

## Oral Presentation 1

- **Presentation Date:** Friday, April 24, 2015
- **TIME:** 13:30-14:20
- **Chaired by:** Soon-Chan Hong, Seong-Ho Choi

### OP-1-1

#### Application of Polyglycolic Acid Mesh to Prevent Pancreatic Fistula Following Distal Pancreatectomy: Multicenter Prospective Randomized Controlled Study

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**Background:** The rate of postoperative pancreatic fistula (POPF) after distal pancreatectomy ranges from 13% to 64%. To prevent POPF, polyglycolic acid (PGA) mesh was introduced but the effect was evaluated only with small number of case series or retrospective studies. The purpose of this study was to investigate perioperative and clinical outcomes in patients undergoing distal pancreatectomy with or without PGA to prevent POPF.

**Methods:** From 2011 to 2014, 97 patients who underwent distal pancreatectomy at 5 centers were enrolled in this prospective randomized controlled study (PGA group, n=44 vs. non-use group, n=53). Pancreatic parenchyma was divided using a stapling device and prophylactic octreotide was not used in all cases. Perioperative and clinical outcomes including POPF were compared. POPF were defined and graded as A, B, or C according to the international study group for pancreatic fistulas criteria.

#### **Results:**

There was no difference in age (59.9±12.0 vs. 54.5±14.1, p=0.051), male to female ratio (1.0:1.3 vs. 1.0:1.7,

p=0.586), malignancy (40.9% vs. 32.1%, p=0.367), pancreatic duct diameter (1.92±0.75 vs. 1.94±0.95 mm, p=0.472), soft pancreatic texture (90.9% vs. 83.0%, p=0.174), or thickness of transection margin (16.9±5.4 vs. 16.4±4.9 mm, p=0.625) between the PGA group and the non-use group. No significant difference in operation time (152.6±58.3 vs. 157.9±57.6 minutes, p=0.681), estimated blood loss (175.0±175.9 vs. 206.8±166.3 mL, p=0.376), or postoperative hospital stay (9.9±7.5 vs. 10.0±6.3 days, p=0.927) was found between 2 groups. Rate of POPF was 65.9% (n=29) in PGA and 54.7% (n=29) in non-use group (p=0.263). Grade of POPF was as follows; Grade A/B/C, 82.8%/17.2%/0% vs. 48.3%/48.3%/3.4%, p=0.019). POPF grade B and C occurred more frequently in non-use group than PGA group (28.3%, n=15 vs. 1.4%, n=5, p=0.040).

**Conclusions:** This study showed that wrapping of pancreas cut surface with PGA mesh provided a significant benefit in reducing the rate of POPF clinically.

**Keywords:** Distal pancreatectomy, Pancreatic fistula, Polyglycolic acid

### OP-1-2

#### Defining Practical N-staging System to Predict Oncologic Outcome in Resected Left Sided Pancreatic Cancer

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**Background:** Lymph node (LN) metastasis is known to be one of the important prognostic factors in resected pancreatic cancer. There are several LN evaluating systems to predict oncologic impact. In this study, we investigated which N-staging system would be practical in determining the survival differences resected left-sided pancreatic cancer.

**Methods:** From January 1992 to December 2014, 120 medical records of the patients who underwent radical pancreatectomy for left-sided pancreatic cancer were retrospectively reviewed. 31 patients who underwent pancreatectomy following neoadjuvant treatment were excluded. Clinicopathologic variables including pN stage, total number of retrieved LNs (RN-LN), absolute number of LN metastasis (N-LNmet), and lymph node ratio (LNR) were evaluated. Overall survival (OS) and Disease free survival (DFS) were analyzed according to these 4 LN related parameter.

**Results:** 57 patients were male and 32 were female with age, 62±2 years. Mean tumor size was 3.5cm. Tumor were located at the body (n=54, 60.7%), the tail (n=30, 33.7%),

or the body/tail ( $n=5$ , 5.6%) R-status of patients were R0,  $n=77$  (86.5%), 9 patients (10.1%) were R1, and 3 patients (3.4%) were R2. PNI of patients were positive,  $n=44$  (50.0%), and 44 patients (50.0%) were negative. LVI of patients were positive,  $n=22$  (25.0%), and 66 patients (75.0%) were negative. pN stage of patients were N0,  $n=42$  (47.2%), and 47 patients (52.6%) were N1. RN-LN of patients were  $N<12$ ,  $n=36$  (40.4%), and 53 patients (59.6%) were  $N\geq 12$ . N-LNmets of patients were #N0,  $n=42$  (47.2%), 22 patients (24.7%) were #N1, and 25 patients (28.1%) were #N $\geq 2$ . LNR of patients were  $r<0.08$ ,  $n=54$  (60.7%), and 35 patients (39.3%) were  $r\geq 0.08$ . DSF was mean 19.5 months (95% CI: 13.8-25.1), and OS was noted to be mean 26.6 months (95% CI: 21.0-32.1). In univariate analysis. pN stage (pN0 vs pN1: 18.1 months (95%CI: 0.00-44.28) vs. 8.3 months (95%CI: 5.52-11.08),  $p=0.001$ ), N-LNmets (#N=0 vs. #N=1 vs. #N $\geq 2$ : 18.1 months (95%CI: 0.00-44.28) vs. 11.0 months (95%CI: 3.88-18.12) vs. 6.5 months (95%CI: 2.87-10.13),  $p<0.001$ ), and LNR ( $<0.08$  vs.  $\geq 0.08$ : 14.9 months (95%CI: 9.22-20.65) vs. 6.6 months (95%CI: 3.27-9.93),  $p<0.001$ ) were analyzed to impact on DFS. In addition, these LN evaluating systems were also found to influence on OS. (pN0 vs pN1: 35.3 months (95%CI: 23.35-47.32) vs. 17.2 months (95%CI: 12.82-21.52),  $p=0.009$ ); (#N=0 vs. #N=1 vs. #N $\geq 2$ : 35.3 months (95%CI: 23.35-47.32) vs. 19.4 months (95%CI: 7.32-31.55) vs. 16.4 months (95%CI: 13.17-19.56),  $p=0.003$ ); ( $r<0.08$  vs.  $r\geq 0.08$ : 32.7 months (95%CI: 21.98-43.43) vs. 16.4 months (95%CI: 11.03-21.70),  $p=0.008$ ) In multivariate analysis, N-LNmet (#N $\geq 2$ ) was identified to be independent prognostic factor to predict oncologic outcome in resected left-sided pancreatic cancer (DFS and OS: Exp ( $\beta$ )=4.46 (95% CI: 2.30-8.54),  $p<0.001$ , and Exp ( $\beta$ )=2.95 (95% CI: 1.57-5.56),  $p=0.001$ )

**Conclusions:** Absolute number of lymph node metastasis (N-LNmets) was found to be independent staging system to predict DFS and OS. Oncologic outcome of patients with #N $\geq 2$  showed poor survival, suggesting these patients will be potential candidate for neoadjuvant treatment. Further study is warranted for preoperative identification of these patients group.

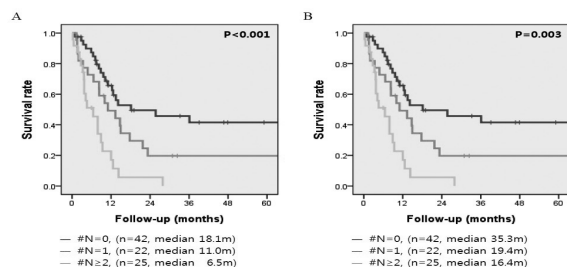


Fig. 1 Survival rate according to absolute number of LN metastasis (N-LNmet). A, DFS. B, OS

**Keywords:** Pancreatic cancer, Pancreatectomy, Lymph node metastasis, N-stage, Survival

## OP-1-3

### Metabolic Effect of Pancreatoduodenectomy: Resolution of Diabetes Mellitus after Surgery

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**Background:** It is considered natural that glucose tolerance worsens after pancreatectomy. However, diabetes mellitus (DM) resolves after bariatric bypass surgery and anatomic changes after pancreatoduodenectomy (PD) resemble those after bariatric surgery. This study assessed the incidence of DM resolution after pancreatectomy and differences in metabolic parameters following PD and distal pancreatectomy (DP).

**Methods:** Between 2007 and 2013, 218 consecutive patients with pancreatic diseases underwent PD ( $n=112$ ) or DP ( $n=106$ ) at Seoul National University Hospital. Factors associated with changes in glucose homeostasis were evaluated by assaying serum glucose concentrations in prospectively collected samples.

**Results:** Of the 218 patients, 88 (40.4%) had preoperative DM, with 27 (30.7%) of the latter showing postoperative resolution of DM, a rate significantly higher in patients who had undergone PD than DP (40.4% vs. 12.9%,  $p=0.008$ ). Fasting blood glucose ( $p=0.001$ ), PP2 ( $p<0.001$ ), and HOMA-IR ( $p=0.005$ ) significantly decreased after PD but not after DP. Multivariate analysis revealed that PD was independently associated with DM resolution (odds ratio 7.790,  $p=0.003$ ). PD was associated with a significantly higher DM resolution rate than DP among the 37 pancreatic cancer patients with preoperative DM (34.6% vs. 0%,  $p=0.036$ ). DM resolution rates were similar in pancreatic cancer and other pancreatic diseases ( $p=0.419$ ).

**Conclusion:** More than 40% of patients with preoperative DM show resolution after PD. Decreased insulin resistance and enhanced glucose stimulated insulin secretion seem to contribute improved glucose homeostasis after PD. BMI was unrelated to DM resolution, indicating that PD-associated physio-anatomical changes may help resolve DM independent of weight.

**Keywords:** Pancreas, Pancreatoduodenectomy, Distal pancreatectomy, Diabetes mellitus

## OP-1-4

### The Significance of Lymph Node in Pancreatic Neuroendocrine Tumors: Is Dissection Absolutely Necessary?

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**Background:** Non-functioning pancreatic neuroendocrine tumors (NF-pNET) are relatively less known pancreatic neoplasm due to rarity. Surgery is the mainstay of treatment, however, the indication and extent of surgery is yet unestablished. This study aims to investigate the clinical significance of lymph node (LN) metastasis and to clarify the surgical extent regarding LN dissection.

**Methods:** 166 patients underwent curative-intent surgery for NF-pNET between 1994 and 2013. LNs were harvested in 102 patients and 64 did not undergo LN dissection. Pathologic review was done by a pathologist. Demographics and clinicopathologic data were obtained. Statistical analysis was performed.

**Results:** The mean age was 53 years and had equal gender distribution. The mean size of tumor was 3.6cm. The frequencies of Gr1, Gr2, Gr3 by WHO classification were 50.0%, 42.8%, 7.2%. T1, T2, T3 tumors consisted 34.9%, 23.5%, 34.9%. There were 78 N0, 24 N1, and 64 Nx. The overall 5-year disease free survival (DFS) was 72.8%. The margin status (HR 4.186,  $p=0.014$ ), WHO classification (Gr2: HR 6.600,  $p=0.072$ ; Gr3: HR 72.419,  $p<0.001$ ), and LN metastasis (HR 2.441,  $p=0.029$ ) were independently associated with DFS.

The 5-year DFS of N0 and N1 was 79.6% and 22.5% ( $p<0.001$ ). Comparing N0 and N1, WHO classification [Gr1: 31(N0) vs. 0(N1),  $p<0.001$ ] and T category [T1/T2: 48(N0) vs. 0(N1),  $p<0.001$ ] showed strong differences. Age, symptom, and size showed marginal differences.

Most of the 64 Nx patients had Gr1 (81.3%) and T1/2 (93.8%) tumors. The 5-year DFS was 96.4%. One recurrence occurred in Gr1, T1 tumor but is believed to be de novo tumor, and another in Gr3, T3 tumor with positive margin.

**Conclusions:** Because LN status provides prognostic information and may have some role in recurrence prevention in NF-pNET, LN dissection should be performed. However, patients with confirmed Gr1 tumors confined within pancreas (T1/2) may be spared from extensive LN dissection.

**Keywords:** Pancreatic neuroendocrine tumor, Lymph node,

Metastasis, Dissection

## OP-1-5

### Yonsei Criteria in Minimally Invasive Surgery for Left Sided Pancreatic Cancer

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**Background:** Minimally invasive surgery (MIS) for left side pancreatic benign or borderline malignancy has been regarded as a feasible and safe. However, application of MIS for left-sided pancreatic cancer is still controversial.

**Methods:** From June 2007 to December 2014, 135 patients who underwent MIS or OPEN distal pancreatectomy (OS) for left-sided pancreatic cancer were enrolled. MIS have been applied for well selected patients with Yonsei criteria, including the following conditions: 1) tumor confined to the pancreas, 2) intact fascial layer between the distal pancreas and the left adrenal gland and kidney, and 3) tumor located more than 1-2cm from the celiac axis. We compared the perioperative and oncologic outcomes of MIS and OS groups for treating left-sided pancreatic cancer.

**Results:** MIS and OS were performed in 29 and 106 patients for left-sided pancreatic cancer. The patients within Yonsei criteria were 16 patients in MIS and 38 in OS. In the MIS group, the mean tumor size was  $2.75 \pm 1.32$  cm and the mean number of retrieved lymph nodes was  $10.5 \pm 7.14$ . The resection margins were confirmed to be negative for malignancy in all patients. Tumor size ( $2.8 \pm 1.3$  vs.  $3.5 \pm 1.9$  cm,  $p=0.05$ ) and length of hospital stay ( $12.3 \pm 6.8$  vs.  $22.4 \pm 21.6$  days,  $p=0.002$ ) were significantly different between two groups. MIS within Yonsei criteria had longer disease-free survival (DFS) and overall survival (OS) than the Open group out of Yonsei criteria (DFS: 47.6 vs. 24.7 months,  $p=0.027$ ; OS: 60.0 vs. 30.7 months,  $p=0.046$ ). However, there were no significant differences in median overall survival between the MIS and open group within Yonsei Criteria (60.00 vs. 60.72 months,  $p=0.616$ ).

**Conclusions:** A Yonsei criterion is useful in selecting MIS for left-sided pancreatic cancer, and can predict excellent long-term oncologic outcomes.

**Keywords:** Minimally Invasive Surgery, Pancreatic Cancer