

## Development Of A Nomogram For Predicting Prognosis Of Pancreatic Cancer After Pancreatectomy

So Jeong YOON<sup>1</sup>, Jaewoo KWON<sup>2</sup>, Chang-Sup LIM<sup>3</sup>, Yong Chan SHIN<sup>4</sup>, Woohyun JUNG<sup>5</sup>, Sang Hyun SHIN<sup>1</sup>, Jin Seok HEO<sup>1</sup>, In Woong HAN\*<sup>1</sup>

<sup>1</sup>*Division Of Hepatobiliary-pancreatic Surgery, Department Of Surgery, Samsung Medical Center, Sungkyunkwan University School Of Medicine, REPUBLIC OF KOREA*

<sup>2</sup>*Department Of Surgery, Kangbuk Samsung Hospital, Sungkyunkwan University School Of Medicine, REPUBLIC OF KOREA*

<sup>3</sup>*Department Of Surgery, Seoul National University Boramae Medical Center, Seoul National University College Of Medicine, REPUBLIC OF KOREA*

<sup>4</sup>*Department Of Surgery, Ilsan Paik Hospital, Inje University College Of Medicine, REPUBLIC OF KOREA*

<sup>5</sup>*Department Of Surgery, Ajou University Hospital, Ajou University College Of Medicine, REPUBLIC OF KOREA*

**Background** : Pancreatic ductal adenocarcinoma (PDAC) is one of the most lethal malignancies, and the mainstay of treatment is curative resection. As of now, TNM staging system is regarded as a standard for predicting prognosis after surgery. However, the prognostic accuracy of the system is still limited. The aim of this study was to develop a new predictive nomogram for resected PDAC.

**Methods** : The clinicopathological data of patients who underwent surgical resection for PDAC between 2006 and 2015 at five major institutions were retrospectively reviewed. A total of 885 patients were included in the analysis. Cox regression analysis was performed to investigate prognostic factors for recurrence and survival. Statistically significant factors in the multivariable models were used for creating nomograms.

**Results** : The nomogram for predicting recurrence-free survival included nine factors: sarcopenic obesity, elevated carbohydrate antigen 19-9, platelet-to-lymphocyte ratio, preoperatively-identified arterial abutment, estimated blood loss (EBL), tumor differentiation, size, lymph node ratio, and tumor necrosis. The model for overall survival was developed using ten variables: age, underlying liver disease or chronic kidney disease, preoperatively found portal vein invasion, portal vein resection, EBL, tumor differentiation, size, lymph node metastasis, and tumor necrosis. The time-dependent area under the receiver operating characteristic curve (AUC) for both models exceeded 0.70.

**Conclusions** : These new comprehensive nomograms would provide information on disease status and be useful for determining the adjuvant therapy for PDAC patients. We are planning further studies using artificial intelligence for enhancing performance of the prediction models.

Corresponding Author : In Woong HAN (cardioman76@gmail.com)