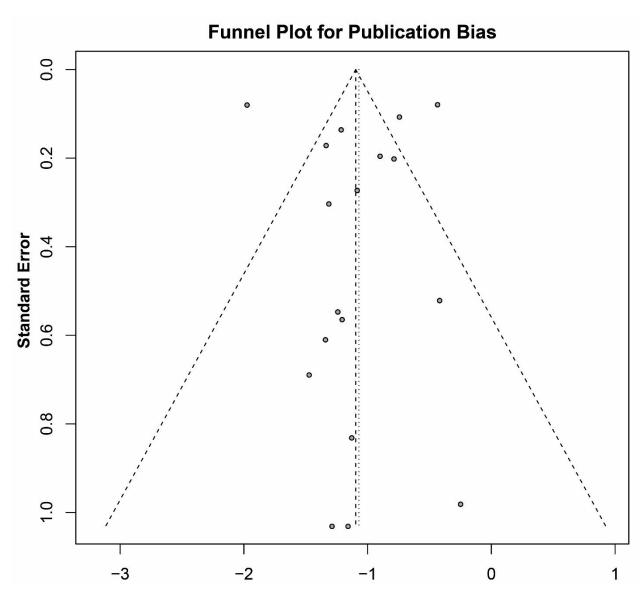


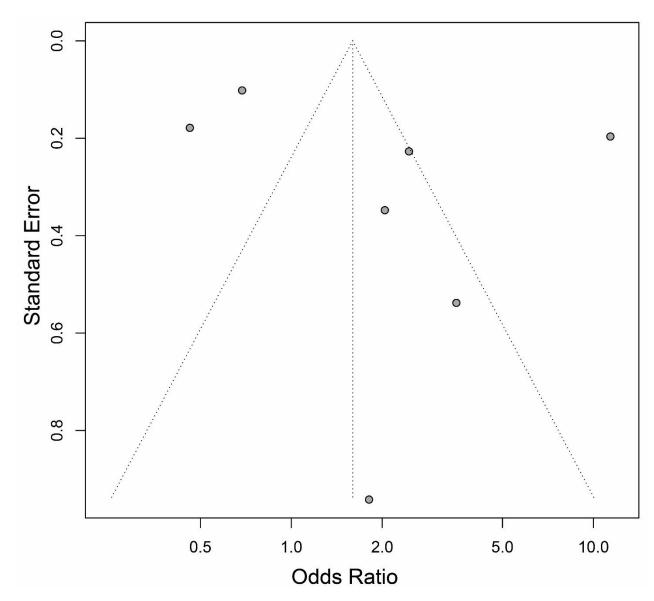
Supplementary Figure 1 Sensitivity analysis for OS comparing PTR with non-resection treatment in patients with PNET.



Supplementary Figure 2 Funnel plot for OS comparing PTR with non-resection treatment in patients with PNET.

Study	Odds Ratio	OR 95%-CI	P-value Tau	2 Tau I2
Omitting Bertani 2017 Omitting Du 2015 Omitting Franko 2010 Omitting Huttner 2015 Omitting Mou 2022 Omitting Tsilimigras 2021 Omitting Yang 2022 Omitting Zheng 2019		- 1.58 [0.64; 3.89] 1.45 [0.59; 3.56] 1.13 [0.59; 2.16] - 1.55 [0.60; 3.96] - 1.50 [0.59; 3.83] - 1.83 [0.74; 4.55] - 1.94 [0.82; 4.57] - 1.94 [0.82; 4.57]	0.4237 1.358 0.7146 0.633 0.3627 1.458 0.3961 1.440 0.1934 1.344 0.1304 1.182	7 1.1822 97.4% 6 1.1656 97.3% 4 0.7959 90.0% 2 1.2076 97.3% 7 1.2003 97.2% 2 1.1594 97.0% 3 1.0873 97.1% 3 1.0873 97.1%
Random effects model		1.60 [0.70; 3.63]	0.2636 1.259	8 1.1224 97.0%
	0.5 1 2			

Supplementary Figure 3 Sensitivity analysis for tumor grading comparing PTR with non-resection treatment in patients with PNET.



Supplementary Figure 4 Funnel plot for tumor grading comparing PTR with non-resection treatment in patients with PNET.

## **Supplementary Table 1 Characteristics of the included studies**

Author	Ye	Coun	Study	Sample S	Size	Total	Age	Sex	Tumor Grade/	Primary Tumor	Study
	ar	try	Period	(Resection/Non-	Re S	Sam	Characteristics	Ratio	Differentiation	Location	Type
				section)	1	ple		(M:F)			
Franko	201	US	1973-2	735/855	2	2158	Median 60y	55.9%:	G1:34.2%,	Pancreatic	Retrospec
[28]	0		004					44.1%	G2:27.2%,	head(42%),	tive
									G3/G4:38.6%	Body(11%),	
										Tail(27%),	
										Diffuse(20%)	
Du [27]	201	China	1991-2	74/56	-	130	Mean 49y	53.1%:	G1:16 cases, G2:29	Pancreas(65.4%),	Retrospec
	5		013				(Range 24-81y)	46.9%	cases, G3:16 cases	Stomach(10.8%),	tive
										Small	
										intestine(5.4%)	
Citterio	201	Milan	1979-2	93/46	-	139	Median 56y	48%:	G1:6 cases, G2:69	Ileum(47%),	Retrospec
[26]	7		005					52%	cases, G3:5 cases	Pancreas(26%),	tive
										Lung(9%)	
Bertani	201	Milan	1994-2	63/61	-	124	Median 54.5y	53.2%:	G1:7.5%,	Pancreatic	Prospecti
[25]	7		013					46.8%	G2:86.3%, G3:6.2%	body/tail	ve

Mou [20]	202	China	2000-2	214/322	536	Median 58y	60.3%:	Grade I(46.3%),	Pancreatic	Retrospec
	2		017				39.7%	Grade II(29.7%),	head(31.9%),	tive
								Grade III(18.3%),	Body(10.3%),	
								Grade IV(5.7%)	Tail(35.4%),	
									Other(22.4%)	
Huttner	201	US	2004-2	75/367	442	Resection	55.9%:	G1/2:24%,	N0:52.9%,	Retrospec
[29]	5		011			group: 52.9y;	44.1%	G3/4:17%	N1:47.1%	tive
						Non-resection				
						group: 59.6y				
Yang [33]	202	China	2010-2	283/987	1270	Resection	~56%:	Resection group	Resection group	Retrospec
	2		018			group: 76.3%	~44%	G1/2:79.2%;	N1:64.7%;	tive
						<65y;		Non-resection	Non-resection	
						Non-resection		group G1/2:27.3%	group N1:22.2%	
						group: 57.9%				
						<65y				
Tsilimigr	202	US	2004-2	632/1587	2219	Resection	54%:	Resection group	Resection group	Retrospec
as [32]	1		015			group: 58.7%	46%	G1/2:51.3%;	N1:76.3%;	tive
						<75y;		Non-resection	Non-resection	
						Non-resection		group G1/2:16%	group N1:28.4%	
						group: 48.3%				

Solorzano	200 US	1988-1	82/81	163	Median	52y	55%:	Survival	Unspecified	Retrospec
[31]	1	999			(Range 20-	-88y)	45%	advantage for		tive
								G1/G2 (exact		
								proportions		
								unspecified)		
Nguyen	200 US	1989-1	42/31	73	Mean	53y	50.7%:	Grade unspecified	Unspecified	Retrospec
[30]	7	999			(Range 24-	-86y)	49.3%			tive
Titan [8]	202 US	2003-2	Apr-95	99	Mean 57y		57%:	Grade 1:54.6%,	Pancreatic	Retrospec
	0	018					43%	Grade 2:30.3%,	tail(42.4%),	tive
								Grade 3:1 case,	Body(26.3%),	
								Unspecified:14.1%	Head(21.2%),	
									Neck(4%),	
									Other(6.1%)	

T TY	202 61:	2010.2	T 1 45	<b>50</b>	3.6	15.05	14110	C 1	D	D (
TongFX	202 China	2010-2	Jul-45	52	Mean	17:35	WHO	Grade:	Pancreas	Retrospec
[38]	1	020			54.2y(>55y:63.4	(0.48:1)	G1:30		(Functional	tive
					%)		cases(40.3°	%),	PNEN:18 cases,	,
							G2:15		Non-functional	
							cases(28.8°	%), G3:3	PNEN:33 cases,	
							cases(5.7%	),	MEN1:1 case)	
							G3(NEC):4	1		
							cases(7.6%	);		
							Ki-67>20%	:11.5%		
WangZG	202 China	2011-2	Oct-59	69	Unspecified	Unspecif	Differentia	ntion:	Colorectum	Retrospec
[37]	3	021				ied	G1(84%),		(Rectum:77%,	tive
							G2(15%), (	G3(1%)	Proximal	
									colon:16%, Distal	
									colon:7%)	

Zheng	201 C	China	2010-2	897/650	1547	Median 57.6y	842:705	Diffe	erentiati	ion:	Gastro-ent	ero-pan	Retrospec
[35]	9		015				(1.19:1)	Well	l-differe	ntiate	creatic	system	tive
								d(59	%),		(Stomach:	5.4%,	
								Mod	lerately	(48.3%	Small		
								),	Poorly	(7.2%),	intestine:3	5.9%,	
								Und	ifferent	iated(7	Colorectur	m:25.3%	
								.9%)			, Pancreas:	32.4%)	
You [34]	202 C	China	2001-2	37/45	114	<60y:76.3%	69:45	All	G2;	Ki-67	Pancreas	(Liver	Retrospec
	2		019				(1.53:1)	inde	x:		metastasis	:73.7%,	tive
								3%-5	5% (48.4	%),	Multi-orga	ın	
								5%-1	10%(36.8	8%),	metastasis	:8.8%,	
								10%	-20%(14	.7%)	Other:17.5	%)	
LvYH	202 C	China	2012-2	96/26	122	Not applicable	-	Not	applica	ble	Not applic	able	Retrospec
[36]	1		020			(non-neuroend							tive
						ocrine tumors)							

## Supplementary Table 2 Summary of quality assessment of included studies

Study	Random	Allocation	Blinded participants	Blinding of	Incomplete	Selective	Other
	sequence	hiding	and personnel	outcome data	outcome data	reporting	bias
	generation	(selection	(performance bias)	(detection bias)	(attrition bias)	(reporting	
	(selection bias)	bias)				bias)	
Bertani 2017	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low
[25]							risk
Citterio 2017	Unclear risk	Low risk	Low risk	Low risk	Low risk	Low risk	Unclear
[26]							risk
Du 2015 [27]	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	Low
							risk
Franko 2010	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	Low
[28]							risk
Huttner	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low
2015 [29]							risk
Mou 2022	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low
[20]							risk
Nguyen	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low
2007 [30]							risk
Solorzano	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Unclear
2001 [31]							risk

Titan 2020	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low
[8]							risk
Tsilimigras	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Unclear
2021 [32]							risk
Yang 2022	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low
[33]							risk
You 2022	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Low
[34]							risk
Zheng 2019	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low
[35]							risk
LvYH [36]	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low
							risk
WangZG	Low risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low
[37]							risk
TongFX [38]	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Unclear
							risk

## Supplementary Table 3 Baseline characteristics of pancreatic neuroendocrine tumors with liver metastases

Characteristics		Total	Primary tumor resection (N = 121)	Non-resection treatment (N = 670)	P value
		(N = 791)			
Age (years)	< 65	435 (55%)	79 (65.3%)	356 (53.1%)	0.013
	≥ 65	356 (45%)	42 (34.7%)	314 (46.9%)	
Gender	Male	465 (58.8%)	71 (58.7%)	394 (58.8%)	0.979
	Female	326 (41.2%)	50 (41.3%)	276 (41.2%)	
Race	White	635 (80.3%)	108 (89.2%)	527 (78.7%)	0.020
	Black	78 (9.9%)	3 (2.5%)	75 (11.2%)	
	Other	77 (9.7%)	10 (8.3%)	67 (10%)	
	Unknown	1 (0.1%)	0 (0%)	1 (0.1%)	
Tumor location	Head	206 (26%)	20 (16.5%)	186 (27.8%)	< 0.001
	Body and Tail	378 (47.8%)	78 (64.5%)	300 (44.8%)	
	Overlapping	67 (8.5%)	13 (10.7%)	54 (80.6%)	
	Other	140 (17.7%)	10 (8.3%)	126 (18.8%)	
Histological grade	G1	125 (15.8%)	51 (42.1%)	74 (11%)	< 0.001

G2	45 (5.7%)	18 (14.9%)	27 (4%)
G3	42 (5.3%)	9 (7.4%)	33 (5%)
G4	14 (1.8%)	1 (0.8%)	13 (2%)
Unknown	565 (71.4%)	42 (34.7%)	523 (78%)