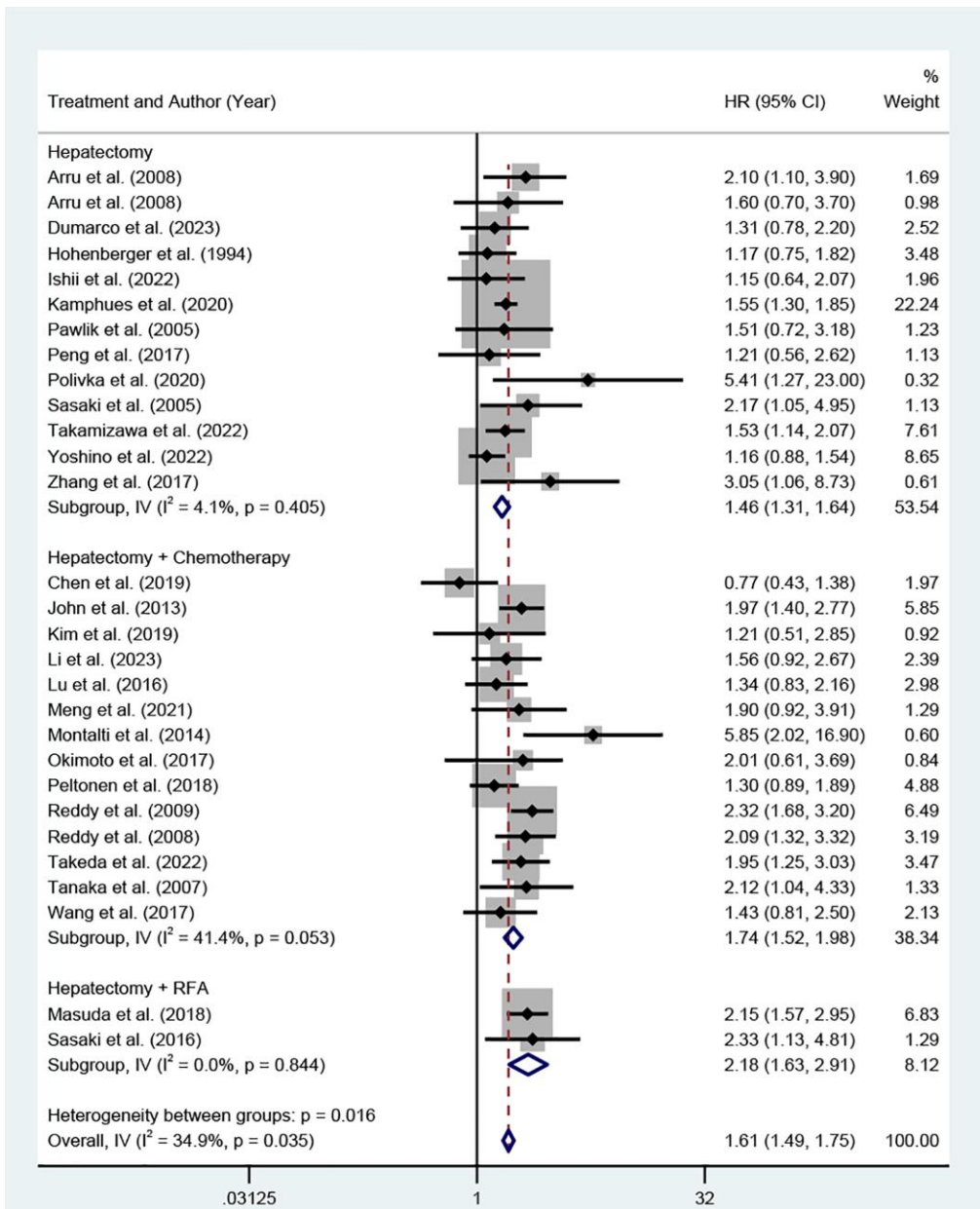
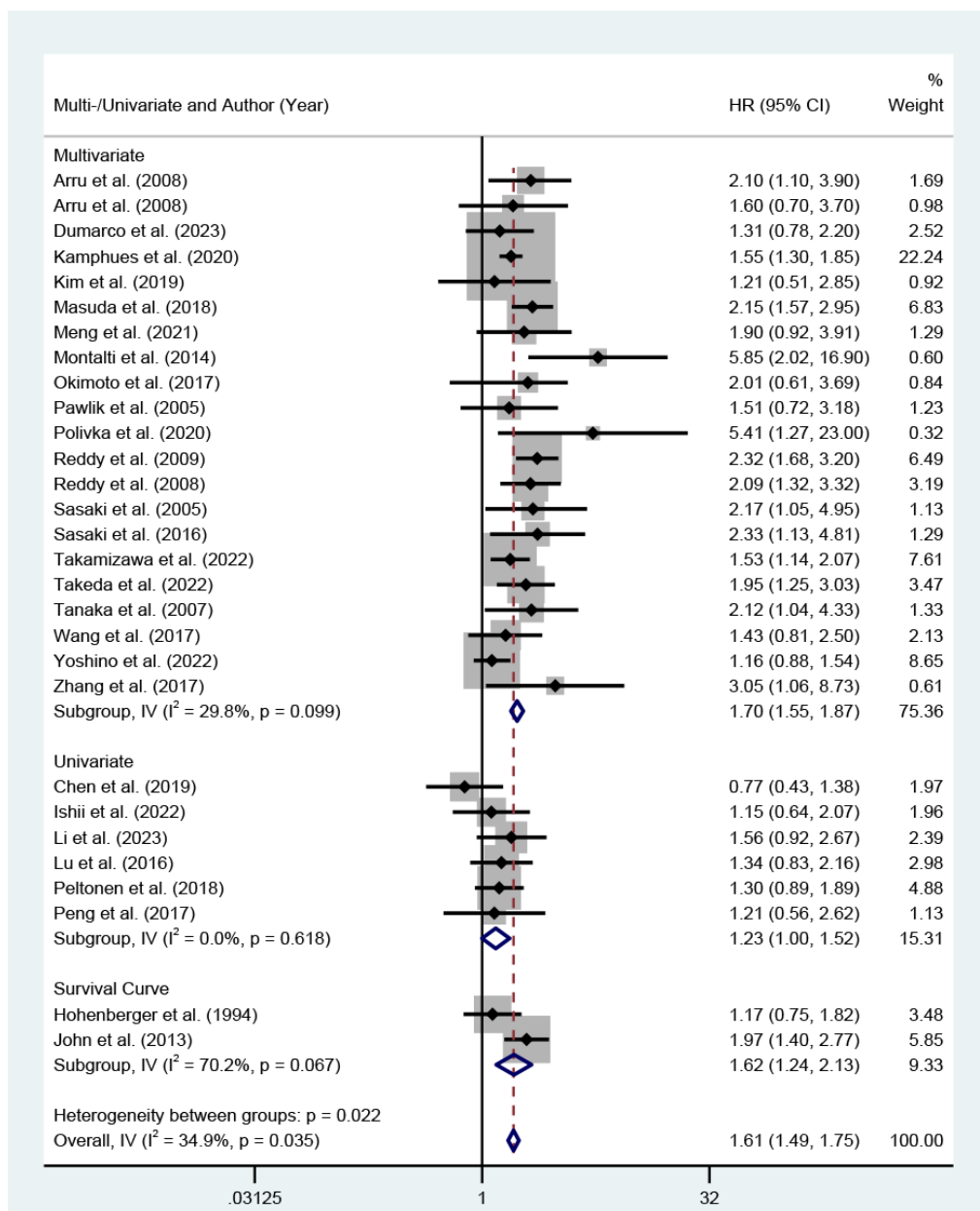


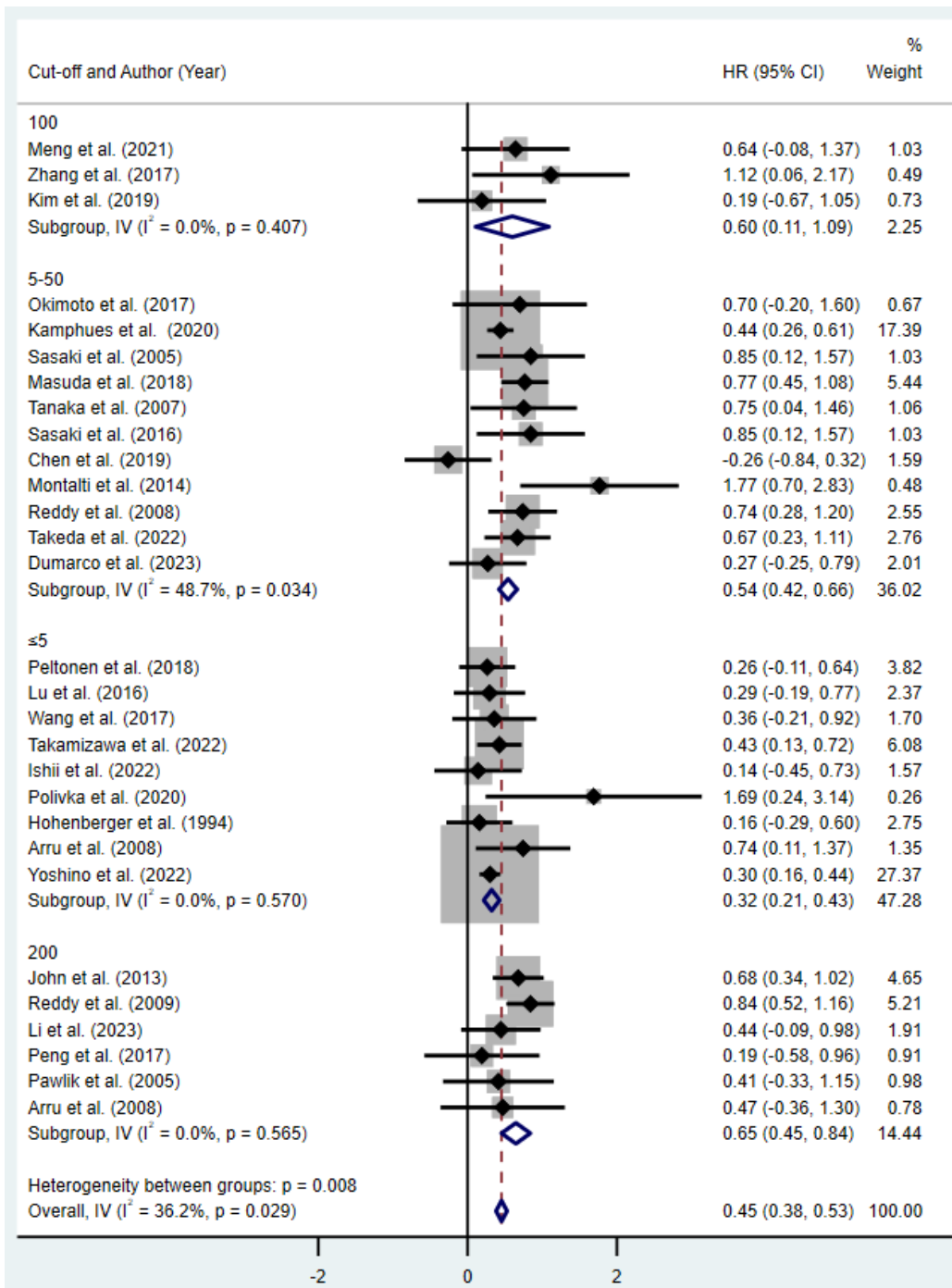
Supplementary Figure 1: Preoperative-OS-subgroup-patient origin



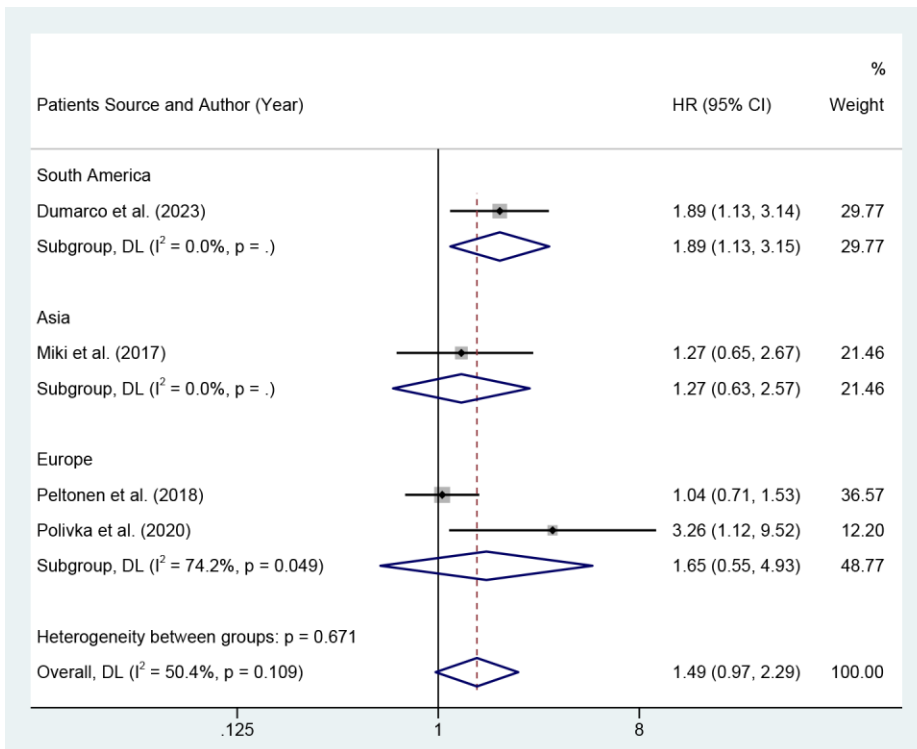
Supplementary Figure 2: Preoperative-OS-subgroup-treatment modality



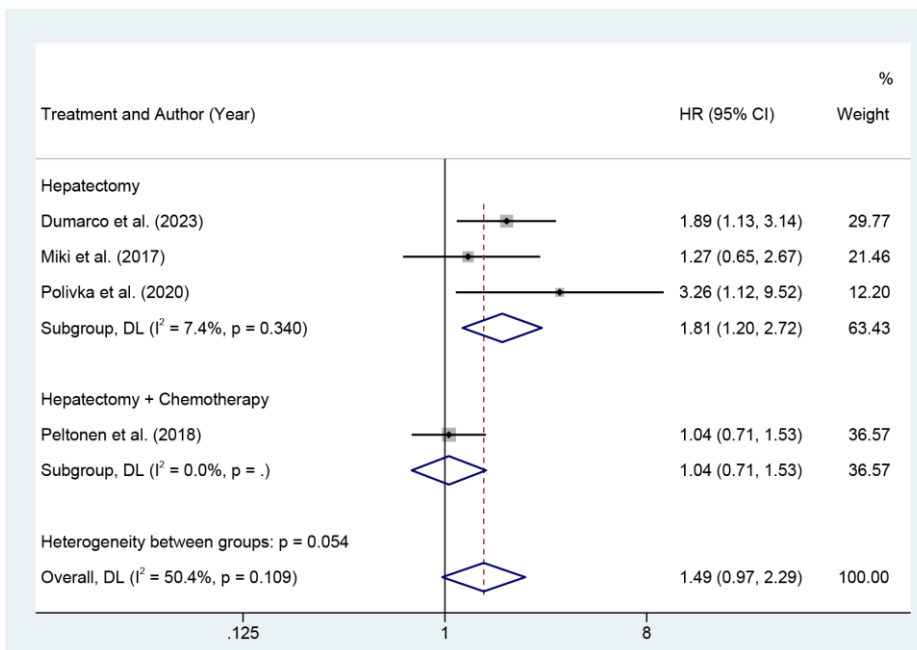
Supplementary Figure 3: Preoperative-OS-subgroup-univariate/multivariate/survival curve



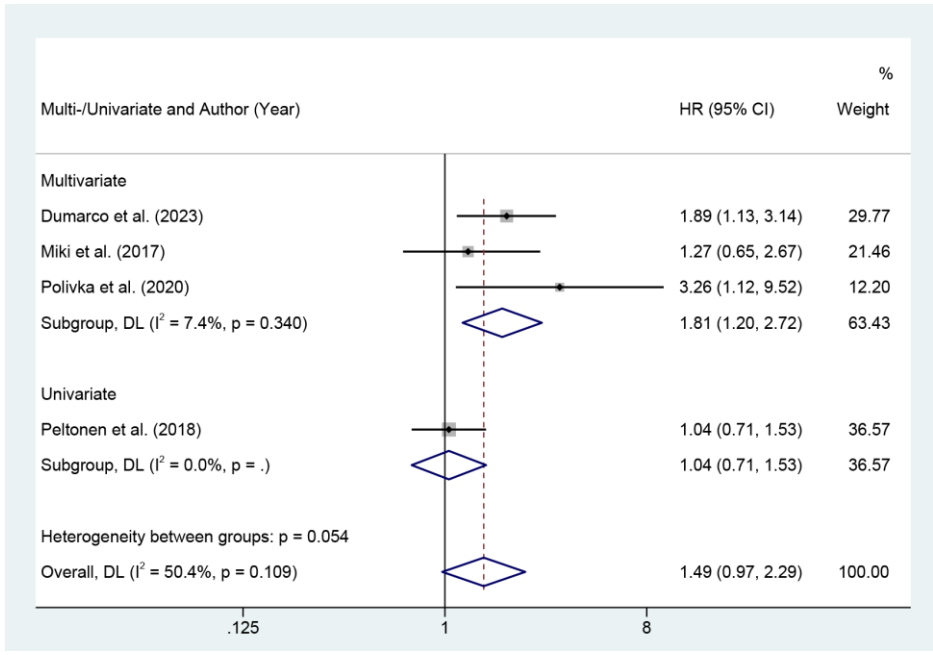
Supplementary Figure 4: Preoperative-OS-subgroup-cut-off value ≤5 ng/ml /5-50 ng/ml /100 ng/ml /200 ng/ml



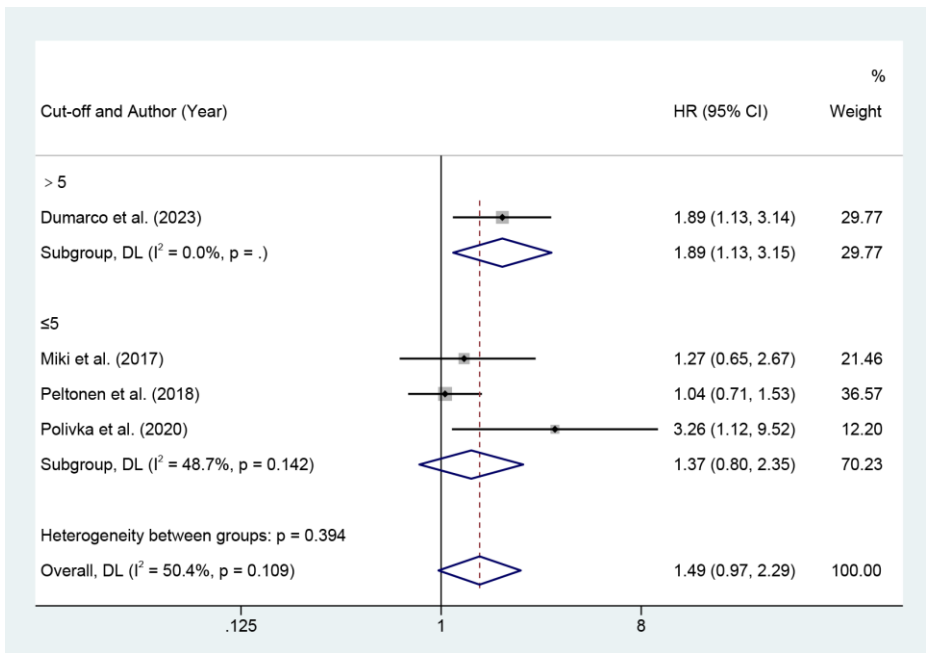
Supplementary Figure 5: Preoperative-DFS-subgroup-patient origin



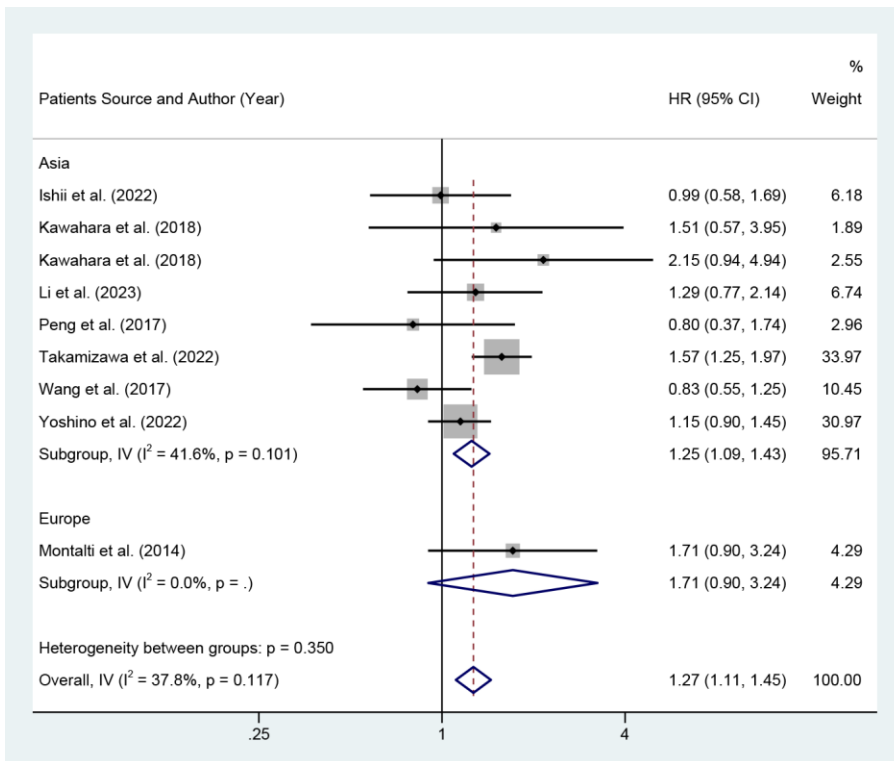
Supplementary Figure 6: Preoperative-DFS-subgroup-treatment modality



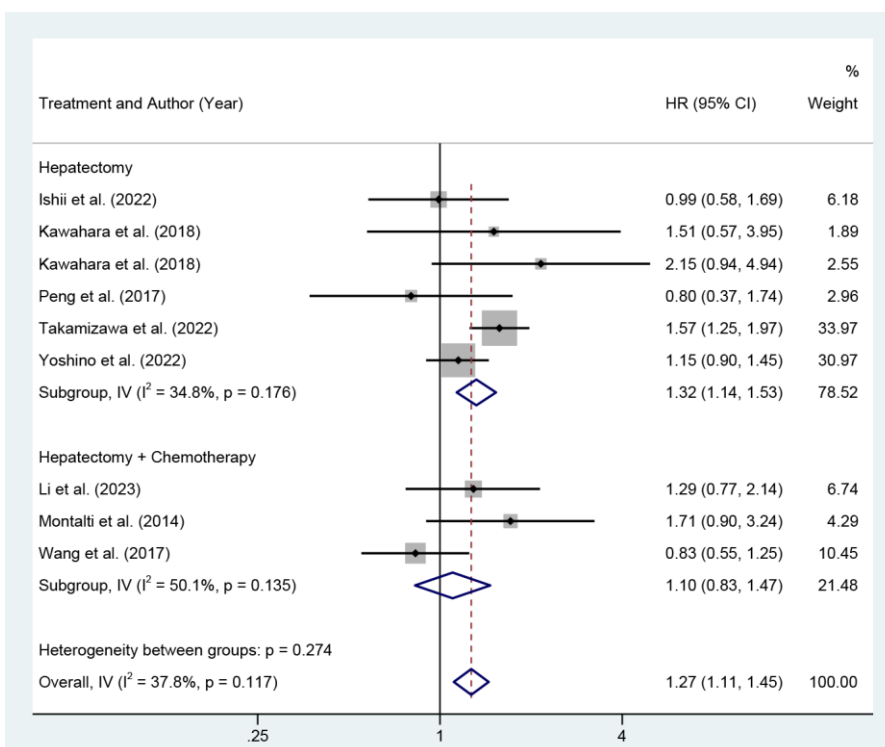
Supplementary Figure 7: Preoperative-DFS-subgroup-univariate/multivariate/survival curve



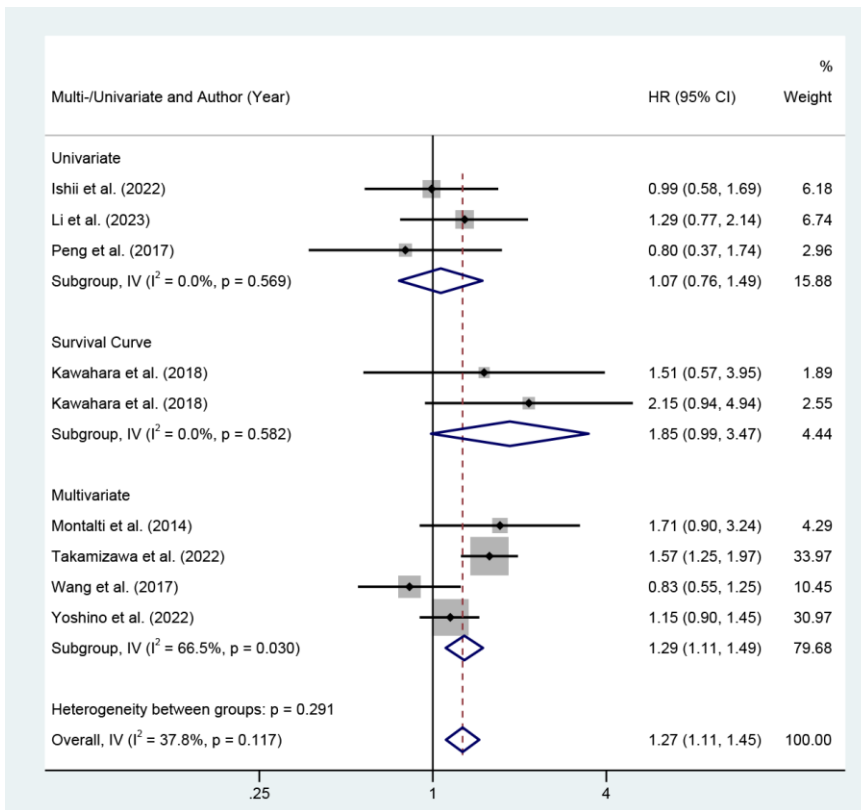
Supplementary Figure 8: Preoperative-DFS-subgroup-cut-off value >5 ng/ml or not



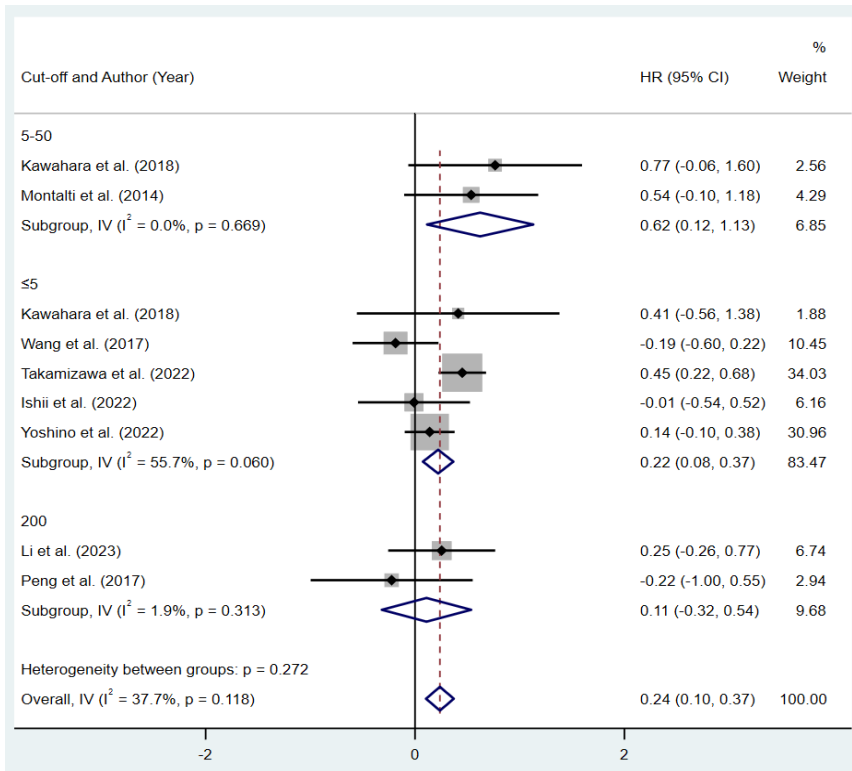
Supplementary Figure 9: Preoperative-RFS-subgroup-patient origin



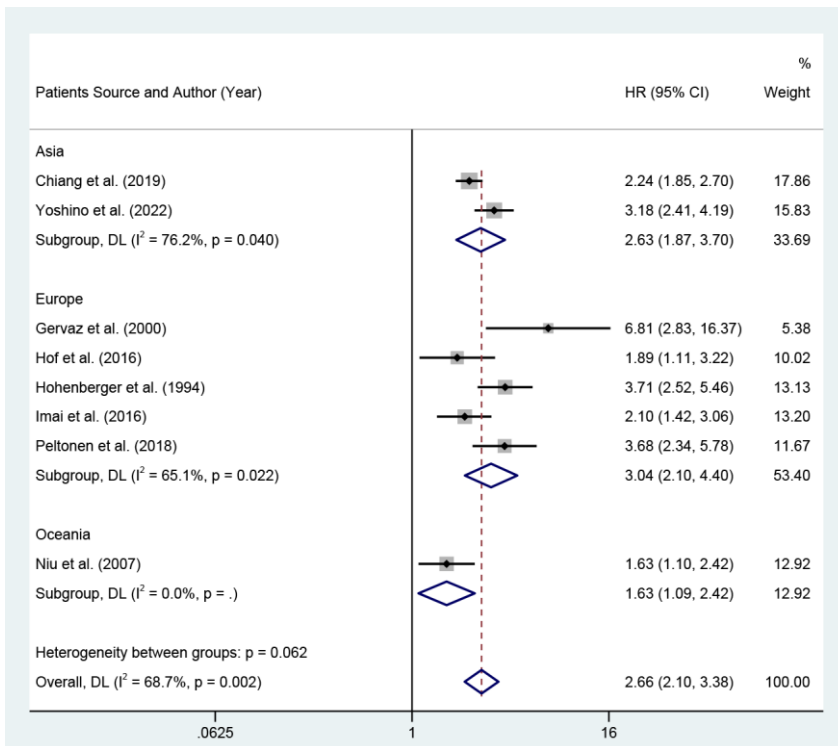
Supplementary Figure 10: Preoperative-RFS-subgroup-treatment modality



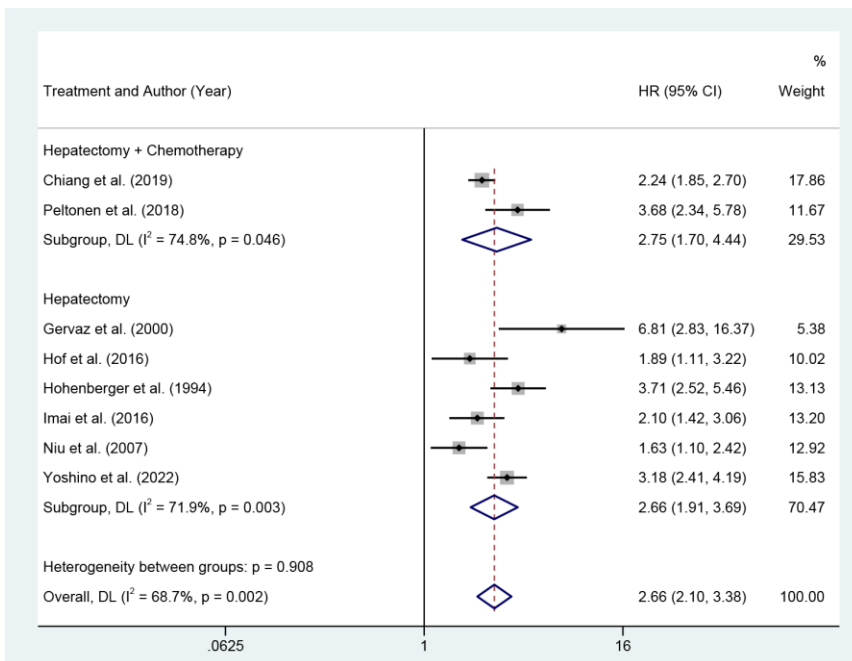
Supplementary Figure 11: Preoperative-RFS-subgroup-univariate/multivariate/survival curve



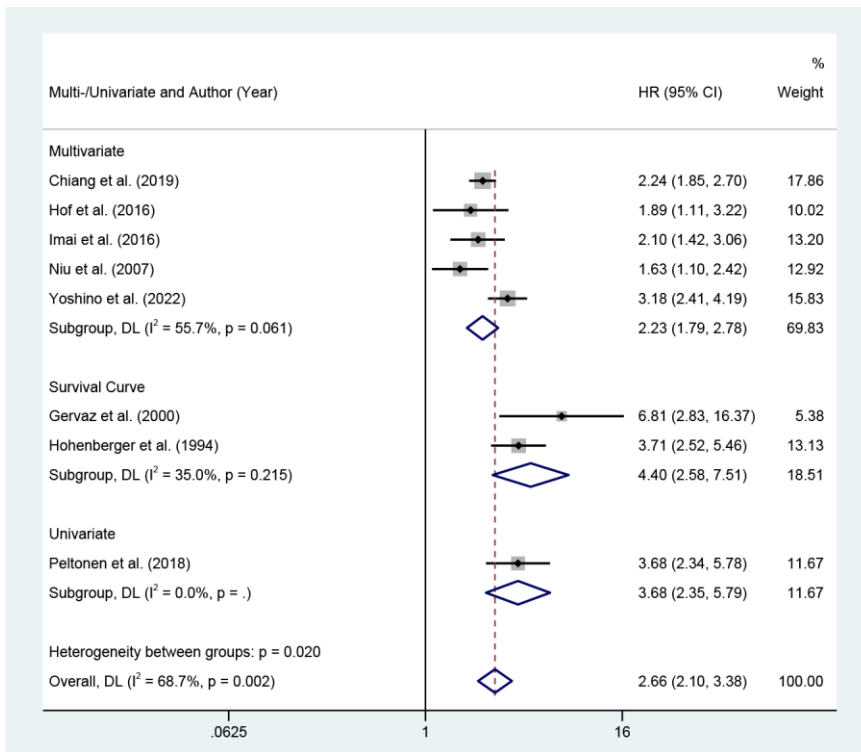
Supplementary Figure 12: Preoperative-RFS-subgroup-cut-off value ≤5 ng/ml / 5-50 ng/ml / 200 ng/ml



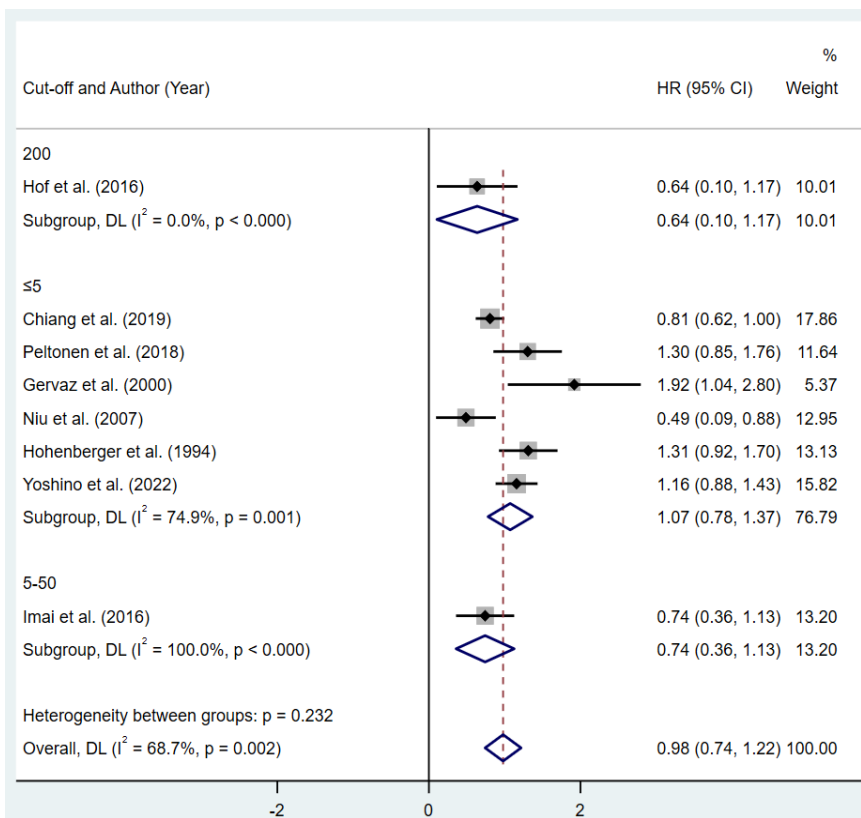
Supplementary Figure 13: Postoperative-OS-subgroup-patient origin



Supplementary Figure 14: Postoperative-OS-subgroup-treatment modality

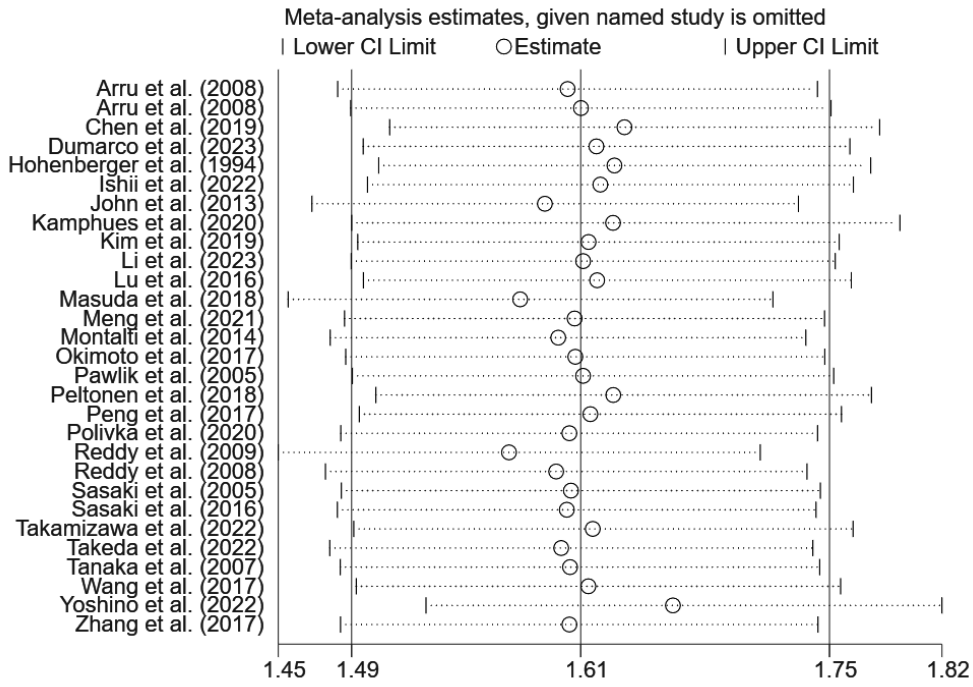


Supplementary Figure 15: Postoperative-OS-subgroup-univariate/multivariate/survival curve

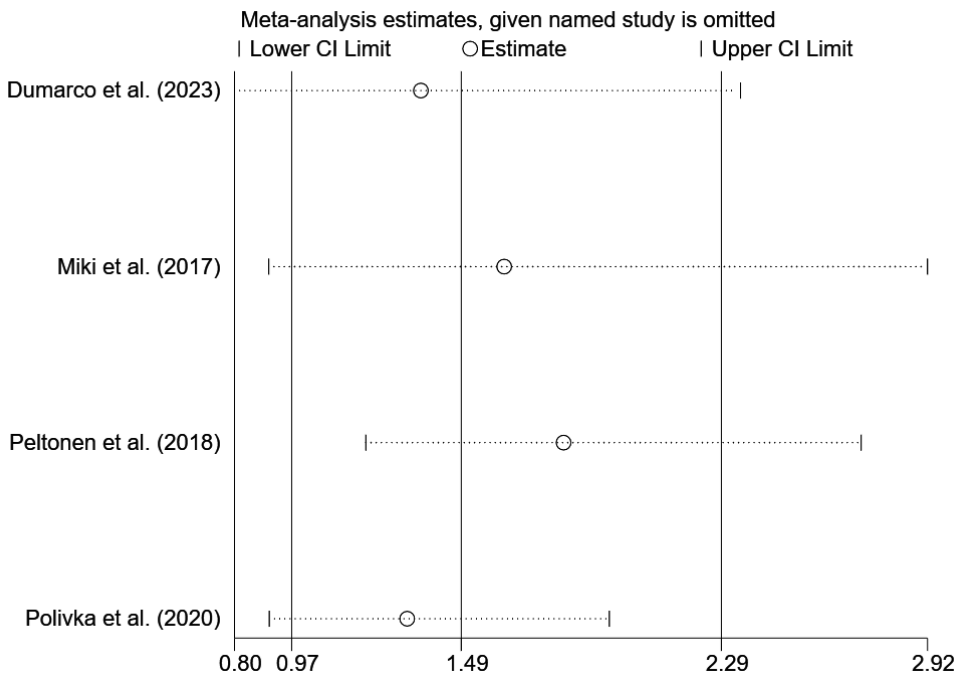


Supplementary Figure 16: Postoperative-OS-subgroup-cut-off value ≤5 ng/ml / 5-50 ng/ml

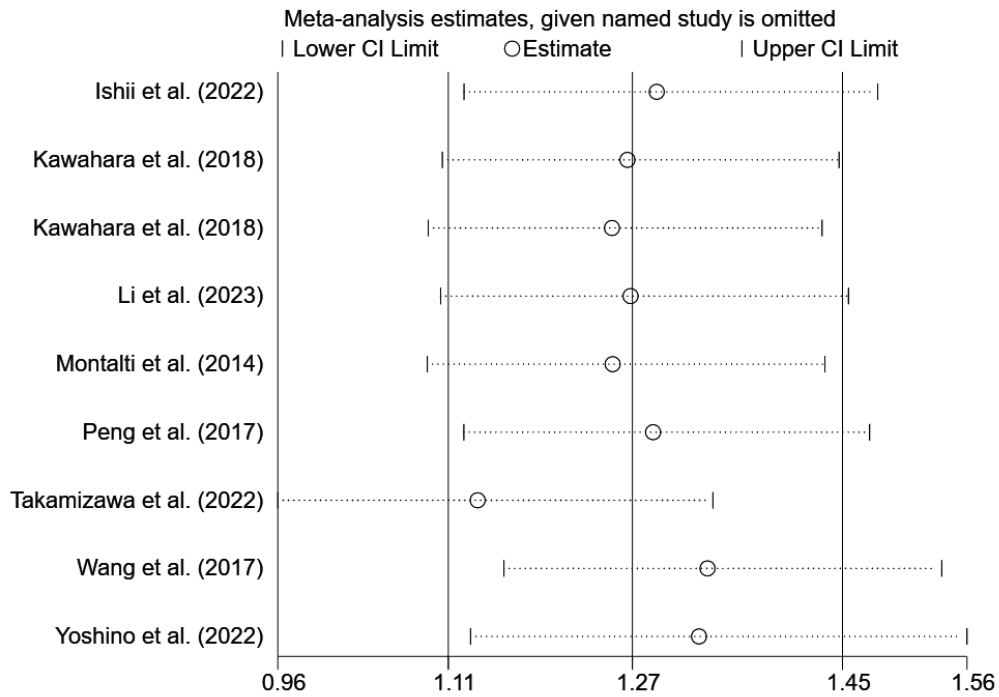
/200 ng/ml



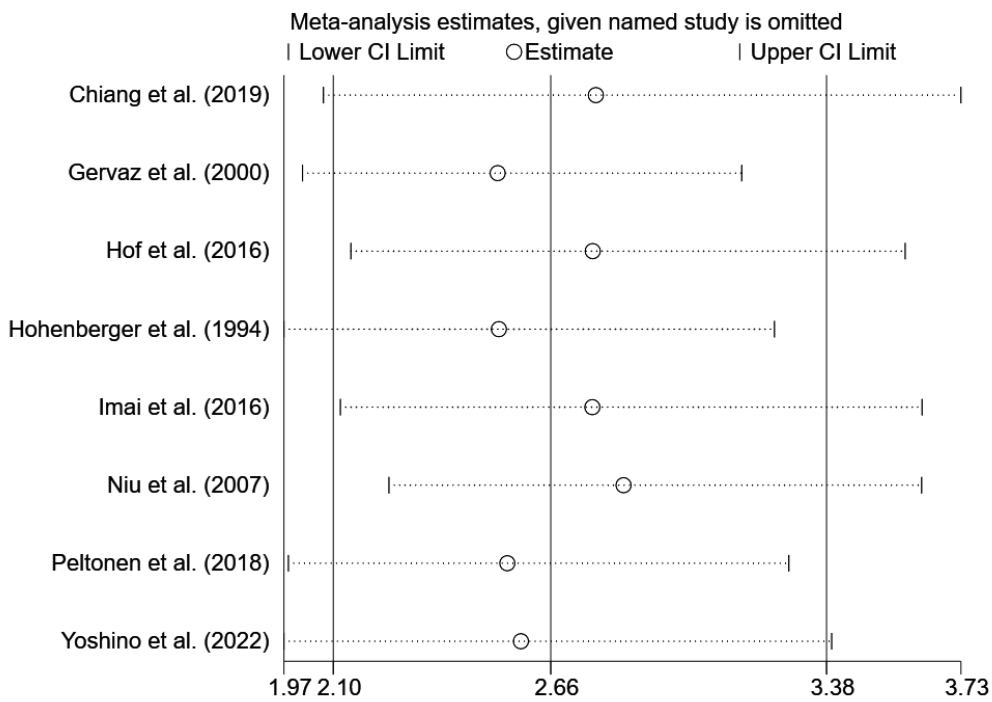
Supplementary Figure 17: Preoperative-OS-sensitivity



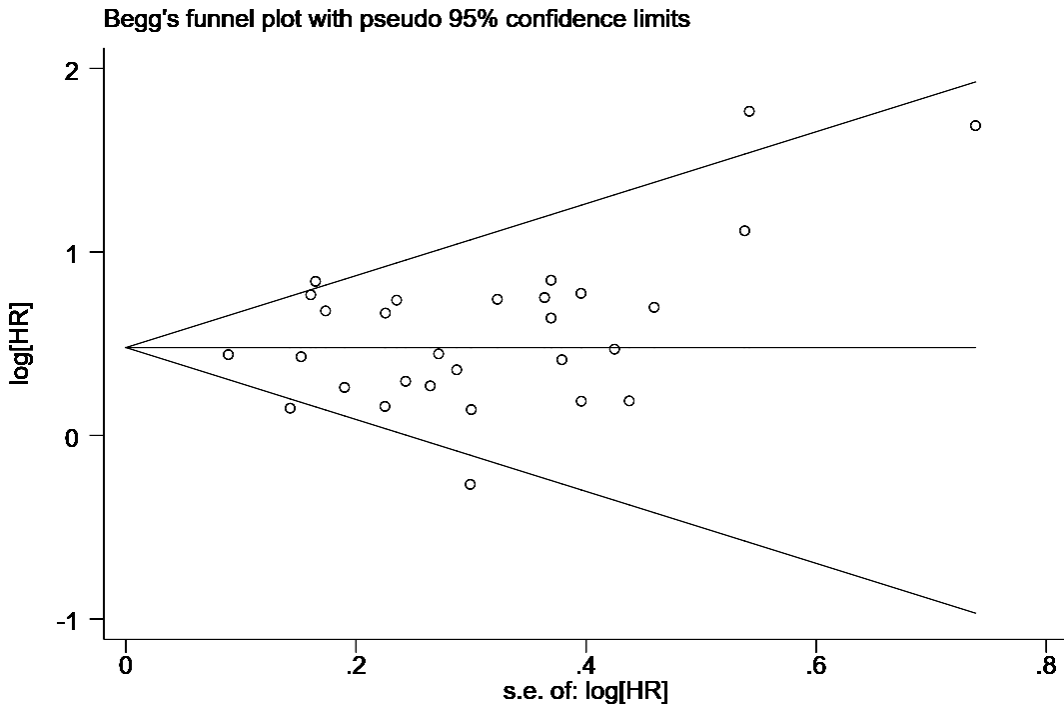
Supplementary Figure 18: Preoperative-DFS-sensitivity



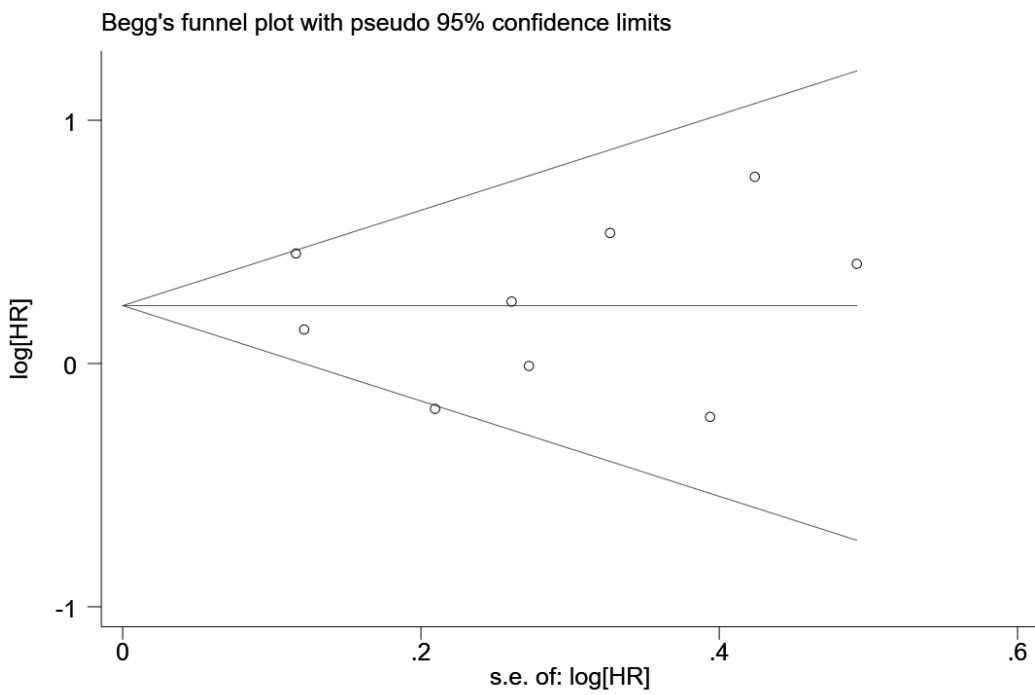
Supplementary Figure 19: Preoperative-RFS-sensitivity



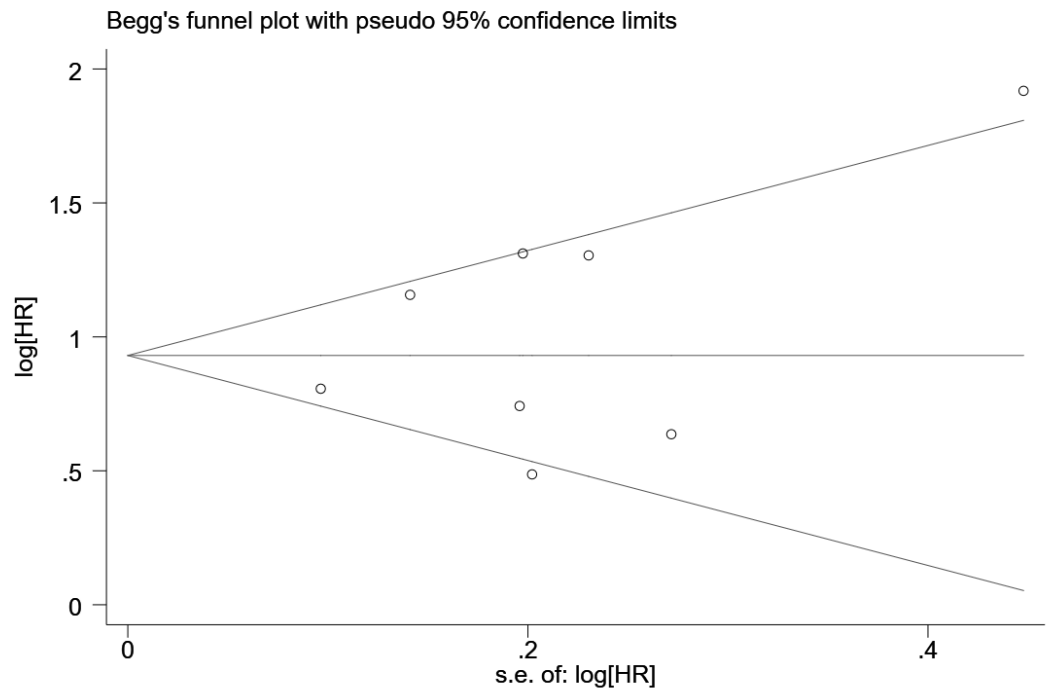
Supplementary Figure 20: Postoperative-OS-sensitivity



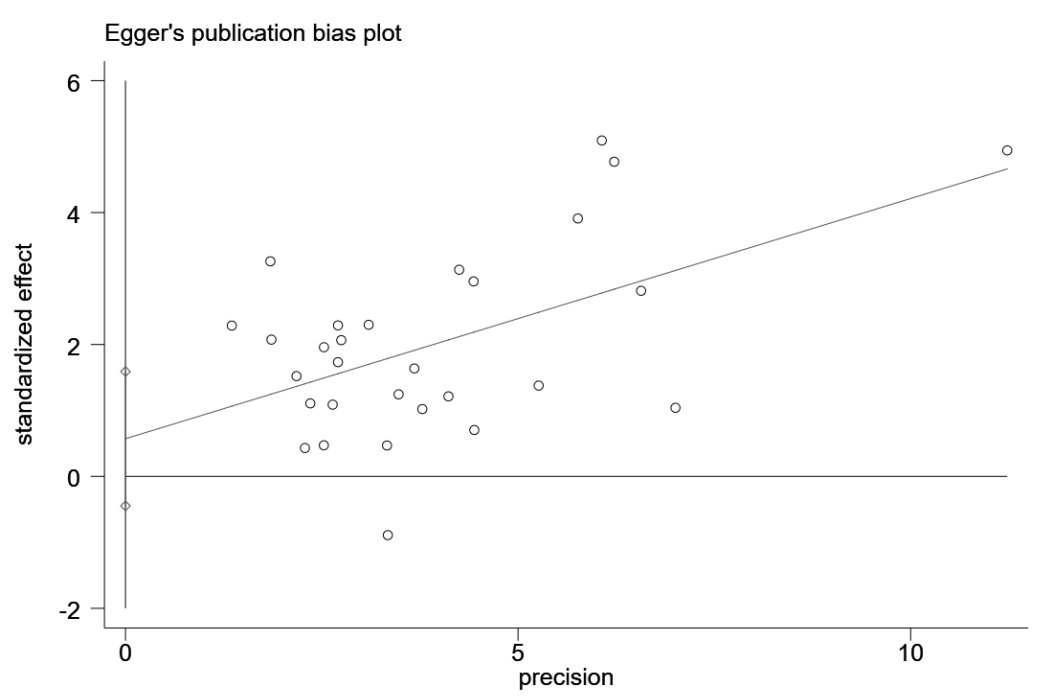
Supplementary Figure 21: Preoperative-OS-begg



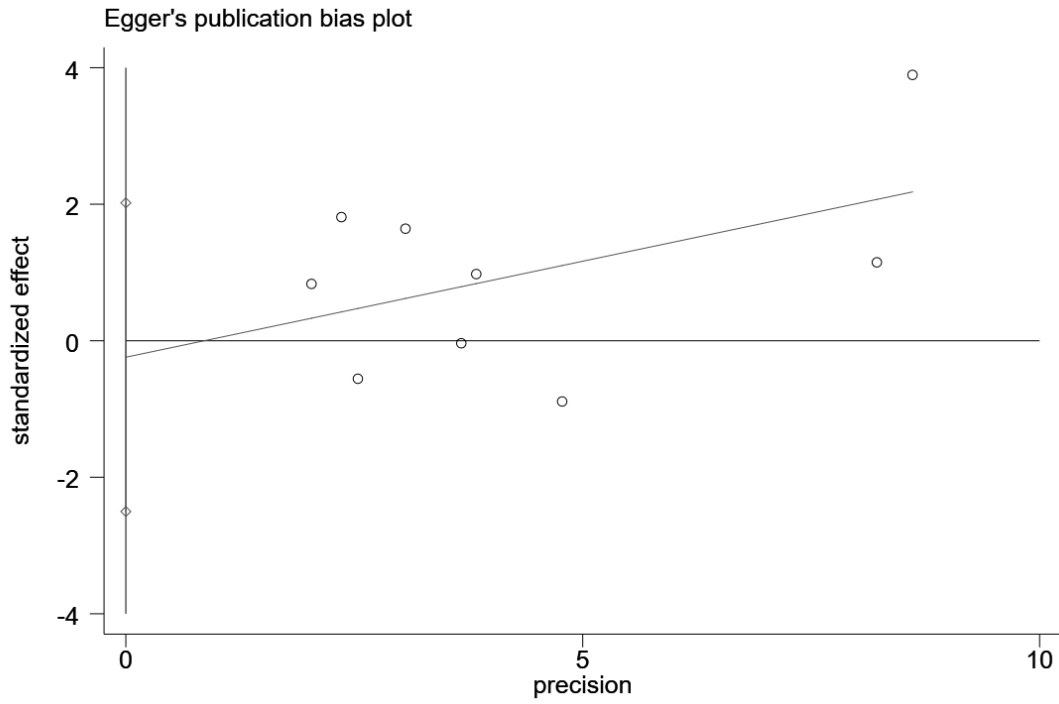
Supplementary Figure 22: Preoperative-RFS-begg



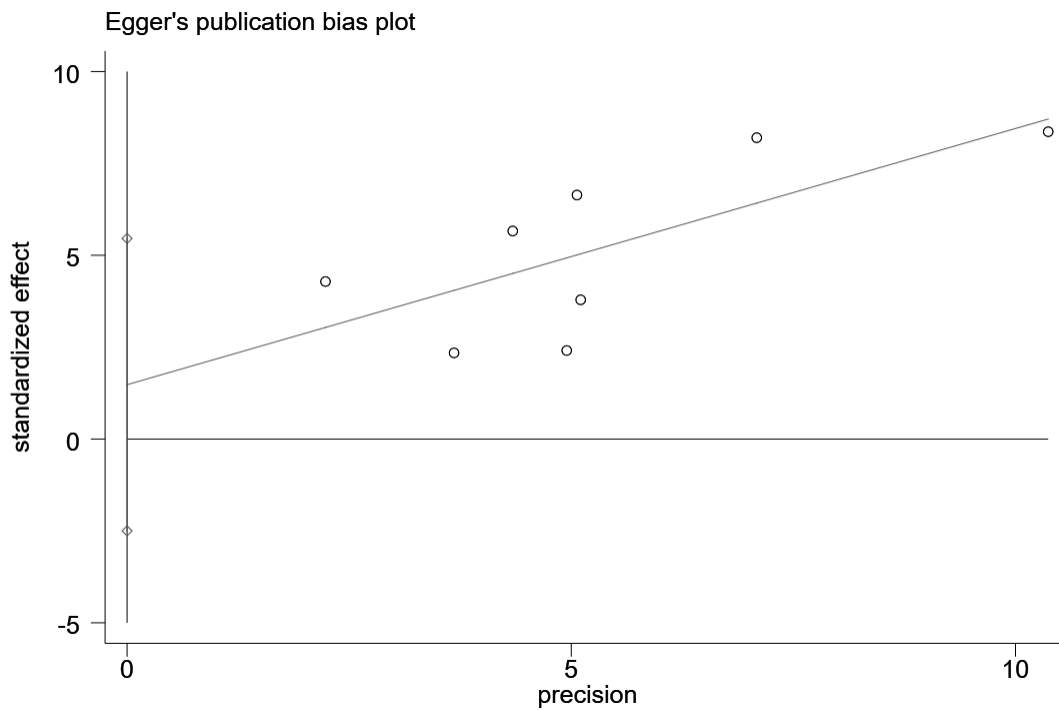
Supplementary Figure 23: Postoperative-OS-begg



Supplementary Figure 24: Preoperative-OS-egger



Supplementary Figure 25: Preoperative-RFS-egger



Supplementary Figure 26: Postoperative-OS-egger

Supplementary Table 1: Search strategy

1. Cochrane

ID	Search
#1	MeSH descriptor: [Carcinoembryonic Antigen] explode all trees
#2	(Carcinoembryonic Antigen):ti,ab,kw OR (Antigen, Carcinoembryonic):ti,ab,kw OR (CD66e Antigen):ti,ab,kw OR (Antigens, CD66e):ti,ab,kw OR (CD66e Antigens):ti,ab,kw
#3	(Antigen, CD66e):ti,ab,kw OR (carcinoembryonic protein):ti,ab,kw OR (ce antigen):ti,ab,kw OR (CEA):ti,ab,kw OR (protein, carcinoembryonic):ti,ab,kw
#4	#1 or #2 or #3
#5	MeSH descriptor: [Colorectal Neoplasms] explode all trees
#6	(Colorectal Neoplasms):ti,ab,kw OR (Colorectal Neoplasm):ti,ab,kw OR (Neoplasm, Colorectal):ti,ab,kw OR (Neoplasms, Colorectal):ti,ab,kw OR (Colorectal Tumors):ti,ab,kw
#7	(Colorectal Tumor):ti,ab,kw OR (Tumor, Colorectal):ti,ab,kw OR (Tumors, Colorectal):ti,ab,kw OR (Colorectal Cancer):ti,ab,kw OR (Cancer, Colorectal):ti,ab,kw
#8	(Cancers, Colorectal):ti,ab,kw OR (Colorectal Cancers):ti,ab,kw OR (Colorectal Carcinoma):ti,ab,kw OR (Carcinoma, Colorectal):ti,ab,kw OR (Carcinomas, Colorectal):ti,ab,kw
#9	(Colorectal Carcinomas):ti,ab,kw OR (colorectal tumorigenesis):ti,ab,kw OR (colorectal tumour):ti,ab,kw OR (tumour, colorectal):ti,ab,kw
#10	#5 or #6 or #7 or #8 or #9
#11	(liver metastasis):ti,ab,kw OR (hepatic metastases):ti,ab,kw OR (hepatic metastasis):ti,ab,kw OR (hepatocellular metastasis):ti,ab,kw OR (liver metastases):ti,ab,kw
#12	(liver tumor metastases):ti,ab,kw OR (liver tumor metastasis):ti,ab,kw OR (liver tumour metastasis):ti,ab,kw OR (metastases of the liver):ti,ab,kw OR (metastasis in

	liver):ti,ab,kw
#13	(metastasis, liver):ti,ab,kw OR (metastatic hepatocellular):ti,ab,kw OR (metastatic liver):ti,ab,kw OR (metastatic liver cell):ti,ab,kw
#14	#11 or #12 or #13
#15	#4 and #10 and #14

2. Pubmed

No.	Query	Search Details	Results
8	(((("Carcinoembryonic Antigen"[Mesh]) OR (((((((((Carcinoembryonic Antigen[Title/Abstract]) OR (Antigen, Carcinoembryonic[Title/Abstract]))) OR (CD66e Antigen[Title/Abstract])) OR (Antigen, CD66e[Title/Abstract])) OR (CD66e Antigens[Title/Abstract])) OR (Antigen, CD66e[Title/Abstract])) OR (carcinoembryonic protein[Title/Abstract])) OR (ce antigen[Title/Abstract])) OR (CEA[Title/Abstract])) OR (protein, carcinoembryonic[Title/Abstract])	("Carcinoembryonic Antigen"[MeSH Terms] OR ("Carcinoembryonic Antigen"[Title/Abstract] OR "antigen carcinoembryonic"[Title/Abstract] OR ("Carcinoembryonic Antigen"[MeSH Terms] OR ("Carcinoembryonic"[All Fields] AND "Antigen"[All Fields]) OR "Carcinoembryonic Antigen"[All Fields] OR "CD66e"[All Fields]) AND "Antigen"[Title/Abstract]) OR ("antigen s"[All Fields] OR "antigene"[All Fields] OR "antigenes"[All Fields] OR "antigenic"[All Fields] OR "antigenically"[All Fields] OR "antigenicities"[All Fields] OR "antigenicity"[All Fields] OR "antigenized"[All Fields] OR "Antigens"[MeSH Terms] OR "Antigens"[All Fields] OR "Antigen"[All Fields]) AND "CD66e"[Title/Abstract]) OR ("Carcinoembryonic Antigen"[MeSH Terms] OR ("Carcinoembryonic"[All Fields] AND "Antigen"[All Fields]) OR "Carcinoembryonic	1,504

<p>tract])) AND ("Colorectal Neoplasms"[Mesh] OR (((((((((((((((Colorectal Neoplasms[Title/Abstract] OR (Colorectal Neoplasm[Title/Abstract]) OR (Neoplasm, Colorectal[Title/Abstract]) OR (Neoplasms, Colorectal[Title/Abstract]) OR (Colorectal Tumors[Title/Abstract]) OR (Colorectal Tumor[Title/Abstract]) OR (Tumor, Colorectal[Title/Abstract]) OR (Tumors, Colorectal[Title/Abstract]) OR (Colorectal Cancer[Title/Abstract]) OR (Cancer, Colorectal[Title/Abstract]) OR (Cancers, Colorectal[Title/Abstract]) OR (Colorectal Cancers[Title/Abstract]) OR (Colorectal Carcinoma[Title/Abstract]) OR (Carcinoma,</p>	<p>Antigen"[All Fields] OR "CD66e"[All Fields]) AND "Antigens"[Title/Abstract]) OR "antigen cd66e"[Title/Abstract] OR "carcinoembryonic protein"[Title/Abstract] OR "ce antigen"[Title/Abstract] OR "CEA"[Title/Abstract] OR "protein carcinoembryonic"[Title/Abstract])) AND ("Colorectal Neoplasms"[MeSH Terms] OR ("Colorectal Neoplasms"[Title/Abstract] OR "colorectal neoplasm"[Title/Abstract] OR "neoplasm colorectal"[Title/Abstract] OR "neoplasms colorectal"[Title/Abstract] OR "colorectal tumors"[Title/Abstract] OR "colorectal tumor"[Title/Abstract] OR "tumor colorectal"[Title/Abstract] OR "tumors colorectal"[Title/Abstract] OR "colorectal cancer"[Title/Abstract] OR "cancer colorectal"[Title/Abstract] OR "cancers colorectal"[Title/Abstract] OR "colorectal cancers"[Title/Abstract] OR "colorectal carcinoma"[Title/Abstract] OR "carcinoma colorectal"[Title/Abstract] OR "carcinomas colorectal"[Title/Abstract] OR "colorectal carcinomas"[Title/Abstract] OR "colorectal tumorigenesis"[Title/Abstract] OR "colorectal tumour"[Title/Abstract] OR ("cysts"[MeSH Terms] OR "cysts"[All Fields] OR "cyst"[All Fields] OR "neurofibroma"[MeSH Terms] OR "neurofibroma"[All Fields] OR</p>	
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<p>Colorectal[Title/ Abstract])) OR (Carcinomas, Colorectal[Title/ Abstract])) OR (Colorectal Carcinomas[Title/ Abstract])) OR (colorectal tumorigenesis[Title/ Abstrac t])) OR (colorectal tumour[Title/ Abstract])) OR (tumour, colorectal[Title/ Abstract])))) AND (((((((((((((((liver metastasis[Title/ Abstract]) OR (hepatic metastases[Title/ Abstract])) OR (hepatic metastasis[Title/ Abstract])) OR (hepatocellular metastasis[Title/ Abstract])) OR (liver metastases[Title/ Abstract])) OR (liver tumor metastases[Title/ Abstract])) OR (liver tumor metastasis[Title/ Abstract])) OR (liver tumour metastasis[Title/ Abstract])) OR (metastases of the liver[Title/ Abstract])) OR</p>	<p>"neurofibromas"[All Fields] OR "tumor s"[All Fields] OR "tumoral"[All Fields] OR "tumorous"[All Fields] OR "tumour"[All Fields] OR "Neoplasms"[MeSH Terms] OR "Neoplasms"[All Fields] OR "Tumor"[All Fields] OR "tumour s"[All Fields] OR "tumoural"[All Fields] OR "tumourous"[All Fields] OR "tumours"[All Fields] OR "Tumors"[All Fields]) AND "Colorectal"[Title/ Abstract])) AND ("liver metastasis"[Title/ Abstract] OR "hepatic metastases"[Title/ Abstract] OR "hepatic metastasis"[Title/ Abstract] OR ("hepatocellular"[All Fields] AND "metastasis"[Title/ Abstract]) OR "liver metastases"[Title/ Abstract] OR "liver tumor metastases"[Title/ Abstract] OR "liver tumor metastasis"[Title/ Abstract] OR ("liver"[MeSH Terms] OR "liver"[All Fields] OR "livers"[All Fields] OR "liver s"[All Fields]) AND "tumour metastasis"[Title/ Abstract]) OR (("metastasion"[All Fields] OR "metastasic"[All Fields] OR "metastasing"[All Fields] OR "metastasis"[All Fields] OR "metastasised"[All Fields] OR "metastasises"[All Fields] OR "metastasising"[All Fields] OR "metastasisation"[All Fields] OR "metastasisizes"[All Fields] OR</p>	
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	<p>(metastasis in liver[Title/Abstract]) OR (metastasis, liver[Title/Abstract]) OR (metastatic hepatocellular[Title/Abstract]) OR (metastatic liver[Title/Abstract]) OR (metastatic liver cell[Title/Abstract])</p>	<p>"metastasizing"[All Fields] OR "neoplasm metastasis"[MeSH Terms] OR ("Neoplasm"[All Fields] AND "metastasis"[All Fields]) OR "neoplasm metastasis"[All Fields] OR "metastase"[All Fields] OR "metastases"[All Fields] OR "metastasis"[All Fields] OR "metastases"[All Fields] OR "metastases"[All Fields] OR "metastases"[All Fields] OR "metastases"[All Fields] AND "of the liver"[Title/Abstract] OR ("metastasi"[All Fields] OR "neoplasm metastasis"[MeSH Terms] OR ("Neoplasm"[All Fields] AND "metastasis"[All Fields]) OR "neoplasm metastasis"[All Fields] OR "metastasis"[All Fields]) AND "in liver"[Title/Abstract] OR "metastasis liver"[Title/Abstract] OR "metastatic hepatocellular"[Title/Abstract] OR "metastatic liver"[Title/Abstract] OR "metastatic liver cell"[Title/Abstract])</p>	
7	<p>(((((liver metastasis[Title/Abstract] OR (hepatic metastases[Title/Abstract]) OR (hepatic metastasis[Title/Abstract]) OR (hepatocellular metastasis[Title/Abstract]) OR (liver metastases[Title/Abstract]) OR (liver tumor</p>	<p>"liver metastasis"[Title/Abstract] OR "hepatic metastases"[Title/Abstract] OR "hepatic metastasis"[Title/Abstract] OR ("hepatocellular"[All Fields] AND "metastasis"[Title/Abstract]) OR "liver metastases"[Title/Abstract] OR "liver tumor metastases"[Title/Abstract] OR "liver tumor metastasis"[Title/Abstract] OR ("liver"[MeSH Terms] OR "liver"[All Fields] OR "livers"[All Fields] OR "liver s"[All Fields]) AND "tumour metastasis"[Title/Abstract] OR</p>	51,546

	<p>metastases[Title/ Abstract])) OR (liver tumor metastasis[Title/ Abstract])) OR (liver tumour metastasis[Title/ Abstract])) OR (metastases of the liver[Title/ Abstract])) OR (metastasis in liver[Title/ Abstract])) OR (metastasis, liver[Title/ Abstract])) OR (metastatic hepatocellular[Title/ Abstrac t])) OR (metastatic liver[Title/ Abstract])) OR (metastatic liver cell[Title/ Abstract]))</p>	<p>(("metastasion"[All Fields] OR "metastasic"[All Fields] OR "metastasing"[All Fields] OR "metastasis"[All Fields] OR "metastasised"[All Fields] OR "metastasises"[All Fields] OR "metastasising"[All Fields] OR "metastasisization"[All Fields] OR "metastasisizes"[All Fields] OR "metastasisizing"[All Fields] OR "neoplasm metastasis"[MeSH Terms] OR ("neoplasm"[All Fields] AND "metastasis"[All Fields]) OR "neoplasm metastasis"[All Fields] OR "metastase"[All Fields] OR "metastases"[All Fields] OR "metastasisize"[All Fields] OR "metastasisized"[All Fields]) AND "of the liver"[Title/ Abstract]) OR (("metastasi"[All Fields] OR "neoplasm metastasis"[MeSH Terms] OR ("neoplasm"[All Fields] AND "metastasis"[All Fields]) OR "neoplasm metastasis"[All Fields] OR "metastasis"[All Fields]) AND "in liver"[Title/ Abstract]) OR "metastasis liver"[Title/ Abstract] OR "metastatic hepatocellular"[Title/ Abstract] OR "metastatic liver"[Title/ Abstract] OR "metastatic liver cell"[Title/ Abstract]</p>	
6	<p>("Colorectal Neoplasms"[Mesh]) OR ((((((((((((((((((((Colorectal Neoplasms[Title/ Abstract]))</p>	<p>"Colorectal Neoplasms"[MeSH Terms] OR ("Colorectal Neoplasms"[Title/ Abstract] OR "colorectal neoplasm"[Title/ Abstract] OR "neoplasm colorectal"[Title/ Abstract] OR</p>	284,239

OR (Colorectal Neoplasm[Title/ Abstract]))	"neoplasms colorectal"[Title/ Abstract] OR "colorectal tumors"[Title/ Abstract] OR	
OR (Neoplasm, Colorectal[Title/ Abstract]))	"colorectal tumor"[Title/ Abstract] OR "tumor colorectal"[Title/ Abstract] OR "tumors colorectal"[Title/ Abstract] OR "colorectal cancer"[Title/ Abstract] OR "cancer colorectal"[Title/ Abstract] OR "cancers colorectal"[Title/ Abstract] OR "colorectal cancers"[Title/ Abstract] OR "colorectal carcinoma"[Title/ Abstract] OR "carcinoma colorectal"[Title/ Abstract] OR "carcinomas colorectal"[Title/ Abstract] OR "colorectal carcinomas"[Title/ Abstract] OR "colorectal tumorigenesis"[Title/ Abstract] OR "colorectal tumour"[Title/ Abstract] OR ("cysts"[MeSH Terms] OR "cysts"[All Fields] OR "cyst"[All Fields] OR "neurofibroma"[MeSH Terms] OR "neurofibroma"[All Fields] OR "neurofibromas"[All Fields] OR "tumor s"[All Fields] OR "tumoral"[All Fields] OR "tumorous"[All Fields] OR "tumour"[All Fields] OR "Neoplasms"[MeSH Terms] OR "Neoplasms"[All Fields] OR "Tumor"[All Fields] OR "tumour s"[All Fields] OR "tumoural"[All Fields] OR "tumourous"[All Fields] OR "tumours"[All Fields] OR "Tumors"[All Fields]) AND "Colorectal"[Title/ Abstract]))	
OR (Cancer, Colorectal[Title/ Abstract]))		
OR (Cancers, Colorectal[Title/ Abstract]))		
OR (Colorectal Cancers[Title/ Abstract]))		
OR (Colorectal Carcinoma[Title/ Abstract]))		
OR (Carcinoma, Colorectal[Title/ Abstract]))		
OR (Carcinomas, Colorectal[Title/ Abstract]))		
OR (Colorectal		

	<p>Carcinomas[Title/ Abstract])) OR (colorectal tumorigenesis[Title/ Abstract]) OR (colorectal tumour[Title/ Abstract]) OR (tumour, colorectal[Title/ Abstract])</p>		
5	<p>((((((((((((((((Colorectal Neoplasms[Title/ Abstract]) OR (Colorectal Neoplasm[Title/ Abstract]) OR (Neoplasm, Colorectal[Title/ Abstract]) OR (Neoplasms, Colorectal[Title/ Abstract]) OR (Colorectal Tumors[Title/ Abstract]) OR (Colorectal Tumor[Title/ Abstract]) OR (Tumor, Colorectal[Title/ Abstract]) OR (Tumors, Colorectal[Title/ Abstract]) OR (Colorectal Cancer[Title/ Abstract]) OR (Cancer, Colorectal[Title/ Abstract]) OR (Cancers, Colorectal[Title/ Abstract])</p>	<p>"colorectal neoplasms"[Title/ Abstract] OR "colorectal neoplasm"[Title/ Abstract] OR "neoplasm colorectal"[Title/ Abstract] OR "neoplasms colorectal"[Title/ Abstract] OR "colorectal tumors"[Title/ Abstract] OR "colorectal tumor"[Title/ Abstract] OR "tumor colorectal"[Title/ Abstract] OR "tumors colorectal"[Title/ Abstract] OR "colorectal cancer"[Title/ Abstract] OR "cancer colorectal"[Title/ Abstract] OR "cancers colorectal"[Title/ Abstract] OR "colorectal cancers"[Title/ Abstract] OR "colorectal carcinoma"[Title/ Abstract] OR "carcinoma colorectal"[Title/ Abstract] OR "carcinomas colorectal"[Title/ Abstract] OR "colorectal carcinomas"[Title/ Abstract] OR "colorectal tumorigenesis"[Title/ Abstract] OR "colorectal tumour"[Title/ Abstract] OR ("cysts"[MeSH Terms] OR "cysts"[All Fields] OR "cyst"[All Fields] OR "neurofibroma"[MeSH Terms] OR "neurofibroma"[All Fields] OR "neurofibromas"[All Fields] OR "tumors"[All</p>	170,765

	OR (Colorectal Cancers[Title/Abstract]) OR (Colorectal Carcinoma[Title/Abstract]) OR (Carcinoma, Colorectal[Title/Abstract]) OR (Carcinomas, Colorectal[Title/Abstract]) OR (Colorectal Carcinomas[Title/Abstract])) OR (colorectal tumorigenesis[Title/Abstract]) OR (colorectal tumour[Title/Abstract]) OR (tumour, colorectal[Title/Abstract])	Fields] OR "tumoral"[All Fields] OR "tumorous"[All Fields] OR "tumour"[All Fields] OR "Neoplasms"[MeSH Terms] OR "Neoplasms"[All Fields] OR "Tumor"[All Fields] OR "tumour s"[All Fields] OR "tumoural"[All Fields] OR "tumourous"[All Fields] OR "tumours"[All Fields] OR "Tumors"[All Fields]) AND "Colorectal"[Title/Abstract])	
4	"Colorectal Neoplasms"[Mesh]	"Colorectal Neoplasms"[MeSH Terms]	233,289
3	("Carcinoembryonic Antigen"[Mesh]) OR (((((((((((Carcinoembryonic Antigen[Title/Abstract]) OR (Antigen, Carcinoembryonic[Title/Abstract])) OR (CD66e Antigen[Title/Abstract])) OR (Antigens, CD66e[Title/Abstract])) OR (CD66e	"Carcinoembryonic Antigen"[MeSH Terms] OR ("Carcinoembryonic Antigen"[Title/Abstract] OR "antigen carcinoembryonic"[Title/Abstract] OR ("Carcinoembryonic Antigen"[MeSH Terms] OR ("Carcinoembryonic"[All Fields] AND "Antigen"[All Fields]) OR "Carcinoembryonic Antigen"[All Fields] OR "CD66e"[All Fields]) AND "Antigen"[Title/Abstract]) OR ("antigen s"[All Fields] OR "antigene"[All Fields] OR "antigenes"[All Fields] OR	36,588

	<p>Antigens[Title/ Abstract])) OR (Antigen, CD66e[Title/ Abstract])) OR (carcinoembryonic protein[Title/ Abstract])) OR (ce antigen[Title/ Abstract])) OR (CEA[Title/ Abstract])) OR (protein, carcinoembryonic[Title/ Abstract]))</p>	<p>"antigenic"[All Fields] OR "antigenically"[All Fields] OR "antigenicities"[All Fields] OR "antigenicity"[All Fields] OR "antigenized"[All Fields] OR "Antigens"[MeSH Terms] OR "Antigens"[All Fields] OR "Antigen"[All Fields]) AND "CD66e"[Title/ Abstract]) OR ("Carcinoembryonic Antigen"[MeSH Terms] OR ("Carcinoembryonic"[All Fields] AND "Antigen"[All Fields]) OR "Carcinoembryonic Antigen"[All Fields] OR "CD66e"[All Fields]) AND "Antigens"[Title/ Abstract]) OR "antigen cd66e"[Title/ Abstract] OR "carcinoembryonic protein"[Title/ Abstract] OR "ce antigen"[Title/ Abstract] OR "CEA"[Title/ Abstract] OR "protein carcinoembryonic"[Title/ Abstract])</p>	
2	<p>((((((((((Carcinoembryonic Antigen[Title/ Abstract]) OR (Antigen, Carcinoembryonic[Title/ Abstract])) OR (CD66e Antigen[Title/ Abstract])) OR (Antigens, CD66e[Title/ Abstract])) OR (CD66e Antigens[Title/ Abstract])) OR (Antigen, CD66e[Title/ Abstract])) OR (carcinoembryonic</p>	<p>"carcinoembryonic antigen"[Title/ Abstract] OR "antigen carcinoembryonic"[Title/ Abstract] OR ("carcinoembryonic antigen"[MeSH Terms] OR ("Carcinoembryonic"[All Fields] AND "Antigen"[All Fields]) OR "carcinoembryonic antigen"[All Fields] OR "CD66e"[All Fields]) AND "Antigen"[Title/ Abstract]) OR ("antigen s"[All Fields] OR "antigene"[All Fields] OR "antigenes"[All Fields] OR "antigenic"[All Fields] OR "antigenically"[All Fields] OR "antigenicities"[All Fields] OR "antigenicity"[All Fields] OR "antigenized"[All</p>	33,900

	protein[Title/Abstract])) OR (ce antigen[Title/Abstract])) OR (CEA[Title/Abstract])) OR (protein, carcinoembryonic[Title/Abstract])	Fields] OR "Antigens"[MeSH Terms] OR "Antigens"[All Fields] OR "Antigen"[All Fields]) AND "CD66e"[Title/Abstract] OR (("carcinoembryonic antigen"[MeSH Terms] OR ("Carcinoembryonic"[All Fields] AND "Antigen"[All Fields]) OR "carcinoembryonic antigen"[All Fields] OR "CD66e"[All Fields]) AND "Antigens"[Title/Abstract]) OR "antigen cd66e"[Title/Abstract] OR "carcinoembryonic protein"[Title/Abstract] OR "ce antigen"[Title/Abstract] OR "CEA"[Title/Abstract] OR "protein carcinoembryonic"[Title/Abstract]	
1	"Carcinoembryonic Antigen"[Mesh]	"Carcinoembryonic Antigen"[MeSH Terms]	16,436

3. Embase

No.	Query	Results
#10	#3 AND #6 AND #9	3356
#9	#7 OR #8	87699
#8	'liver metastasis':ab,ti OR 'hepatic metastases':ab,ti OR 'hepatic metastasis':ab,ti OR 'hepatocellular metastasis':ab,ti OR 'liver metastases':ab,ti OR 'liver tumor metastases':ab,ti OR 'liver tumor metastasis':ab,ti OR 'liver tumour metastasis':ab,ti OR 'metastases of the liver':ab,ti OR 'metastasis in liver':ab,ti OR 'metastasis, liver':ab,ti OR 'metastatic hepatocellular':ab,ti OR 'metastatic liver':ab,ti OR 'metastatic liver cell':ab,ti	55729
#7	'liver metastasis'/exp	74355

#6	#4 OR #5	474073
#5	'colorectal tumor':ab,ti OR 'colorectal neoplasms':ab,ti OR 'colorectal neoplasm':ab,ti OR 'neoplasm, colorectal':ab,ti OR 'neoplasms, colorectal':ab,ti OR 'colorectal tumors':ab,ti OR 'tumor, colorectal':ab,ti OR 'tumors, colorectal':ab,ti OR 'colorectal cancer':ab,ti OR 'cancer, colorectal':ab,ti OR 'cancers, colorectal':ab,ti OR 'colorectal cancers':ab,ti OR 'colorectal carcinoma':ab,ti OR 'carcinoma, colorectal':ab,ti OR 'carcinomas, colorectal':ab,ti OR 'colorectal carcinomas':ab,ti OR 'colorectal tumorigenesis':ab,ti OR 'colorectal tumour':ab,ti OR 'tumour, colorectal':ab,ti	211890
#4	'colorectal tumor'/exp	457183
#3	#1 OR #2	66252
#2	'carcinoembryonic antigen':ab,ti OR 'antigen, carcinoembryonic':ab,ti OR 'cd66e antigen':ab,ti OR 'antigens, cd66e':ab,ti OR 'cd66e antigens':ab,ti OR 'antigen, cd66e':ab,ti OR 'carcinoembryonic protein':ab,ti OR 'ce antigen':ab,ti OR cea:ab,ti OR 'protein, carcinoembryonic':ab,ti	47642
#1	'carcinoembryonic antigen'/exp	45603

4. Web of Science

No.	Query	Run Date	Results
1	Carcinoembryonic Antigen (topic) OR Antigen, Carcinoembryonic (topic) OR CD66e Antigen (topic) OR Antigens, CD66e (topic) OR CD66e Antigens (topic) OR Antigen, CD66e (topic) OR carcinoembryonic protein (topic) OR ce antigen (topic) OR CEA (topic) OR protein, carcinoembryonic (topic)	Mon Feb 27 2023 11:58:53 GMT+0800	40863
2	Colorectal Neoplasms (topic) OR Colorectal Neoplasm (topic) OR Neoplasm, Colorectal (topic) OR Neoplasms, Colorectal (topic) OR Colorectal Tumors (topic) OR	Mon Feb 27 2023 12:01:10	263359

	Colorectal Tumor (topic) OR Tumor, Colorectal (topic) OR Tumors, Colorectal (topic) OR Colorectal Cancer (topic) OR Cancer, Colorectal (topic) OR Cancers, Colorectal (topic) OR Colorectal Cancers (topic) OR Colorectal Carcinoma (topic) OR Carcinoma, Colorectal (topic) OR Carcinomas, Colorectal (topic) OR Colorectal Carcinomas (topic) OR colorectal tumorigenesis (All fields) OR colorectal tumour (All fields) OR tumour, colorectal (All fields)	GMT+08 00	
3	Colorectal Neoplasms (topic) OR Colorectal Neoplasm (topic) OR Neoplasm, Colorectal (topic) OR Neoplasms, Colorectal (topic) OR Colorectal Tumors (topic) OR Colorectal Tumor (topic) OR Tumor, Colorectal (topic) OR Tumors, Colorectal (topic) OR Colorectal Cancer (topic) OR Cancer, Colorectal (topic) OR Cancers, Colorectal (topic) OR Colorectal Cancers (topic) OR Colorectal Carcinoma (topic) OR Carcinoma, Colorectal (topic) OR Carcinomas, Colorectal (topic) OR Colorectal Carcinomas (topic) OR colorectal tumorigenesis (topic) OR colorectal tumour (topic) OR tumour, colorectal (topic)	Mon Feb 27 2023 12:01:22 GMT+08 00	258868
4	liver metastasis (topic) OR hepatic metastases (topic) OR hepatic metastasis (topic) OR hepatocellular metastasis (topic) OR liver metastases (topic) OR liver tumor metastases (topic) OR liver tumor metastasis (topic) OR liver tumour metastasis (topic) OR metastases of the liver (topic) OR metastasis in liver (topic) OR metastasis, liver (topic) OR metastatic hepatocellular (topic) OR metastatic liver (topic) OR metastatic liver cell (topic)	Mon Feb 27 2023 12:03:08 GMT+08 00	87887
5	#1 AND #4 AND #3		1571

Supplementary Table 2: Quality evaluation

No.	Study	Cohort selection				Demonstration That Outcome of Interest Was Not Present at Start of Study	Comparability of the exposed and non-exposed cohorts	Outcome			Total score
		Representativeness of the exposed cohort	Representativeness of the non-exposed cohort	Ascertainment of exposure	Comparison of outcome assessment of outcome			Was follow-up prolonged enough	Adequacy of follow-up		
1	Meng et al.	1	1	1	1	2	1	1	1	9	
2	Okimoto et al.	1	1	1	1	2	1	1	0	8	
3	Kamphuis et al.	1	0	1	1	2	1	1	0	7	
4	Kawahara et al.	1	1	1	1	1	1	1	0	7	
5	Hof et al.	1	1	1	1	2	1	1	0	8	
6	Chiang et al.	1	1	1	1	2	1	1	0	8	

7	Peltone n et al.	1	1	1	1	1	1	1	1	8
8	Lu et al.	1	1	1	1	1	1	1	0	7
9	John et al.	1	1	1	1	1	1	1	0	7
10	Yi et al.	1	1	1	1	2	1	1	0	8
11	Gervaz et al.	1	1	1	1	1	1	1	0	7
12	Sasaki et al.	1	1	1	1	2	1	1	1	9
13	Wang et al.	1	1	1	1	2	1	1	0	8
14	Takami zawa et al.	1	1	1	1	2	1	1	1	9
15	Masud a et al.	1	0	1	1	2	1	1	0	7
16	Zhang et al.	1	1	1	1	2	1	1	1	9
17	Ishii et al.	1	1	1	1	1	1	1	0	7
18	Tanaka et al.	1	1	1	1	2	1	1	1	9
19	Sasaki et al.	1	1	1	1	2	1	1	0	8
20	Chen et al.	1	1	1	1	1	1	1	0	7

2 1	Montal ti et al.	0	0	1	1	2	1	1	0	6
2 2	Reddy et al.	0	0	1	1	2	1	1	0	6
2 3	Reddy et al.	1	1	0	1	2	1	1	0	7
2 4	Li et al.	1	1	1	1	1	1	1	0	7
2 5	Niu et al.	0	0	1	1	2	1	1	0	6
2 6	Polivka et al.	0	0	1	1	2	1	1	0	6
2 7	Takeda et al.	1	1	1	1	2	1	1	0	8
2 8	Dumar co et al.	1	1	1	1	2	1	1	0	8
2 9	Kim et al.	1	1	1	1	2	1	1	0	8
3 0	Peng et al.	1	1	1	1	1	1	1	0	7
3 1	Imai et al.	1	1	1	1	2	1	1	0	8
3 2	Pawlik et al.	0	0	1	1	2	1	1	0	6
3 3	Miki et al.	1	1	1	1	2	1	1	0	8
3 4	Hohen berger et al.	1	1	1	1	1	1	1	0	7

3 5	Arru et al.	1	1	1	1	2	1	1	0	8
3 6	Yoshin o et al.	1	1	1	1	2	1	1	0	8