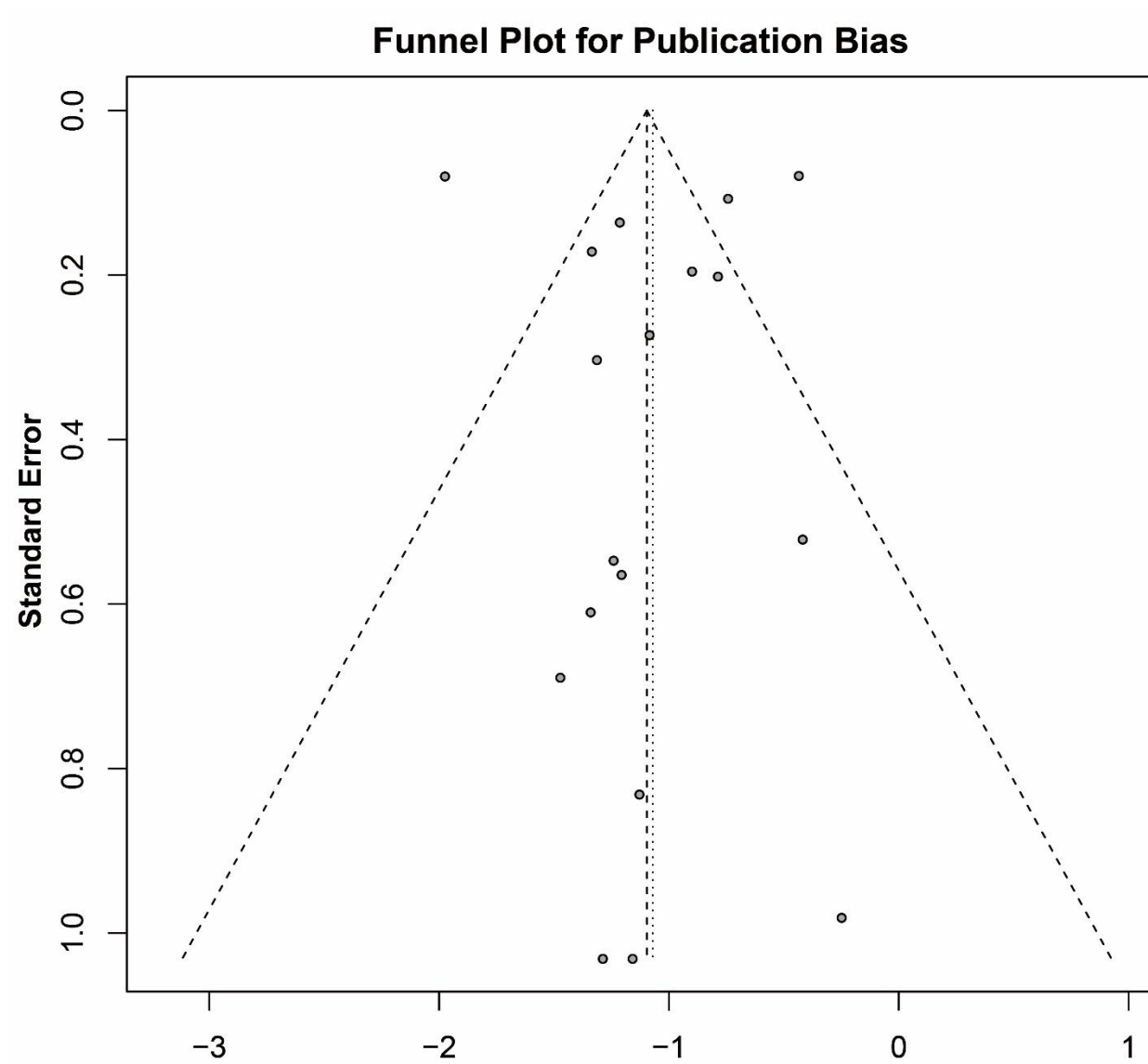
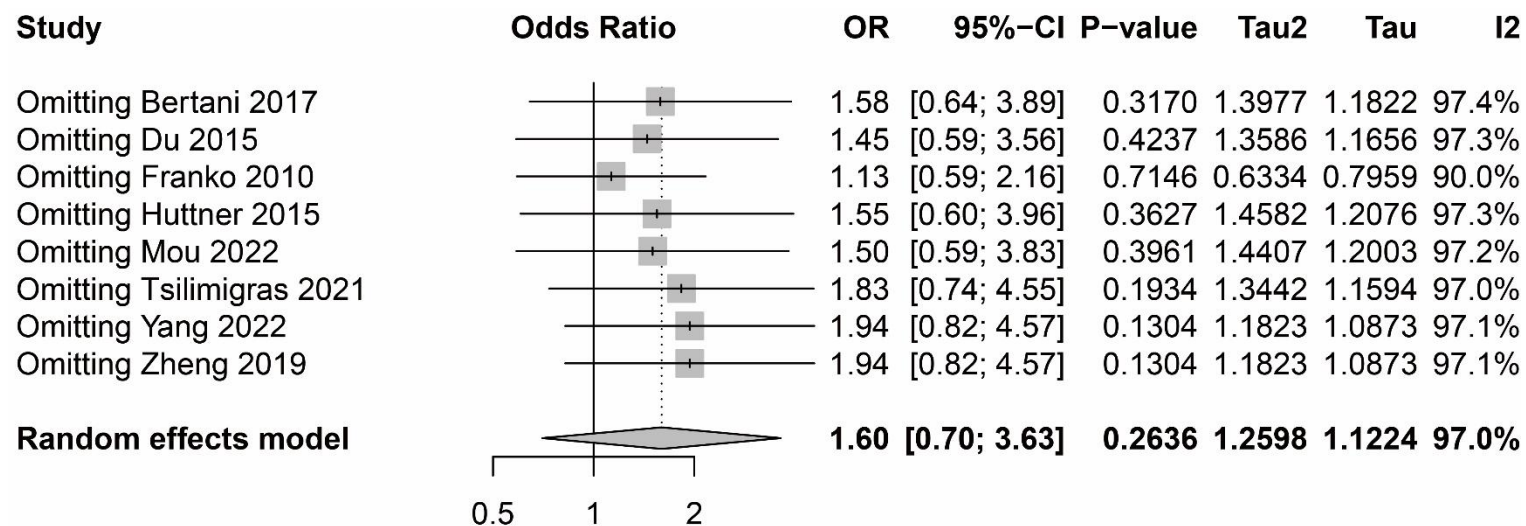


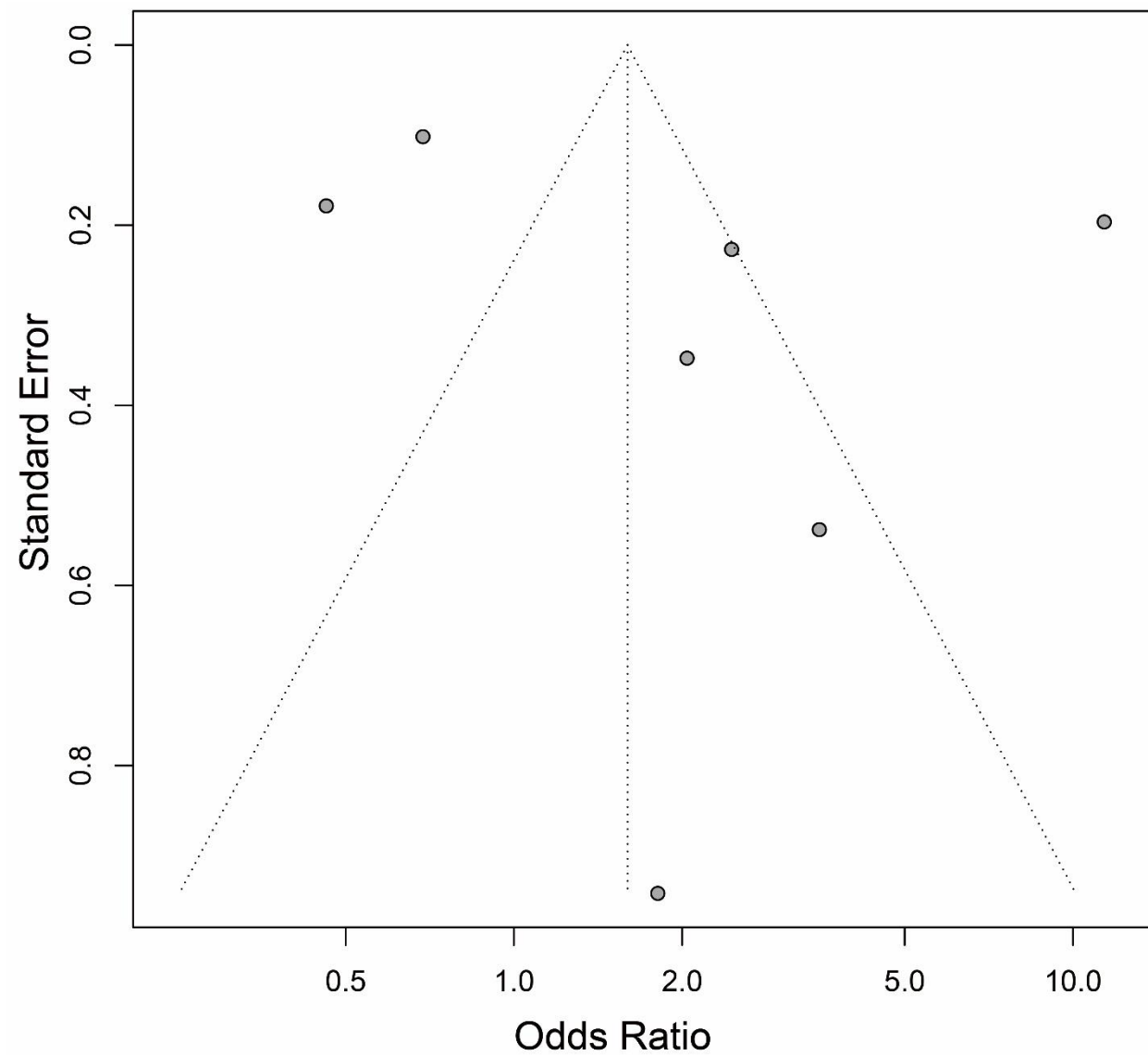
Supplementary Figure 1 Sensitivity analysis for OS comparing PTR with non-resection treatment in patients with PNET.



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



**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	Year	Country	Study Period	Sample Size (Resection/Non-Re section)	Total Sample	Age Characteristics	Sex Ratio (M:F)	Tumor Grade/Differentiation	Primary Location	Tumor	Study Type
Franko [28]	2010	US	1973-2004	735/855	2158	Median 60y	55.9%: 44.1%	G1:34.2%, G2:27.2%, G3/G4:38.6%	Pancreatic head(42%), Body(11%), Tail(27%), Diffuse(20%)		Retrospective
Du [27]	2015	China	1991-2013	74/56	130	Mean 49y (Range 24-81y)	53.1%: 46.9%	G1:16 cases, G2:29 cases, G3:16 cases	Pancreas(65.4%), Stomach(10.8%), Small intestine(5.4%)		Retrospective
Citterio [26]	2017	Milan	1979-2005	93/46	139	Median 56y	48%: 52%	G1:6 cases, G2:69 cases, G3:5 cases	Ileum(47%), Pancreas(26%), Lung(9%)		Retrospective
Bertani [25]	2017	Milan	1994-2013	63/61	124	Median 54.5y	53.2%: 46.8%	G1:7.5%, G2:86.3%, G3:6.2%	Pancreatic body/ tail		Prospective

Mou [20]	2022	China	2000-2017	214/322	536	Median 58y	60.3%: 39.7%	Grade I(46.3%), Grade II(29.7%), Grade III(18.3%), Grade IV(5.7%)	Pancreatic head(31.9%), Body(10.3%), Tail(35.4%), Other(22.4%)	Retrospective
Huttner [29]	2015	US	2004-2011	75/367	442	Resection group: 52.9y; Non-resection group: 59.6y	55.9%: 44.1%	G1/2:24%, G3/4:17%	N0:52.9%, N1:47.1%	Retrospective
Yang [33]	2022	China	2010-2018	283/987	1270	Resection group: <65y; Non-resection group: <65y	~56%: ~44%	Resection group G1/2:79.2%; Non-resection group G1/2:27.3%	Resection group N1:64.7%; Non-resection group N1:22.2%	Retrospective
Tsilimigras [32]	2021	US	2004-2015	632/1587	2219	Resection group: <75y; Non-resection group:	54%: 46%	Resection group G1/2:51.3%; Non-resection group G1/2:16%	Resection group N1:76.3%; Non-resection group N1:28.4%	Retrospective

<75y											
Author	Year	Country	Period	Age	Gender	N	Median Age (y)	Survival (%)	Grade	Site	Study Type
Solorzano [31]	2001	US	1988-1999	82/81		163	Median (Range 20-88y)	55%: 45%	Survival advantage for G1/G2 (exact proportions unspecified)	Unspecified	Retrospective
Nguyen [30]	2007	US	1989-1999	42/31		73	Mean (Range 24-86y)	53y 50.7%: 49.3%	Grade unspecified	Unspecified	Retrospective
Titan [8]	2020	US	2003-2018	Apr-95		99	Mean 57y	57%: 43%	Grade 1:54.6%, Grade 2:30.3%, Grade 3:1 case, Unspecified:14.1%	Pancreatic tail(42.4%), Body(26.3%), Head(21.2%), Neck(4%), Other(6.1%)	Retrospective

TongFX [38]	2021	China	2010-2020	Jul-45	52	Mean 54.2y(>55y:63.4%)	17:35 (0.48:1)	WHO G1:30 cases(40.3%), G2:15 cases(28.8%), G3:3 cases(5.7%), G3(NEC):4 cases(7.6%); Ki-67>20%:11.5%	Grade: Pancreas (Functional PNEN:18 cases, Non-functional PNEN:33 cases, MEN1:1 case)	Retrospec tive
WangZG [37]	2023	China	2011-2021	Oct-59	69	Unspecified	Unspecif ied	Differentiation: G1(84%), G2(15%), G3(1%)	Colorectum (Rectum:77%, Proximal colon:16%, Distal colon:7%)	Retrospec tive



Zheng [35]	2019	China	2010-2015	897/650	1547	Median 57.6y	842:705 (1.19:1)	Differentiation: Well-differentiated(59%), Moderately(48.3%), Poorly(7.2%), Undifferentiated(7.9%)	Gastro-entero-pancreatic system (Stomach:6.4%, Small intestine:35.9%, Colorectum:25.3%, Pancreas:32.4%)	Retrospective
You [34]	2022	China	2001-2019	37/45	114	<60y:76.3%	69:45 (1.53:1)	All G2; Ki-67 index: 3%-5%(48.4%), 5%-10%(36.8%), 10%-20%(14.7%)	Pancreas (Liver metastasis:73.7%, Multi-organ metastasis:8.8%, Other:17.5%)	Retrospective
LvYH [36]	2021	China	2012-2020	96/26	122	Not applicable (non-neuroendocrine tumors)	-	Not applicable	Not applicable	Retrospective

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

[illegible]

[illegible]

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

Characteristics		Total (N = 791)	Primary tumor resection (N = 121)	Non-resection treatment (N = 670)	P value
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%)

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