is the most determinant. The MIS approach in distal pancreas resections is currently considered the “gold standard” technique (9). The MIS approach is superior to the open approach in terms of lower blood loss, lower incidence of delayed gastric emptying, shorter hospital stays, and less time to achieve functional recovery of the patient (10-12). We remember that the MIS approach includes both laparoscopic and robotic surgery. Pancreatic robotic surgery in recent years has seen an exponential increase and had achieved higher rates of splenic preservation, lower conversion rates, similar results in terms of oncology (R0 resections and number of lymph nodes resected) and post-surgical morbidity and mortality, with the drawback of increased costs (13). Perhaps in the not-too-distant future, when robotic costs decrease, we will witness the replacement of the laparoscopic approach by robotic surgery. Another remarkable fact is the low application of MIS technique in this manuscript (14.3%), especially in more straightforward cases like type 1. The implementation of pancreas MIS technique has been slower than in other organs, and as we commented before, the long recruitment period justifies the low percentage of MIS. Nowadays, the application of MIS in type 1 is near 60% in many series, but it is low in type 2 to 4, even in experienced hands (14).

One of the open debates is how to close the pancreas stump after DP. In two previous meta-analyses (2015 and 2022), stapler closure for the pancreatic remnant after DP reduces postoperative pancreatic fistula grade B/C rates significantly compared with suture closure (15,16). In 2023, a new meta-analysis showed that reinforced staplers do not add any gain to standard staplers. The manuscript has no information about how the authors closed the pancreatic stump, so we cannot draw any conclusions about that topic (17).

Another hot topic is using the radical antegrade modular pancreatectomy (RAMPS) technique to obtain better oncological results. Initially, RAMPS was performed using the open approach, but a recent meta-analysis suggests that MIS-RAMPS may produce comparable short- and long-term outcomes to open RAMPS. No information on the application of RAMPS technique is included in the author's manuscript (18).

The article also includes information on healthcare outcomes measured with innovative tools such as textbook outcomes (TO). Kolfshoten *et al.* introduced TO as a quality marker in colon surgery in 2013 (19). TO is a simple marker, which brings together the sum of many postsurgical variables (hospital stay, readmission, mortality and postoperative complications), the patient who meets all these variables has had a perfect postoperative course and achieved TO. TO received a series of criticisms like low TO in highly complex procedures, and the arbitrariness in selecting variables and cut-off points in very specific and complex surgical procedures (20). In the case of pancreatic surgery, Van Roessel *et al.* established the appropriate variables to calculate TO in pancreatic surgery (21), and these same variables have served as a reference for the authors. The high percentage of patients in the series achieving TO (68.1%) is remarkable, especially the 56.5% of the patients achieving TO in the most complex DP (type 4), which demonstrates the high level of expertise from the authors. The usefulness of TO is demonstrated by observing that some variables linked to not achieving TO [American Society of Anesthesiologists (ASA) classification, type of pancreatectomy performed, and blood loss] independently increase 90-day mortality (1). We believe that the determination of benchmarking and failure to rescue are also very useful tools to measure the quality of pancreatic surgery.

The quality of this article not only lies in the originality and the effort with which they have managed to classify a highly complex procedure such as DP, but they have also communicated excellent quality standards of care. Although this is a retrospective study, with their data the authors have been able to classify DP into four different degrees of complexity, which will facilitate the comparison of results between centers in a more homogeneous way. One example of the importance of classifications is how Clavien-Dindo classification of postoperative complications has changed the way of comparing series. After an external validation including more MIS cases, this classification of DP could become the way of comparing DP procedures in all published manuscripts in the next decade. We must not forget that MIS implementation must be progressive, with specific training and proctorization programs (22). Congratulations to the authors of the article, their classification is undoubtedly a starting point for the homogenization and standardization of the different techniques used in DP.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the editorial office, *Gland Surgery*. The article has undergone external peer review.

Peer Review File: Available at <https://gs.amegroups.com/article/view/10.21037/gS-23-511/prf>

Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at <https://gs.amegroups.com/article/view/10.21037/gS-23-511/coif>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Cite this article as: Alcazar C, Ramia JM. The extent of the distal pancreatectomy determines the surgical risk. *Gland Surg* 2024;13(4):603-606. doi: 10.21037/gs-23-511