

Laparoscopic and Robot-Assisted Surgery for Pancreatic Neuroendocrine Tumors: Single-Center Experience

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Context Pancreatic neuroendocrine tumors (pNET) in many cases are small and could be considered well suited for removal by minimally invasive approach. There are few large series that describe the technical feasibility, outcome and histopathology associated with laparoscopic (LS) and robot-assisted (RA) pancreatic surgery. **Objective** To evaluate the efficiency of minimally invasive surgery for pNET, considering the revolutionary field of RA pancreatic surgery. **Methods** We performed a retrospective analysis of all minimally invasive pancreatic resections (LS and RA) at Pancreas Institute of Verona between January 2002 and May 2013. We reviewed operative management information and compared clinical and histological data with short- and long-term outcomes. Standard statistical methods were used. **Results** Fifty consecutive patients were selected (26 females, 24 males), with a median age of 55 years (IQR: 24-81 years). Forty-three LS procedures were performed: 17 distal pancreatectomies with splenectomy (DPS), 12 spleen-preserving distal pancreatectomies (DS), 12 enucleations (En), and 2 middle pancreatectomies (MP). Seven procedures were

performed robotically: 3 DS, 3 DPS, 1 En. Five patients (10%) required conversion to open surgery. The median operative time of En was 125 min (IQR: 100-166 min), of DPS, DS and MP was 210 min (IQR: 150-240 min). Pancreatic fistula rate was 32% (6 cases classified by ISGPF as grade A, 8 grade B, and 2 grade C). The median hospital stay was 7 days (IQR: 6-10 days). All but one resections were R0. On histological examination, median size of pNET was 17.5 mm (IQR: 12.2-29.2 mm); 10 were functioning pNET (9 insulinomas, 1 ACTH); 37 were G1 pNET, 12 G2 and 1 G3; regional lymphadenectomy was performed in 20 DPS, with a median of 13 lymphnodes removed and a Ln Ratio of 0.05. No patient developed recurrences or metastases. **Conclusion** The present study confirms that LS and RA pancreatic resections for pNET are feasible, with comparable morbidity, fistula formation and oncological results to that observed after open surgery, but with all known advantages of minimally invasive techniques. The crucial point is the right pre-operative evaluation and selection of each patient.