neither prevented by caspase inhibitor nor necrosis inhibitor. Co-treatment of doxorubicin, which is a representative of chemotherapeutic agents for HCC, and AS1411 or modified AS1411 showed additional anti-tumor efficacy in HCC cell proliferation. The affinity and specificity of GPC3 aptamers newly synthesized were evaluated, and then anti-tumor efficacy was also assessed. We found a specific one showing high affinity and specificity in HCC cells compared to CCA cells, and the GPC3 aptamer was found to suppress HCC cell growth.

**Conclusions:** We found that AS 1411 and modified AS1411 can suppress HCC cell growth without inducing cell death. Additionally, we confirmed that GPC3 aptamer may selectively bind to HCC cells with high affinity, and suppress cell proliferation, implicating the therapeutic potential of aptamer as a novel targeted therapy for HCC.

**Keywords:** Aptamer, Hepatocellular carcinoma, Targeted therapy, AS1411, Nucleolin, Glypican-3

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**Multidisciplinary Approach to Biliary**

- **Date:** June 13, 2014  
- **Time:** 14:00~15:30  
- **Venue:** C Room

**PS-3-13**

**Factors Associated with Postoperative Endocrine Function Impairment after Distal Pancreatectomy**

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**Background/Aim:** Incidence and risk factors of post-pancreatectomy glucose intolerance are not well investigated before. This study was aimed to figure out clinicopathologic factors associated with development of glucose intolerance or overt diabetes mellitus (DM) after distal pancreatectomy, and to investigate correlation between resected pancreas volume and endocrine function impairment.

**Methods:** Excluding those with preoperative DM, a total of 101 patients was enrolled in this prospective cohort study, who underwent distal pancreatectomy with minimum 1 year postoperatively follow up. Oral glucose tolerance test, HbA1c and pancreatic volumetry were consecutively checked at preoperative, immediate postoperative period and postoperative 1 year.

**Results:** Mean age of the patients was 54.1 years and male to female ratio was 1 to 1.9. Among the study subjects, 20.8% had pancreatic ductal adenocarcinoma and mean BMI of the patients was 23.3. After 1 year of distal pancreatectomy, 51 patients (50.5%) had impaired fasting glucose (n=26) or DM (n=25). Univariate analysis revealed female sex (58.5% vs. 36.1%, P=0.031), higher body mass index (BMI) (24.1 vs. 22.5, P=0.010), higher preoperative fasting blood sugar (106.0 vs. 99.2, P=0.047), larger resected volume (36.5% vs. 28.0%, P=0.026) and lower remnant volume versus BMI (1689 vs. 2059, P=0.021) were risk factors for postoperative endocrine function impairment. Multivariate analysis revealed female sex (OR 6.592, P=0.002), higher BMI (OR 10.292, P=0.007), and resected volume (OR 3.386, P=0.044) were independent risk factors. Threshold of maximum diagnostic value for BMI was 20 and resected volume was 25% in ROC curve analysis.

**Conclusions:** Among patients without preoperative DM, impaired glucose tolerance or overt DM develop in 50.5% of the patients after distal pancreatectomy. Female sex, higher BMI and resection of the pancreatic volume over 25% are risk factors of endocrine function impairment, therefore preoperative explanation and careful perioperative glucose monitoring is needed in these patients.

**Keywords:** Pancreatectomy, Diabetes mellitus, Postoperative period, Body mass index, Female

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**PS-3-14**

**Does Timing of Adjuvant Chemotherapy Impact Patient Survival with Resected Pancreatic Cancer?**

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Department of Surgery, Seoul National University Bundang Hospital, Seoul National University College of Medicine

**Background:** Currently the adjuvant chemotherapy after curative resection has become the accepted standard of care in patients with pancreatic ductal adenocarcinoma (PDAC). Although earlier initiation of adjuvant chemotherapy is theoretically presumed to have a survival benefit, there has been few clinical data regarding optimal timing of adjuvant chemotherapy after surgery. The purpose of the present study was to evaluate the oncologic outcome of patients with resected PDCA according to the timing of adjuvant therapy.

**Method:** Among 169 patients undergoing pancreatic resection for PDAC between July 2003 and December 2012, 62 patients who received adjuvant chemotherapy after R0 or R1 resection were selected for this study. The patients were divided into two groups according to the start time of adjuvant chemotherapy after resection; early group (<5 weeks) (n=25) and late group (≥5 weeks) (n=37). We respectively analyzed the clinical and survival outcomes of the two groups.

**Results:** There were no significant differences in age, gender, tumor site, tumor size, cancer stage, perineural invasion, lymphovascular invasion, rate of R1 resection, completion rate...
of chemotherapy and rate of concurrent radiation between two groups. However, the late group showed longer hospital stay ($P=0.001$) and higher incidence of severe postoperative complications (defined as grade III or more Clavien-Dindo classification) ($P=0.064$) compared with the early group. The early group showed higher 3-year overall survival rate than the late group but the difference did not reach a statistical significance (53.9% vs. 31.0%, $P=0.076$). In comparison, the 3-year disease-free survival rate was significantly higher in early group than the late chemotherapy group (39.9% vs. 16.1%, $P=0.017$). The multivariate analysis revealed that early adjuvant chemotherapy ($P=0.040; \text{RR}=2.080; 95\% \text{ confidence interval [CI]} 1.034-4.184$) and perineural invasion ($P=0.032; \text{RR}=2.864; 95\% \text{ CI} 1.095-7.493$) were independent factors for disease-free survival.

**Conclusion:** This study demonstrated that early initiation of adjuvant chemotherapy provides better prognosis in patients with resected PDCA. The efforts to reduce postoperative complications and enhance the postoperative recovery should be made to early initiate the adjuvant chemotherapy after resection for PDCA.

**PS-3-15**

**Effect of Rowachol on Prevention of Postcholecystectomy Syndrome after Laparoscopic Cholecystectomy: Prospective Multicenter Randomized Controlled Trial**

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**Background/Aim:** Postcholecystectomy syndrome (PCS) is characterized by abdominal pain following gallbladder removal. The purpose of this trial is to determine whether Rowachol will be useful in the prevention of PCS and in symptoms improvement after laparoscopic cholecystectomy (LC).

**Methods:** From 2012 to 2013, this prospective, randomized, single blind, placebo-controlled study had balanced random assignment Rowachol and placebo in Dongguk University Ilsan Hospital, and Chung-Ang University Hospital. A total of 138 patients, with various gallbladder diseases after LC, were enrolled and randomized. Rowachol or placebo 100mg three times daily was given to each group of patients for 3 months. Outcomes were assessed in visit over 3 months after surgery with right upper quadrant (RUQ) pain on European Organization for Research and Treatment of Cancer QLQ-C30.

**Results:** There are no differences in aspect of demographics, preoperative clinical findings, and surgical findings between each group. Incidence of PCS in placebo group (n=9, 14.3%) was higher than that in Rowachol group (n=3, 4.7%) with statistically marginal significance ($P=0.089$). After risk factor analysis for PCS, the patients with PCS showed a higher difficulty score to perform LC, more frequent pathology with acute cholecystitis, and absence of postoperative Rowachol treatment compared to those without PCS. Among these, higher difficulty score to perform LC ($HR=5.780, 95\% CI 1.355-24.390, P=0.018$), and Absence of postoperative Rowachol treatment ($HR=2.537, 95\% CI 1.102-10.386, P=0.048$) were identified independent risk factors to develop PCS after multivariate analysis.

**Conclusion:** Rowachol can be beneficial for prevention of PCS and symptoms improvement after LC.

**Keywords:** Postcholecystectomy syndrome, Laparoscopic cholecystectomy

**PS-3-16**

**Laparoscopic Central Pancreatectomy for Benign or Low-grade Malignant Lesions in the Pancreatic Neck and Proximal Body**


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**Background:** Laparoscopic central pancreatectomy (LCP) is a parenchyma-sparing minimally invasive surgical technique for removal of benign or low-grade malignant lesions from the neck and proximal body of the pancreas. The aim of this study was to compare the short- and long-term clinical outcomes of LCP with those of other pancreatectomies.

**Methods:** During the study period, January 2007 to December 2010 (median follow-up 40.6 months), 287 pancreatectomies were performed for lesions in the neck and proximal body of the pancreas. To compare the clinical outcomes of LCP and other pancreatectomies, 26 cases of LCP, 14 cases of open central pancreatectectomy (OCP), and 96 cases of extended laparoscopic distal pancreatectomy (E-LDP) were selected.

**Result:** Tumor sizes in the LCP (2.2 cm) and OCP (2.9 cm) groups were smaller than in the E-LDP (4.0 cm) group. Mean operation time in the LCP group (350.2 min) was longer than in the OCP (270.3 min) and E-LDP groups (210.6 min). There were more surgical complications in the LCP (38.5%) and OCP groups (50%) than in the E-LDP group (14.6%). Mean duration of postoperative hospital stay was 13.8 days for the LCP group, which was significantly shorter than for the OCP group (22.4 days). New-onset diabetes was less frequent after LCP than after E-LDP (11.5% vs 30.8%).