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# Long-term Oncological Outcomes After Distal Pancreatectomy for Neuroendocrine Neoplasms: A Comparison Between Minimally Invasive and Open Approach Using Propensity Score

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**BACKGROUND:** Pancreatic neuroendocrine neoplasms (PanNEN) represent ideal entities for minimally invasive surgery. Several series described laparoscopic surgery for PanNEN demonstrating the advantage of this approach compared to open technique in terms of complications, length of hospital stay and cosmetic results. However, scarce data are available on long-term oncological outcomes. Aim of this study was to compare short-term postoperative outcomes, pathological findings and long-term oncological results of minimally invasive distal pancreatectomy (MIDP) and open distal pancreatectomy (ODP).

**METHODS:** Patients who underwent ODP or MIDP for nonfunctioning PanNEN (NF-PanNEN) were retrospectively analyzed. Complications were graded according to the Clavien-Dindo classification. Inverse probability of treatment weighting using propensity score was used to compare the outcomes of minimally invasive and open approach.

**RESULTS:** Overall, 131 patients with NF-PanNEN were included in the study: 84 underwent OPD, whereas 47 underwent MIDP. Median radiological diameter was 25 mm (interquartile range 18-45). The rate of postoperative complications was significantly lower after MIDP ($p<0.001$, estimated grade of postoperative complication 0 vs 2) and postoperative length of stay was significantly shorter after MIDP compared to ODP ($p<0.001$, 8 vs 11 days). The number of examined lymph nodes (LN) was significantly higher after ODP in comparison to MIDP ($p=0.006$, estimated number of LN 13 vs 10). Estimated median follow-up was 77 months (95% confidence interval 66-85) and overall 22 patients had a recurrence after a median follow-up of 26 months (range 1-92). Similar progression-free survival (PFS) and overall survival (OS) were reported for the two groups ($p=0.695$ and $p=0.766$, respectively).

**CONCLUSION:** Although MIDP seems to be associated with a lower number of resected LN, long-term survival is not influenced by the type of surgical approach. MIDP is advantageous in terms of postoperative complications and length of stay but prospective studies are needed to confirm the oncological quality of resection in this group of neoplasms.