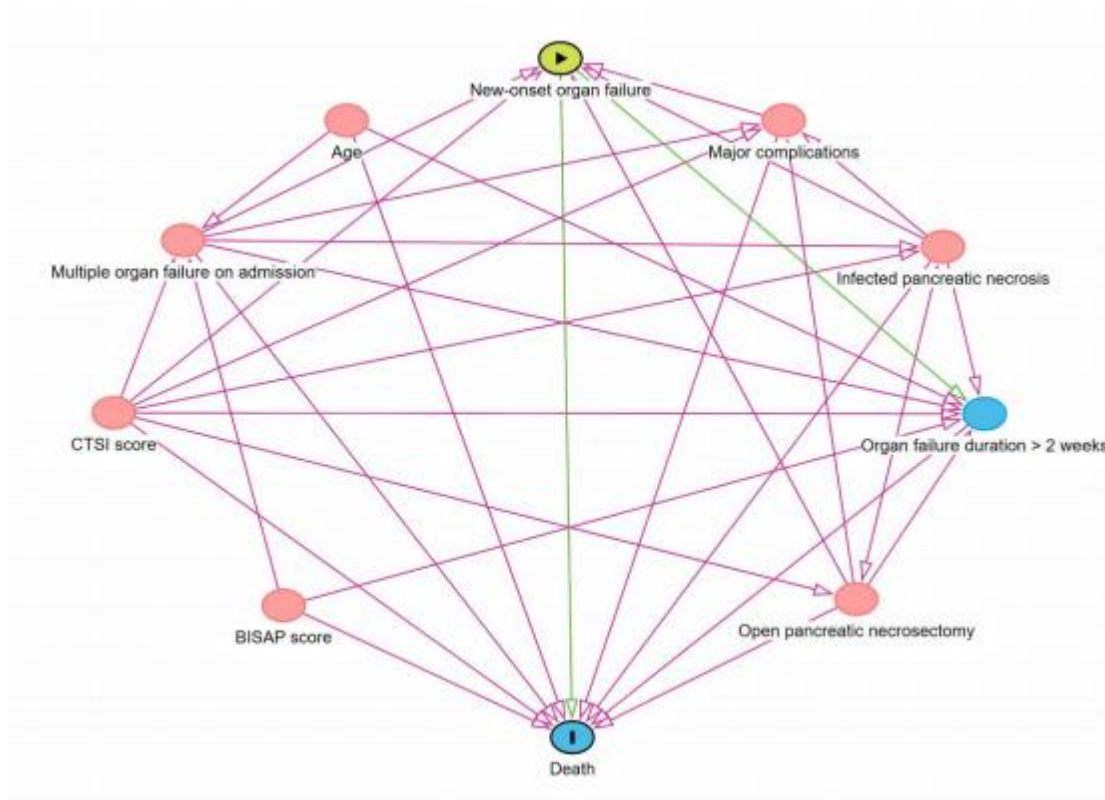




Supplementary Figure 1 Causal directed acyclic graph for assessing the association of NOOF with mortality in patients with SAP. NOOF: new-onset organ failure; SAP: severe acute pancreatitis; CTSI: computed tomography severity index; BISAP: Bedside Index for Severity in Acute Pancreatitis.

**Supplementary Table 1 Detailed baseline and clinical characteristics among
NOMOF, NOSOF, and OF groups**

Characteristics	NOOF (n = 38)		OF (n = 113)	P value ^a	P value ^b	Missing n (%)
	NOMOF (n = 21)	NOSOF (n = 17)				
Age, years, median (IQR)	42 (35, 67)	48 (35, 59)	48 (37, 59)	0.663	0.791	0
Male, n (%)	10 (47.6)	11 (64.7)	55 (48.7)	0.482	0.292	0
BMI, mean $\pm$ SD	25.6 $\pm$ 2.8	26.5 $\pm$ 2.8	26.4 $\pm$ 3.1	0.466	0.332	9 (6.0)
DM history, n (%)	2 (9.5)	2 (11.8)	26 (23.0)	0.095	1.000	0
CCI, median (IQR)	2 (0, 3)	1 (0, 2)	1 (0, 2)	0.709	0.549	0
Etiology, n (%)				0.186	0.652	0
Biliary	10 (47.6)	7 (41.2)	33 (29.2)			
Hypertriglyceridemia	7 (33.3)	8 (47.1)	52 (46.0)			
Others	4 (19.0)	2 (11.8)	28 (24.8)			
Severity						
APACHE II score, median (IQR)	14 (11, 19)	16 (13, 20)	11 (8, 14)	<0.001	0.263	5 (3.3)
BISAP score, median (IQR)	3 (3, 4)	3 (2, 3)	2 (2, 3)	0.001	0.117	6 (4.0)
CTSI score, median (IQR)	8 (8, 10)	8 (6, 10)	4 (4, 6)	<0.001	0.348	0
MOF on admission, n	12 (57.1)	9 (52.9)	19 (16.8)	<0.001	0.79	0

(%)				01	6	
OF duration > 2 weeks, n (%)	19 (90.5)	10 (58.8)	17 (15.0)	<0.0	0.05	0
IPN, n (%)	19 (90.5)	14 (82.4)	19 (16.8)	<0.0	0.80	0
				01	0	
Interventions, n (%)						
Step-up approach	14 (66.7)	11 (64.7)	20 (17.7)	<0.0	0.89	0
				01	9	
OPN	5 (23.8)	3 (17.6)	0 (0)	<0.0	0.95	0
				01	0	
Major complications, n (%)	15 (71.4)	11 (64.7)	13 (11.5)	<0.0	0.65	0
				01	8	
Intra-abdominal hemorrhage	4 (23.5)	6 (28.6)	0 (0)	<0.0	1.00	0
				01	0	
Enterocutaneous fistula	3 (14.3)	4 (23.5)	3 (2.7)	0.00	0.75	0
				3	7	
Pancreatic fistula	13 (61.9)	8 (47.1)	9 (8.0)	<0.0	0.36	0
				01	0	

^a Group NOOF VS. OF.

^b Group NOMOF VS. NOSOF.

NOOF: new-onset organ failure; OF: organ failure; NOMOF: new-onset multi-organ failure; NOSOF: new-onset single organ failure; IQR: interquartile range; BMI: body mass index; DM: diabetes mellitus; CCI: Charlson comorbidity index; APACHE: acute physiology and chronic health assessment; BISAP: bedside index of severity in acute pancreatitis; CTSI: computed tomography severity index; MOF: multiple organ failure; IPN: infected pancreatic necrosis; OPN: open pancreatic necrosectomy.

Supplementary Table 2 Baseline and clinical characteristics of the NOOF and OF groups before and after PSM

Characteristics	Before Propensity Score Matching			After Propensity Score Matching		
	NOOF	OF	<i>P</i>	NOOF	OF	<i>P</i>
	(n = 38)	(n = 113)	Value	(n = 30)	(n = 46)	value
Age, years, median (IQR)	47 (35, 65)	48 (37, 59)	0.663	55 (40, 67)	44 (36, 58)	0.099
Male, n (%)	21 (55.3)	55 (48.7)	0.482	17 (56.7)	21 (45.7)	0.348
BMI, mean $\pm$ SD	26.0 $\pm$ 2.8	26.4 $\pm$ 3.1	0.466	26.0 $\pm$ 3.1	26.2 $\pm$ 3.4	0.717
DM history, n (%)	4 (10.5)	26 (23.0)	0.095	4 (13.3)	11 (23.9)	0.257
CCI, median (IQR)	1 (0, 2)	1 (0, 2)	0.709	2 (0, 3)	1 (0, 2)	0.185
Etiology, n (%)			0.186			0.181
Biliary	17 (44.7)	33 (29.2)		14 (46.7)	12 (26.1)	
Hypertriglyceridemia	15 (39.5)	52 (46.0)		11 (36.7)	23 (50.0)	
Others	6 (15.8)	28 (24.8)		5 (16.7)	11 (23.9)	
Severity						
APACHE II score, median (IQR)	15 (13, 20)	11 (8, 14)	<0.001	16 (13, 20)	12 (9, 15)	<0.001
BISAP score, median (IQR)	3 (3, 4)	2 (2, 3)	0.001	3 (3, 4)	2 (2, 3)	0.001

CTSI	8	4 (4, 6)	<0.001	8	4 (4, 6)	<0.001
score, median (IQR)	(6, 10)			(6, 10)		
MOF on admission, n (%)	21 (55.3)	19 (16.8)	<0.001	17 (56.7)	12 (26.1)	0.007
OF duration > 2 weeks, n (%)	29 (76.3)	17 (15.0)	<0.001	22 (73.3)	12 (26.1)	<0.001
IPN, n (%)	33 (86.8)	19 (16.8)	<0.001	25 (83.3)	18 (39.1)	<0.001
Interventions, n (%)						
Step-up approach	25 (65.8)	20 (17.7)	<0.001	17 (56.7)	20 (43.5)	0.261
OPN	8 (21.1)	0(0)	<0.001	0(0)	0 (0)	-
Major complications, n (%)	26 (68.4)	13 (11.5)	<0.001	18 (60.0)	11 (23.9)	0.002
Intra-abdominal hemorrhage	10 (26.3)	0(0)	<0.001	3 (13.3)	0 (0)	0.043
Enterocutaneous fistula	7 (18.4)	3 (2.7)	0.003	2 (6.7)	3 (6.5)	1.000
Pancreatic fistula	21 (55.3)	9 (8.0)	<0.001	15 (50.0)	8 (17.4)	0.002

PSM: propensity score matching; NOOF: new-onset organ failure; OF: organ failure; NOMOF: new-onset multi-organ failure; NOSOF: new-onset single organ failure; IQR: interquartile range; BMI: body mass index; DM: diabetes mellitus; CCI: Charlson comorbidity index; APACHE: acute physiology and chronic health assessment; BISAP: bedside index of severity in acute pancreatitis; CTSI: computed tomography severity index; MOF: multiple organ failure; IPN: infected pancreatic necrosis; OPN: open pancreatic necrosectomy.

Supplementary Table 3 Predictors of in-hospital mortality among patients with SAP after PSM

Variables	Died (n = 10)	Survived (n = 66)	Univariable analysis		Multivariable analysis	
			OR (95% CI)	P value	OR (95% CI)	P value
Age	55 (40, 74)	46 (36, 62)	1.0 (0.9-1.1)	0.089		
Male	5 (50.0)	33 (50.0)	1.0 (0.3-3.8)	1.000		
BISAP score	3 (3, 4)	3 (2, 3)	3.0 (1.2-7.5)	0.019		
CTSI score	9 (6, 10)	6 (4, 8)	1.4 (1.0-1.9)	0.026		
IPN	8 (80.0)	35 (53.0)	3.5 (0.7-18.0)	0.127		
MC	8 (80.0)	21 (31.8)	8.6 (1.7-43.9)	0.010		
MOF on admission	6 (60.0)	23 (34.8)	2.8 (0.7-11.0)	0.138		
OF duration > 2 weeks	8 (80.0)	26 (39.4)	6.2 (1.2-31.3)	0.029		
NOOF	9 (90.0)	21 (31.8)	19.3 (2.3-162.3)	0.006	19.3 (2.3-162.3)	0.006

OR: odds ratio; CI: confidence interval; PSM: propensity score matching; SAP: severe acute pancreatitis; BISAP: bedside index of severity in acute pancreatitis; CTSI: computed tomography severity index; IPN: infected pancreatic necrosis; MC: major complications; MOF: multiple organ failure; OF: organ failure; NOOF: new-onset organ failure.

Supplementary Table 4 Comparison of Cox proportional-hazards model and competing risk models

Variables	Cox	<i>P</i> value	Cause-spe cific	<i>P</i> value	Fine-Gray	<i>P</i> value
	HR (95% CI)		HR (95% CI)		SHR (95% CI)	
Age	1.0 (0.9- 1.1)	0.418	1.0 (0.9- 1.1)	0.418	1.0 (0.9- 1.1)	0.410
Male	1.3 (0.5- 3.6)	0.555	1.3 (0.5- 3.4)	0.595	1.3 (0.5- 13.6)	0.550
BISAP score	2.7 (1.1- 6.4)	0.025	2.6 (1.1- 6.2)	0.024	2.7 (1.2- 6.3)	0.022
CTSI score	1.2 (0.9- 1.6)	0.129	1.2 (0.9- 1.6)	0.141	0.4 (0.9- 1.6)	0.170
IPN	0.7 (0.1- 4.6)	0.726	0.8 (0.1- 4.5)	0.786	1.4(0.0- 11.0)	0.810
OPN	1.5 (0.3- 6.4)	0.602	1.6 (0.4- 6.3)	NA	1.5 (0.4- 6.2)	0.590
MC	1.6 (0.4- 6.5)	0.548	1.3 (0.4- 6.1)	0.677	1.6 (0.2- 14.4)	0.700
MOF on admission	1.5 (0.5- 4.3)	0.483	1.4 (0.5- 4.4)	0.495	1.5 (0.4- 5.7)	0.580
OF duration > 2 weeks	0.8 (0.2- 2.6)	0.703	0.8 (0.3- 2.7)	NA	0.8 (0.2- 3.1)	0.740
NOOF	9.1 (1.9- 44.1)	0.006	8.6 (2.0- 42.1)	0.004	9.1 (1.6- 51.9)	0.013

HR: hazard ratio; SHR: subdistribution hazard ratio; CI: confidence interval;
BISAP: bedside index of severity in acute pancreatitis; CTSI: computed

tomography severity index; IPN: infected pancreatic necrosis; OPN: open pancreatic necrosectomy; MC: major complications; MOF: multiple organ failure; OF: organ failure; NOOF: new-onset organ failure.