

# Title: Examination of Surgical Outcomes and Techniques in Laparoscopic(Robot-assisted) Pancreatic Enucleation

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**Background:** Laparoscopic (Robot-assisted) pancreatic enucleation (L(R)-PEN) is a surgical procedure performed for benign or low-grade malignant pancreatic tumors. According to the second edition of the Pancreatic and Gastrointestinal Neuroendocrine Tumor Treatment Guidelines, PEN is an option for non-functional pancreatic neuroendocrine tumors (NF-PNEN) less than 1 cm in size or insulinomas with a low risk of main pancreatic duct injury. L(R)-PEN is performed for similar indications at our institution.

**Methods:** We retrospectively analyzed the perioperative and long-term outcomes of L(R)-PEN performed at our institution from 2013 to 2022.

## Indication at our institute:

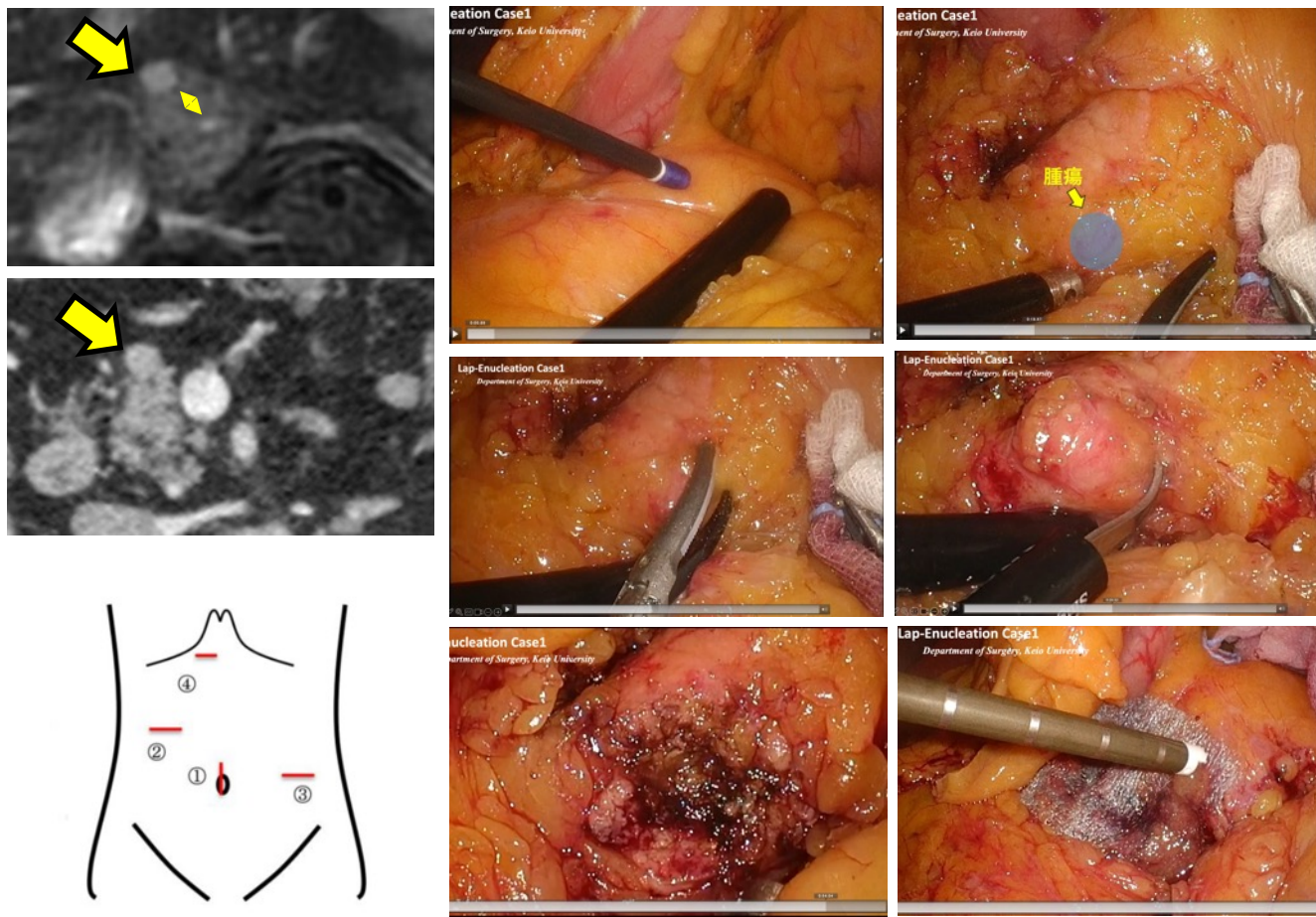
- Oncological
  - Benign or low-grade malignant tumor
  - Tumor with a clear capsule and no infiltration
  - Low risk of lymph node metastasis
- Surgical
  - Not close to the main pancreatic duct (>3-5 mm between the tumor and the main pancreatic duct)
  - Located on the surface of the pancreas
  - Basically, laparoscopic (robot-assisted)

## Results:

	n=9
Age, years	60 (33-76)
Sex (male/female)	4 / 3
BMI	26 (19-30)
Disease	
PNEN (insulinomas)	5 (55.6%)
NF-PNEN	3 (33.3%)
Epithelial cyst	1 (11.1%)
Tumor size ; mm	10 (7-20)
Tumor location (Ph:Pb:Pt)	3 : 2 : 4
Operation time (min)	165 (103-273)
Blood loss (ml)	5 (5-25)
Change of surgical procedure → Spleen-preserving distal* pancreatectomy	1 (11.1%)
Postoperative pancreatic fistula (≥Grade B)	1 (11.1%)
Postoperative hospital stay (day)	12 (7-66)
Postoperative diabetes mellitus	1 (11.1%)
Follow-up period (month)	33 (1-131)
Recurrence or death	0 (0%)

**Conclusion:** Despite the potential risks of main pancreatic duct injury and pancreatic fistula, L(R)-PEN is a minimally invasive and function-preserving surgery that aims to preserve as much pancreatic parenchyma as possible.

**Case1:** 59y, Male, Ph 7mm, NF-PNEN, L-PEN, Op-time 172min, Blood loss 5ml, Hospital stay 9 days



**Case2:** 44y Female Pt 8mm, Insulinoma, R-PEN, Op-time 145min, Blood loss 5ml, Hospital stay 10 days

