

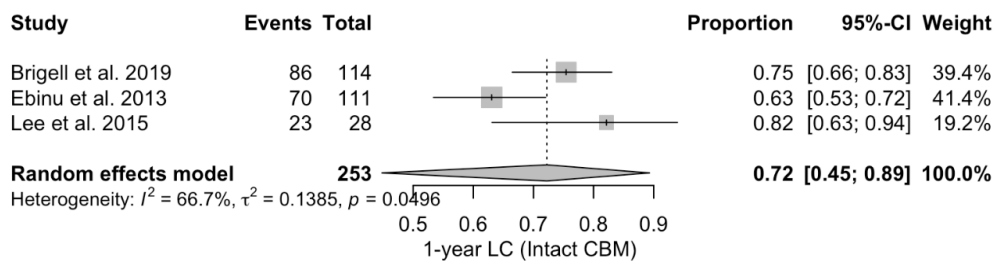
Table S1 Search strategy and terms

Source	Search Strategy/Search Terms	Date/Time of Search	Results	
			Yield	Eligible
Publication database				
PubMed	1. radiotherapy (MeSH Terms) 2. radiosurgery (MeSH Terms) 3. 1 OR 2 4. brain metastas* (Title/Abstract) 5. cystic (Title/Abstract) 6. 4 AND 5 7. 3 AND 6 Filter: None	July 11, 2024 8:00AM	39	
Scopus	TITLE-ABS-KEY(radiation AND therapy) AND TITLE-ABS-KEY(radiotherapy) OR TITLE-ABS-KEY(radiosurgery) AND TITLE-ABS-KEY(brain AND metastas*s) AND TITLE-ABS-KEY(cystic) Filters: None	July 11, 2024 8:00AM	122	
ScienceDirect	(radiotherapy OR radiosurgery OR "radiation therapy") AND "brain metastases" AND cystic Filters: None	July 11, 2024 8:00AM	18	
ASCOpubs	SUBJECT "radiation therapy" AND TITLE (brain metastases) AND TITLE (cystic) Filters: None	July 11, 2024 8:00AM	1	
EBSCOhost	SU (radiotherapy) OR SU (radiation therapy) AND AB (brain metastases) AND AB (cystic) Filters: None	July 11, 2024 8:00AM	19	
Cochrane Library	TITLE-ABS-KEY(radiation therapy) AND TITLE-ABS-KEY(brain metastases) AND TITLE-ABS-KEY(cystic) Filters: None	July 11, 2024 8:00AM	0	
Bibliography scan		July 11, 2024 5:00PM		
Hand search		July 11, 2024 5:00PM	2	
Exact duplicates			-47	
Unique studies			154	
Excluded studies			-141	
Included studies			13	

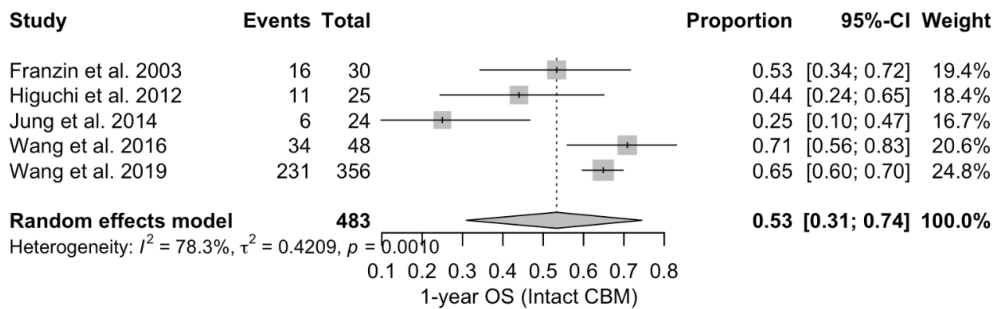
**Table S2** Risk of bias assessment—CASP checklist for cohort studies

Study	Research Question	Selection bias	Measurement bias (exposure)	Measurement bias (outcomes)	Confounding factors	Follow-up	Magnitude of effect	Precision of estimate	Credibility	Empiric congruence	Applicability	Implications to Practice
Studies reporting 1-year LC and 1-year OS (n=1)												
Post-operative SRS/SRT (n=1)												
Evin 2023	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Studies reporting 1-year LC only (n=4)												
Intact brain metastases SRS/SRT (n=3)												
Brigell 2019	Low risk	Low risk	Low risk	Low risk	Low risk	Uncertain risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Ebinu 2013	Low risk	Uncertain risk	Uncertain risk	Low risk	Low risk	Low risk	Low risk	High risk	Low risk	Low risk	Uncertain risk	Low risk
Lee 2015	Low risk	Low risk	Uncertain risk	Low risk	High risk	Low risk	Low risk	High risk	Low risk	Low risk	Uncertain risk	Low risk
Post-operative SRS/SRT (n=1)												
Amidon 2024	Low risk	Low risk	Uncertain risk	Low risk	High risk	Low risk	Low risk	High risk	Low risk	Low risk	Uncertain risk	Low risk
Studies reporting 1-year OS only (n=5)												
Intact brain metastases SRS/SRT (n=5)												
Franzin 2003	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Higuchi 2012	Low risk	Low risk	Uncertain risk	High risk	High risk	Low risk	Low risk	High risk	Low risk	Low risk	Uncertain risk	Low risk
Jung 2014	Low risk	Low risk	Low risk	Low risk	Low risk	Uncertain risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Wang 2016	Low risk	Uncertain risk	Uncertain risk	Uncertain risk	High risk	Low risk	Low risk	High risk	Low risk	Low risk	Uncertain risk	Low risk
Wang 2019	Low risk	Low risk	Low risk	Low risk	Low risk	Uncertain risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Other included studies (n=3)												
Intact brain metastases SRS/SRT (n=2)												
Park 2009	Low risk	Low risk	Uncertain risk	Low risk	Low risk	Low risk	Uncertain risk	High risk	Uncertain risk	Low risk	Uncertain risk	Low risk
Sadik 2021	Low risk	Low risk	Low risk	Low risk	Uncertain risk	Low risk	Uncertain risk	High risk	Uncertain risk	Low risk	Low risk	Low risk
Post-operative SRS/SRT (n=1)												
Press 2019	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Uncertain risk	High risk	Uncertain risk	Low risk	Low risk	Low risk

CASP, Critical Appraisal Skills Programme; LC, local control; OS, overall survival; SRS/SRT, stereotactic radiosurgery or radiotherapy.



**Figure S1** Sensitivity analysis pooled 1-year local control with SRS/SRT in intact CBM.



**Figure S2** Sensitivity analysis pooled 1-year local control with SRS/SRT in intact CBM.

**Table S3** Summary of recommendations and grade of evidence

No.	Summary	Quality of evidence	Strength of recommendation
1.	In patients with cystic brain metastases, stereotactic radiosurgery or radiotherapy-based treatment approach achieves favorable local control and survival outcomes.	Low	Strong
2.	In patients with intact cystic brain metastases, stereotactic radiosurgery or radiotherapy-based treatment approach alone provides good local control and survival outcomes.	Low	Strong
3.	In patients with cystic brain metastases who underwent prior surgical resection, postoperative stereotactic radiosurgery or radiotherapy-based treatment approach yields good local control and survival.	Very low	Strong
4.	In patients with cystic brain metastases who will undergo stereotactic radiosurgery or radiotherapy, cyst aspiration may be appropriate for select patients when the cystic component may negatively affect radiation therapy efficacy.	Very low	Weak