Supplementary Material

Supplementary Table S1. Complications and their associated Clavien Dindo Classification applied during this study for pancreaticoduodenectomy resection

Complication	**Clavien Dindo Classification**
Assessment for pancreaticoduodenectomy	
Superficial SSI	1
Deep incision SSI	1
Readmission	1
Grade A POPF	1
Post-operative acute pancreatitis grade A	1
Renal Insufficiency	1
Delayed gastric emptying	2
Grade B POPF	2
Post-operative acute pancreatitis grade B	2
Pneumonia	2
Sepsis	2
DVT requiring therapy	2
Pulmonary embolism	2
Transfusion intraoperative or post-operative	2
Urinary tract infection	2
Organ space SSI	3A
Grade C POPF	3A
Post-operative acute pancreatitis grade C	3A
Wound dehiscence	3B

Return to OR	3B
Cardiac arrest	4A
CVA	4A
Myocardial infarction	4A
Acute renal failure	4A
Unplanned intubation	4A
Persistent intubation >48 hours	4A
Septic shock	4B
Mortality	5

Supplementary Table S2. Multivariable regression model for SSI in high-risk patients undergoing pancreaticoduodenectomy

n=7784	Multivariable OR	95% CI	p-value
NPWT	0.98	0.75-1.13	0.898
Age	1.00	0.99-1.01	0.709
BMI	1.02	1.01 -1.04	*0.005*
COPD	0.83	0.51-1.35	0.459
CHF	0.44	0.06-3.21	0.414
Hypertension	0.95	0.79 -1.15	0.596
Dialysis	1.34	0.41-4.46	0.670
Bleeding disorder	1.18	0.73 -1.90	0.508
Preoperative sepsis	1.08	0.50-2.36	0.842
Functional status	1.79	0.80-3.97	0.154
MIS (vs. open)	0.68	0.47-0.98	*0.038*
Invasive (≥T3)	1.10	0.94-1.28	0.231
Pancreas texture (soft vs intermediate or hard)	1.60	1.36-1.82	*<0.001*
Prophylactic broad antibiotics	0.83	0.69-1.00	0.052

Significant p-values are italicized. Values presented as odds ratio (95% confidence interval). Brier score 0.062, ROC area under curve 0.560 ($p<0.001$)

Abbreviations: ASA, American Society of Anesthesiologist; BMI, body mass index; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; NPWT, negative pressure wound therapy; MIS, minimally invasive surgery); ROC, receiver operating curve.

Supplementary Table S3. Multivariable logistic regression model for SSI in patients undergoing pancreaticoduodenectomy for malignancy

n=5653	Multivariable OR	95% CI	p-value
NPWT	0.96	0.70-1.32	0.788
Age	1.00	1.00-1.01	0.849
BMI	1.03	1.01-1.05	*0.005*
Female	1.19	0.96-1.47	0.113
COPD	1.14	0.66-1.97	0.641
CHF	0.62	0.09-4.63	0.641
Hypertension	1.04	0.83-1.40	0.735
Diabetes insulin dependant	1.01	0.74-1.38	0.941
Diabetes non-insulin dependant	0.71	0.74-1.00	0.051
Smoking	1.04	0.76-1.42	0.801
Dialysis	1.63	0.37-7.27	0.522
Steroid use	1.65	1.00-2.80	0.066
Bleeding disorder	0.74	0.36-1.53	0.417
Preoperative sepsis	0.75	0.27-2.07	0.578
Functional status	1.52	0.53-4.35	0.440
Neoadjuvant	0.99	0.78-1.25	0.913
MIS (vs. open)	0.69	0.45-1.06	0.086
Invasive (≥T3)	0.90	0.71-1.15	0.409

Pancreas texture (soft vs intermediate or hard)	1.14	0.91-1.42	0.249
Prophylactic broad antibiotics	0.71	0.57-0.89	*0.003*

Significant p-values are italicized. Values presented as odds ratio (95% confidence interval). Brier score 0.0606, ROC area under curve 0.590

Abbreviations: ASA, American Society of Anesthesiologist; BMI, body mass index; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; NPWT, negative pressure wound therapy; MIS, minimally invasive surgery); ROC, receiver operating curve.

Supplementary Table S4. Multivariable logistic regression model for factors predictive of 30-day serious complications in high-risk patients undergoing pancreaticoduodenectomy

n=7784	Multivariable OR	95% CI	p-value
NPWT	0.81	0.67-0.98	*0.031*
Age	1.01	1.00-1.01	*0.019*
BMI	1.03	1.01-1.04	*<0.001*
COPD	1.63	1.27-2.11	*<0.001*
CHF	0.90	0.39-2.10	0.811
Hypertension	1.18	1.04-1.33	*0.008*
Dialysis	1.92	0.92-4.03	0.081
Bleeding disorder	1.07	0.78-1.47	0.685
Preoperative sepsis	2.25	1.47-3.46	*<0.001*
Functional status	1.44	0.81-2.54	0.213
MIS (vs. open)	0.89	0.72-1.09	0.258
Invasive (≥T3)	1.16	1.02-1.32	*0.028*
Weight loss	1.14	0.96-1.34	0.133
Prophylactic broad antibiotics	0.84	0.74- 0.94	*0.004*

Significant p-values are italicized. Values presented as odds ratio (95% confidence interval). Brier score 0.144, ROC area under curve 0.577

Abbreviations: ASA, American Society of Anesthesiologist; BMI, body mass index; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; NPWT, negative pressure wound therapy; MIS, minimally invasive surgery); ROC, receiver operating curve.

Supplementary Table S5. Multivariable logistic regression model for factors predictive of 30-day serious complications in patients undergoing pancreaticoduodenectomy for malignancy

	Multivariable OR	95% CI	p-value
NPWT (n=5,653)	0.954	0.767 – 1.189	0.678
Age	1.01	1.00-1.01	0.096
BMI	1.02	1.01-1.03	*0.005*
Sex	0.77	0.67-0.89	*<0.001*
COPD	1.44	1.03-2.02	*0.035*
CHF	1.41	0.57-3.47	0.454
Hypertension	1.27	1.09-1.48	*0.003*
Diabetes insulin dependant	0.93	0.75-1.15	0.484
Diabetes non-insulin dependant	0.96	0.78-1.18	0.694
Smoker	1.23	1.01-1.51	*0.042*
Dialysis	0.76	0.21-2.71	0.674
Steroid use	1.04	0.68-1.58	0.868
Bleeding disorder	1.17	0.78-1.76	0.458
Preoperative sepsis	2.38	1.49-3.82	*<0.001*
Functional status	1.89	0.95-3.77	0.071
Neoadjuvant chemotherapy	0.91	0.78-1.08	0.277
Invasive (≥T3)	1.10	0.94-1.28	0.231

MIS (vs. open)	0.89	0.721.09	0.258
Invasive (≥T3)	1.16	1.02-1.32	*0.028*
Soft pancreas	1.57	1.36-1.82	*<0.001*
Weight loss	1.26	1.04-1.53	*0.018*
Prophylactic broad antibiotics	0.82	0.71-0.95	*0.007*
MIS (vs. open)	0.91	0.71-1.19	0.482

Significant p-values are italicized. Values presented as odds ratio (95% confidence interval). Brier score 0.139, ROC area under curve 0.610

Abbreviations: ASA, American Society of Anesthesiologist; BMI, body mass index; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; NPWT, negative pressure wound therapy; MIS, minimally invasive surgery); ROC, receiver operating curve.