Supplement 1. Univariate analysis of risk factors for complications after TP

Variable	Without complications n=29	With complications n=23	Univariate analysis P-value
Age			
≤60 years	12	10	
>60 years	17	13	0.879
Gender			
Male	20	12	
Female	9	11	0.219
Preop. BMI			
<18 kg/m^2	2	3	0.446
18-25 kg/m^2	21	15	
>25 kg/m^2	6	5	0.824
Smoke history			
No	19	14	
Yes	10	9	0.730
Alcohol history			
No	24	16	
Yes	5	7	0.267
Jaundice			
No	19	22	
Yes	4	7	0.153
Pancreatitis			
No	25	18	
Yes	4	5	0.455
CA19-9			
< 37 U/mL	6	8	
≥ 37 U/mL	23	15	0.259
Neoadjuvant treatment			
No	19	19	
Yes	10	4	0.174
Diabetes mellitus			
No	9	12	
Short-term	14	6	0.084
Long-term	6	5	0.530

Preop. FBG			
⩽ 110 mg/dl	14	13	
> 110 mg/dl	15	10	0.555
Preop. HbA1c			
< 6.5 %	18	19	
⩾ 6.5 %	11	4	0.112
Preop. total protein			
> 55 g/L	17	19	
⩽ 55 g/L	10	6	0.516
Preop. albumin			
> 35 g/L	19	18	
⩽ 35 g/L	10	5	0.317
Preop. prealbumin			
> 185 mg/L	17	18	
⩽ 185 mg/L	12	5	0.139
Preop. PNI			
> 45	19	15	
⩽ 45	10	8	0.982
Blood transfusion			
No	10	10	
Yes	19	13	0.684
Postop. FBG[*]			
< 155 mg/dl	19	7	
⩾ 155 mg/dl	10	16	**0.014**
Postop. total protein[*]			
> 55 g/L	23	18	
⩽ 55 g/L	6	5	0.927
Postop. albumin*			
> 35 g/L	24	14	
⩽ 35 g/L	5	9	0.084
Postop. prealbumin*			
> 185 mg/L	21	9	
⩽ 185 mg/L	8	14	**0.018**
Postop. PNI[*]			
> 45	24	16	
⩽ 45	5	7	0.267

*: The postoperative data are mean values calculated from biochemical data in the first three days after surgery.

Supplement 2. Cox regression analysis of factors for recurrence-free survival after TP

Variable	n	Median OS (95% CI) (months)	Univariate analysis
			P-value
Age			
≤60 years	30	4.2 (3.0-5.5)	
>60 years	22	5.0 (3.7-6.4)	0.604
Gender			
Male	32	5.0 (1.6-8.5)	
Female	20	4.2 (2.6-5.8)	0.547
BMI			
<18 kg/m^2	5	3.4 (0.6-6.1)	0.740
18-25 kg/m^2	36	4.6 (3.8-5.4)	
>25 kg/m^2	11	7.5 (2.7-12.3)	0.352
Smoke history			
No	33	5.0 (3.4-6.6)	
Yes	19	4.6 (3.9-5.3)	0.864
Alcohol history			
No	40	4.7 (3.8-5.7)	
Yes	12	4.6 (0.4-8.7)	0.719
Jaundice			
No	41	5.0 (3.7-6.4)	
Yes	11	4.7 (3.0-6.5)	0.753
Pancreatitis			
No	43	7.4 (0.8-13.9)	
Yes	9	4.3 (3.6-5.1)	0.398
CA19-9			
< 37 U/mL	14	7.4 (0-22.0)	
≥ 37 U/mL	38	4.3 (3.5-5.2)	0.205
Neoadjuvant treatment			
No	38	4.3 (3.5-5.1)	
Yes	14	8.6 (0-18.8)	0.158
Diabetes mellitus			
No	21	4.6 (2.5-6.7)	
Short-term	20	5.1 (4.5-5.8)	0.868

Long-term	11	4.3 (2.4-6.1)	0.303
Preop. FBG			
≤ 110 mg/dl	27	7.4 (3.3-11.4)	
> 110 mg/dl	25	4.3 (4.1-4.5)	**0.045**
Preop. HbA1c			
< 6.5 %	37	4.7 (3.5-5.6)	
≥ 6.5 %	15	4.6 (0-10.6)	0.789
Preop. total protein			
> 55 g/L	36	7.4 (1.6-13.2)	
≤ 55 g/L	16	4.3 (2.9-5.6)	0.127
Preop. albumin			
> 35 g/L	37	5.0 (1.1-9.0)	
≤ 35 g/L	15	4.6 (2.5-6.6)	0.281
Preop. prealbumin			
> 185 mg/L	35	5.0 (3.7-6.4)	
≤ 185 mg/L	17	4.6 (3.5-5.6)	0.806
Preop. PNI			
> 45	34	7.4 (1.2-13.6)	
≤ 45	18	4.2 (2.7-5.6)	0.076
Venous invasion			
No	26	8.6 (0.1-17.2)	
Yes	26	3.6 (2.1-5.2)	**0.015**
Lymph node invasion			
No	34	7.4 (2.7-12.0)	
Yes	18	4.3 (2.5-6.1)	0.125
Tumor size			
< 3 cm	14	7.4 (3.0-11.7)	
≥ 3 cm	38	4.2 (2.6-5.8)	0.373
Blood transfusion			
No	20	4.7 (3.7-5.7)	
Yes	32	4.3 (3.3-5.4)	0.296
Complications			
No	29	5.1 (0.4-9.9)	
Yes	23	4.7 (3.9-5.6)	0.356
Postop. BMI*			
<18 kg/m^2	14	3.0 (2.2-3.8)	0.056
18-25 kg/m^2	36	5.3 (2.2-8.5)	
>25 kg/m^2	2	4.3 (NA)	0.799

Postop. FBG[*]

< 155 mg/dl	30	5.0 (4.0-6.0)	
≥ 155 mg/dl	22	4.3 (3.6-4.9)	0.229

Postop. HbA1c[*]

< 7 %	23	8.2 (2.3-14.0)	
≥ 7 %	29	4.2 (2.9-5.5)	**0.010**

Postop. total protein[*]

> 55 g/L	50	4.4 (3.7-5.8)	
≤ 55 g/L	2	2.2 (NA)	0.490

Postop. albumin[*]

> 35 g/L	30	5.3 (1.2-9.4)	
≤ 35 g/L	22	4.3 (3.9-4.7)	0.705

Postop. prealbumin[*]

> 185 mg/L	16	7.4 (2.7-12.0)	
≤ 185 mg/L	36	4.3 (3.7-4.9)	0.232

Postop. PNI[*]

> 45	25	7.4 (3.9-10.9)	
≤ 45	27	4.2 (2.7-5.6)	**0.044**

Insulin dose[*]

> 0.7 U/kg/day	12	4.3 (3.4-5.2)	
≤ 0.7 U/kg/day	40	5.0 (3.9-6.1)	0.878

*: The postoperative data were the latest clinical values during the last follow-up before tumor recurrence.

Supplement 3. Cox regression analysis of prognostic factors for overall survival after TP

Variable	n	Median OS (95% CI) (months)	Univariate analysis P-value
Age			
≤60 years	22	26.7 (16.9-36.6)	
>60 years	30	13.9 (7.9-19.9)	0.102
Gender			
Male	32	13.9 (7.8-20.0)	
Female	20	51.0 (5.1-96.9)	0.065
Preop. BMI			
<18 kg/m^2	5	26.7 (13.4-32.4)	0.853
18-25 kg/m^2	36	18.2 (9.7-26.7)	
>25 kg/m^2	11	26.0 (9.7-42.3)	0.719
Smoke history			
No	33	25.43 (14.7-36.2)	
Yes	19	13.9 (6.9-20.9)	0.071
Alcohol history			
No	40	20.9 (3.7-38.1)	
Yes	12	18.2 (8.7-27.7)	0.452
Jaundice			
No	41	18.2 (8.0-28.4)	
Yes	11	25.4 (0-55.0)	0.908
Pancreatitis			
No	43	17.7 (3.7-31.7)	
Yes	9	75.4 (20.7-130.1)	0.222
CA19-9			
< 37 U/mL	14	20.9 (5.1-36.7)	
≥ 37 U/mL	38	18.2 (10.2-26.2)	0.823
Neoadjuvant treatment			
No	38	18.2 (7.6-28.8)	
Yes	14	45.6 (12.5-88.8)	0.254
Diabetes mellitus			
No	21	43.0 (8.7-77.3)	
Short-term	20	25.4 (8.1-42.7)	0.676
Long-term	11	8.1 (6.3-10.0)	**0.004**

Preop. FBG

  ≤ 110 mg/dl   27   25.4 (0-53.8)

  > 110 mg/dl   25   11.0 (6.7-15.2)   **0.016**

Preop. HbA1c

  < 6.5 %   37   20.9 (10.3-31.5)

  ≥ 6.5 %   15   11.0 (6.0-15.9)   0.215

Preop. total protein

  > 55 g/L   36   17.7 (10.5-50.9)

  ≤ 55 g/L   16   26.7 (2.5-50.9)   0.238

Preop. albumin

  > 35 g/L   37   18.2 (8.8-27.6)

  ≤ 35 g/L   15   25.4 (0-68.7)   0.444

Preop. prealbumin

  > 185 mg/L   35   26.0 (0-53.3)

  ≤ 185 mg/L   17   13.4 (12.2-16.6)   0.097

Preop. PNI

  > 45   34   17.7 (10.8-24.5)

  ≤ 45   18   26.7 (0-57.1)   0.326

Venous invasion

  No   26   25.4 (10.2-40.7)

  Yes   26   18.2 (7.9-28.5)   0.180

Lymph node invasion

  No   34   25.4 (9.1-41.8)

  Yes   18   17.7 (11.4-24.0)   0.483

Tumor size

  < 3 cm   14   26.7 (2.9-50.6)

  ≥ 3 cm   38   17.7 (6.9-28.5)   0.192

Blood transfusion

  No   20   18.2 (0-59.8)

  Yes   32   20.9 (5.9-36.0)   0.732

Complications

  No   29   13.9 (5.3-22.5)

  Yes   23   26.7 (0-55.5)   0.157

Postop. BMI[*]

  <18 kg/m^2 14   20.9 (5.9-35.9)   0.537

  18-25 kg/m^2 36   18.2 (1.8-34.6)

  >25 kg/m^2 2   24.9 (0-60.4)   0.456

Postop. FBG[*]

< 155 mg/dl	30	24.4 (13.7-37.2)	
≥ 155 mg/dl	22	12.6 (7.0-18.1)	0.325
Postop. HbA1c[*]			
< 7 %	35	26.7 (8.2-45.2)	
≥ 7 %	17	9.3 (7.1-11.4)	**0.011**
Postop. total protein[*]			
> 55 g/L	47	25.4 (13.8-37.0)	
≤ 55 g/L	5	11.0 (6.6-15.4)	**0.028**
Postop. Albumin[*]			
> 35 g/L	35	26.0 (18.1-33.9)	
≤ 35 g/L	17	12.6 (6.5-18.6)	**0.014**
Postop. Prealbumin[*]			
> 185 mg/L	14	58.8 (36.2-81.3)	
≤ 185 mg/L	38	17.7 (11.5-23.8)	**0.009**
Postop. PNI[*]			
> 45	30	26.0 (18.5-33.5)	
≤ 45	22	12.6 (7.7-17.4)	**0.021**
Insulin dose[*]			
> 0.7 U/kg/day	13	11.0 (6.3-15.7)	
≤ 0.7 U/kg/day	39	20.9 (10.6-31.2)	0.294

*: The postoperative data were the latest clinical values during the last follow-up before patient death.

Supplement 4. Univariate analysis of preoperative factors for postoperative glycemic control[*] after TP

Variable	Well-controlled n=29	Poorly-controlled n=23	Univariate analysis P-value
Age			
⩽ 60 years	12	10	
> 60 years	17	13	0.879
Gender			
Female	13	7	
Male	16	16	0.292
Preop. BMI			
< 18 kg/m^2	3	2	0.419
18-25 kg/m^2	18	18	
> 25 kg/m^2	8	3	0.194
Smoke history			
No	21	12	
Yes	8	11	0.136
Alcohol history			
No	22	18	
Yes	7	5	0.838
Jaundice			
No	23	18	
Yes	6	5	0.927
Pancreatitis			
No	24	19	
Yes	5	4	0.989
CA19-9			
< 37 U/mL	7	7	
⩾ 37 U/mL	22	16	0.612
Neoadjuvant treatment			
No	19	19	
Yes	10	4	0.174
Diabetes mellitus			
No	14	7	
Short-term	14	6	0.819
Long-term	1	10	**0.009**

Preop. FBG			
⩽ 110 mg/dl	17	10	
> 110 mg/dl	12	13	0.280
Preop. HbA1c			
< 6.5 %	24	13	
⩾ 6.5 %	5	10	**0.043**

*: The postoperative data were the latest biochemical values during the last follow-up.

Supplement 5. Linear analysis of preoperative factors for changes in BMI[*] after TP

Variable	Univariate analysis	
	B (SE)	P-value
Age (years)	-0.088 (0.041)	**0.038**
Gender, male vs. female	-0.088 (0.789)	0.911
Smoke history, yes or no	1.030 (0.784)	0.195
Alcohol history, yes or no	1.978 (0.868)	**0.027**
Jaundice, yes or no	1.212 (0.925)	0.196
Pancreatitis, yes or no	1.762 (0.984)	0.079
CA19-9 (U/mL)	-0.000025 (0.001)	0.967
Neoadjuvant therapy, yes or no	-1.580 (0.847)	0.065
Diabetes mellitus, long-term vs. short-term vs. no	0.727 (0.494)	0.148
Preop. total protein (g/L)	-0.064 (0.041)	0.129
Preop. albumin (g/L)	-0.158 (0.095)	0.102
Preop. prealbumin (mg/L)	-0.004 (0.007)	0.614
Preop. PNI	-0.137 (0.111)	0.226

*: The postoperative data were the latest biochemical values during the last follow-up.