

## Supplemental material The search formula for each database

The details are as follows:

Pubmed: ("Hepatectomy"[MeSH Terms] OR "Hepatectomy"[All Fields] OR "hepatectomies"[All Fields] OR (("hepatic"[All Fields] OR "hepatophyta"[MeSH Terms] OR "hepatophyta"[All Fields] OR "hepatics"[All Fields]) AND ("resect"[All Fields] OR "resectability"[All Fields] OR "resectable"[All Fields] OR "resectates"[All Fields] OR "resected"[All Fields] OR "resecting"[All Fields] OR "resection"[All Fields] OR "resectional"[All Fields] OR "resectioned"[All Fields] OR "resectioning"[All Fields] OR "resections"[All Fields] OR "resective"[All Fields] OR "resects"[All Fields])) OR ("Hepatectomy"[MeSH Terms] OR "Hepatectomy"[All Fields] OR ("liver"[All Fields] AND "resection"[All Fields]) OR "liver resection"[All Fields]) OR "resection liver"[All Fields] OR "Hepatectomy"[MeSH Terms]) AND (("carcinoma, hepatocellular"[MeSH Terms] OR ("carcinoma"[All Fields] AND "hepatocellular"[All Fields]) OR "hepatocellular carcinoma"[All Fields] OR ("hepatocellular"[All Fields] AND "carcinoma"[All Fields]) OR "carcinoma, hepatocellular"[MeSH Terms]) AND (((("spontaneous"[All Fields] OR "spontaneously"[All Fields]) AND ("ruptur"[All Fields] OR "rupture"[MeSH Terms] OR "rupture"[All Fields] OR "ruptured"[All Fields] OR "ruptures"[All Fields] OR "rupturing"[All Fields])) OR ("rupture, spontaneous"[MeSH Terms] OR ("rupture"[All Fields] AND "spontaneous"[All Fields]) OR "spontaneous rupture"[All Fields] OR ("spontaneous"[All Fields] AND "rupture"[All Fields])) OR ("rupture\*"[All Fields] AND "spontane\*"[All Fields]) OR "rupture, spontaneous"[MeSH Terms]))

EMBASE: ('liver cell carcinoma'/exp OR 'carcinoma in the liver' OR 'carcinoma of the liver' OR 'carcinoma, hepatic cell' OR 'carcinoma, hepatocellular' OR 'carcinoma, liver' OR 'carcinoma, liver cell' OR 'hepatic carcinoma' OR 'hepatic

cell carcinoma' OR 'hepato-carcinoma' OR 'hepato-cellular carcinoma' OR 'hepatocarcinoma' OR 'hepatocellular carcinoma' OR 'hepatocellular carcinomata' OR 'hepatocyte carcinoma' OR 'hepatocytic carcinoma' OR 'hepatoma' OR 'hepatomata' OR 'hepatomatous' OR 'liver carcinoma' OR 'liver carcinoma rupture' OR 'liver cell carcinoma' OR 'malignant hepatoma' OR 'primary liver carcinoma') AND 'spontaneously ruptured' AND ('hepatectomy'/exp OR 'hepatectomy' OR 'hepatic resection' OR 'liver resection' OR 'resection, liver') AND 'artificial embolization'/exp

Cochrane Library databases:

ID Search Hits

- #1 MeSH descriptor: [Carcinoma, Hepatocellular] explode all trees 2028
- #2 hepatocellular carcinoma 5690
- #3 #1 OR #2 5690
- #4 (Early OR emerge\* OR one-stage):ti,ab,kw (Word variations have been searched) 185209
- #5 (Delayed OR staged OR two-stage):ti,ab,kw (Word variations have been searched) 151075
- #6 #4 OR #5 303562
- #7 ('liver resection' OR hepatectomy):ti,ab,kw (Word variations have been searched) 4769
- #8 embolization 2852
- #9 #4 OR #5 303561
- #10 MeSH descriptor: [Rupture, Spontaneous] explode all trees 113
- #11 (ruptur\*):ti,ab,kw (Word variations have been searched) 7558
- #12 #10 OR #11 7558
- #13 #3 AND #6 AND #9 AND #12 7

**Supplementary Table 1 Quality evaluation of included studies**

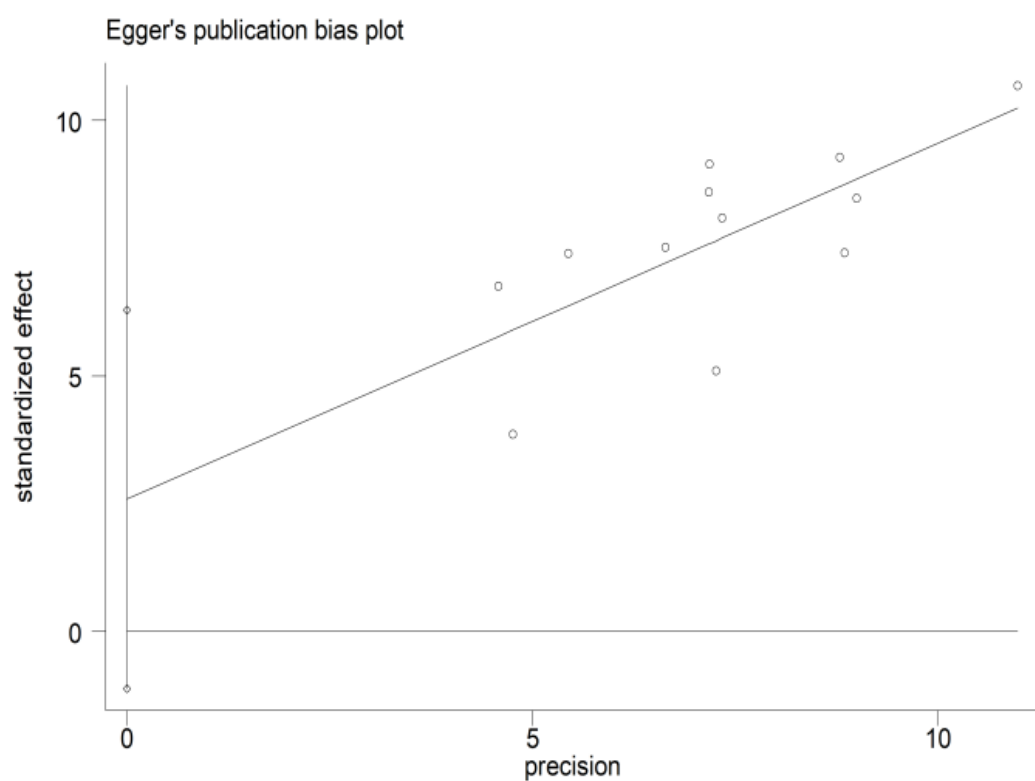
| Ref.         | Country | Type of study | Selection |   |   |   | Comparability |   | Outcome |   |   | Score |
|--------------|---------|---------------|-----------|---|---|---|---------------|---|---------|---|---|-------|
|              |         |               | 1         | 2 | 3 | 4 | 5             | 6 | 7       | 8 | 9 |       |
| Lee 2022     | Korea   | R             | ☆         | ☆ | ☆ | ☆ | ☆             |   | ☆       | ☆ | ☆ | 7     |
| Cho JK 2022  | Korea   | R(PSM)        | ☆         | ☆ | ☆ | ☆ | ☆             | ☆ | ☆       | ☆ | ☆ | 8     |
| Navarro 2020 | Korea   | R(PSM)        | ☆         | ☆ | ☆ | ☆ | ☆             | ☆ | ☆       | ☆ | ☆ | 8     |
| Jang JY 2019 | Korea   | R             | ☆         | ☆ | ☆ | ☆ | ☆             |   | ☆       | ☆ |   | 7     |
| Itano O 2015 | Japan   | R             | ☆         |   | ☆ | ☆ | ☆             |   | ☆       | ☆ |   | 6     |

Note: 1. Representativeness of exposed cohort; 2. Selection of non-exposed cohort; 3. Ascertainment of exposure; 4. Outcome of interest was not present at start of study; 5. Study controls for age, sex, and marital status; 6. Study controls for any additional factors; 7. Assessment of outcomes; 8. Follow-up long enough for outcomes to occur; 9. Adequacy of follow-up; R: Retrospective comparative study; PSM: Propensity score matching.

**Supplementary Table 2 Begg's and Egger's test for all included studies**

| Measured outcomes            | No. studies | Begg's test |             | Egger's test |
|------------------------------|-------------|-------------|-------------|--------------|
|                              |             | Pr>  z  *   | Pr >  z  ** | P>  t  *     |
| Operative time               | 5           | 1           | 1           | 0.685        |
| Blood loss                   | 4           | 0.497       | 0.734       | 0.398        |
| Hospital stays               | 5           | 0.142       | 0.221       | 0.13         |
| Lymph nodes retrieved        | 5           | 1           | 1           | 0.863        |
| Transfusion                  | 3           | 0.602       | 1           | 0.729        |
| Complication                 | 5           | 1           | 1           | 0.758        |
| Recurrence                   | 2           | 0.317       | 1           | *            |
| 3-year overall survival      | 3           | 0.117       | 0.296       | 0.553        |
| 5-year overall survival      | 3           | 0.602       | 1           | 0.468        |
| 3-year disease-free survival | 3           | 0.602       | 1           | 0.944        |
| 5-year disease-free survival | 3           | 0.117       | 0.296       | 0.218        |

Note: No. - the number of; \*- p values; \*\*- Correct p values.



Tests for Publication Bias

| Outcome                      | n     | Begg's |       | Begg's |       | cont. corr. |       | Egger's |       |
|------------------------------|-------|--------|-------|--------|-------|-------------|-------|---------|-------|
|                              |       | score  | s.d.  | z      | p     | z           | p     | bias    | p     |
| 3-year disease free survival | 3     | -1     |       |        | 1.915 | -0.52       | 0.602 | 0.00    | 1.00  |
| > 0                          | -0.27 | 0.944  |       |        |       |             |       |         |       |
| 3-year disease free survival | 3     | 3      |       |        | 1.915 | 1.57        | 0.117 | 1.04    | 0.29  |
| > 6                          | 5.16  | 0.553  |       |        |       |             |       |         |       |
| 3-year disease free survival | 3     | 3      |       |        | 1.915 | 1.57        | 0.117 | 1.04    | 0.29  |
| > 6                          | 6.17  | 0.281  |       |        |       |             |       |         |       |
| 3-year disease free survival | 3     | 1      |       |        | 1.915 | 0.52        | 0.602 | 0.00    | 1.00  |
| > 0                          | 6.87  | 0.468  |       |        |       |             |       |         |       |
| overall                      | 12    | 6      | 3.830 | 1.57   | 0.117 | 1.31        | 0.192 | 3.67    | 0.027 |

Supplementary Figure 1 Egger's publication bias plot.