

**Supplementary Table S1: Search Strategy**

Database	Search Strategy	Number of articles found
PubMed	("catheter ablation"[MeSH Terms] OR ("catheter"[All Fields] AND "ablation"[All Fields]) OR "catheter ablation"[All Fields] OR ("crit arts"[Journal] OR "ca cancer j clin"[Journal] OR "ca"[All Fields])) AND (((("medic"[All Fields] OR "medical"[All Fields] OR "medicalization"[MeSH Terms] OR "medicalization"[All Fields] OR "medicalizations"[All Fields] OR "medicalize"[All Fields] OR "medicalized"[All Fields] OR "medicalizes"[All Fields] OR "medicalizing"[All Fields] OR "medically"[All Fields] OR "medicals"[All Fields] OR "medicated"[All Fields] OR "medication s"[All Fields] OR "medics"[All Fields] OR "pharmaceutical preparations"[MeSH Terms] OR ("pharmaceutical"[All Fields] AND "preparations"[All Fields]) OR "pharmaceutical preparations"[All Fields] OR "medication"[All Fields] OR "medications"[All Fields]) AND ("therapeutics"[MeSH Terms] OR "therapeutics"[All Fields] OR "therapies"[All Fields] OR "therapy"[MeSH Subheading] OR "therapy"[All Fields] OR "therapy s"[All Fields] OR "therapys"[All Fields])) OR ("methods"[MeSH Subheading] OR "methods"[All Fields] OR "mt"[All Fields]) OR (("j rehabil assist technol eng"[Journal] OR "rate"[All Fields]) AND ("controlling"[All Fields] OR "controllability"[All Fields] OR "controllable"[All Fields] OR "controllably"[All Fields] OR "controller"[All Fields] OR "controller s"[All Fields] OR "controllers"[All Fields] OR "controlling"[All Fields] OR "controls"[All Fields] OR "prevention and control"[MeSH Subheading] OR ("prevention"[All Fields] AND "control"[All Fields]) OR "prevention and control"[All Fields] OR "control"[All Fields] OR "control groups"[MeSH Terms] OR ("control"[All Fields] AND "groups"[All Fields]) OR "control groups"[All Fields]) AND ("agent"[All Fields] OR "agents"[All Fields])) OR ("rhythm"[All Fields] AND ("controlling"[All Fields] OR "controllability"[All Fields] OR "controllable"[All Fields] OR "controllably"[All Fields] OR "controller"[All Fields] OR "controller s"[All Fields] OR "controllers"[All Fields] OR "controlling"[All Fields] OR "controls"[All Fields] OR "prevention and control"[MeSH Subheading] OR ("prevention"[All Fields] AND "control"[All Fields]) OR "prevention and control"[All Fields] OR "control"[All Fields] OR "control groups"[MeSH Terms] OR ("control"[All Fields] AND "groups"[All Fields]) OR "control groups"[All Fields]) AND ("agent"[All Fields] OR "agents"[All Fields])) OR ((("anti-arrhythmia agents"[Pharmacological Action] OR "anti-arrhythmia agents"[MeSH Terms] OR ("anti-arrhythmia"[All Fields] AND "agents"[All Fields]) OR "anti-arrhythmia agents"[All Fields] OR ("anti"[All Fields] AND "arrhythmic"[All Fields]) OR "anti-arrhythmic"[All Fields]) AND ("drug s"[All Fields] OR "pharmaceutical preparations"[MeSH Terms] OR ("pharmaceutical"[All Fields] AND "preparations"[All Fields]) OR "pharmaceutical preparations"[All Fields] OR "drugs"[All Fields]))) AND ("atrial fibrillation"[MeSH Terms] OR ("atrial"[All Fields] AND "fibrillation"[All Fields]) OR "atrial fibrillation"[All Fields] OR ("atrial fibrillation"[MeSH Terms] OR ("atrial"[All Fields] AND "fibrillation"[All Fields]) OR "atrial fibrillation"[All Fields] OR "AFib"[All Fields]) OR "AF"[All Fields]) AND ("heart failure"[MeSH Terms] OR ("heart"[All Fields] AND "failure"[All Fields]) OR "heart failure"[All Fields] OR ("hepatol forum"[Journal] OR "hf"[All Fields]))	12
Cochrane library	(Catheter ablation OR CA) AND (Medical therapy OR MT OR rate control agents OR rhythm control agents OR anti-arrhythmic drugs) AND (atrial fibrillation OR AFib OR AF) AND (Heart failure OR HF)	10
Google scholar	(Catheter ablation OR CA) AND (Medical therapy OR MT OR rate control agents OR rhythm control agents OR anti-arrhythmic drugs) AND (atrial fibrillation OR AFib OR AF) AND (Heart failure OR HF)	2

**Supplementary Table S2 - Assessing the Methodological Quality of Systematic Reviews – AMSTAR2**

References	AMSTAR2 Items*																Overall Rating †
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Magnocavallo, et al. (2022) [17]	No	Yes	Yes	PY	Yes	Yes	No	Yes	Yes	No	Yes	No	No	Yes	No	Yes	Moderate
Elgendy, et al. (2018) [18]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Moderate
Saylik, et al. (2023) [19]	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No	Moderate
Yu, et al. (2022) [20]	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No	Moderate
Pan, et al. (2021) [21]	No	Yes	Yes	PY	Yes	Yes	No	Yes	Yes	No	Yes	No	No	Yes	No	Yes	Moderate
Zhu, et al. (2016) [22]	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No	Moderate
Total Amount of Yes	4	6	3	4	6	6	4	6	6	1	6	0	4	6	3	3	

PY: Partial Yes.

\*AMSTAR items:

1. Did the research questions and inclusion criteria for the review include the components of PICO/PECO?
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?
3. Did the review authors explain their selection of the study designs for inclusion in the review?
4. Did the review authors use a comprehensive literature search strategy?
5. Did the review authors perform study selection in duplicate?
6. Did the review authors perform data extraction in duplicate?
7. Did the review authors provide a list of excluded studies and justify the exclusions?
8. Did the review authors describe the included studies in adequate detail?
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?
10. Did the review authors report on the sources of funding for the studies included in the review?
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?

†Rating overall confidence in the results of the review:

- High: No or one non-critical weakness: the systematic review provides an accurate and comprehensive summary of the results of the available studies that address the question of interest.

- Moderate: More than one non-critical weakness\*: the systematic review has more than one weakness but no critical flaws. It may provide an accurate summary of the results of the available studies that were included in the review.
- Low: One critical flaw with or without non-critical weaknesses: the review has a critical flaw and may not provide an accurate and comprehensive summary of the available studies that address the question of interest.
- Critically low: More than one critical flaw with or without non-critical weaknesses: the review has more than one critical flaw and should not be relied on to provide an accurate and comprehensive summary of the available studies

\*Multiple non-critical weaknesses may diminish confidence in the review, and it may be appropriate to move the overall appraisal down from moderate to low confidence.

Shea et al. 2017. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomized or non-randomized studies of healthcare interventions, or both

Supplementary Table S3: Grade Assessment of the Meta-analyses and Systematic Reviews Included

Author(s): Magnocavallo et al (2022) [17]

Question: CA compared to MT for AFib

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CA	MT	Relative (95% CI)	Absolute (95% CI)		
All-cause mortality (follow-up: mean 12 months)												
9	randomized trials	not serious	not serious	not serious	not serious	none	1077	1078	<b>RR 0.65</b> (0.51 to 0.82)	<b>0 fewer per 1,000</b> (from 0 fewer to 0 fewer)	⊕⊕⊕⊕ High	CRITICAL
Heart Failure Hospitalization (follow-up: mean 12 months)												
9	randomized trials	not serious	not serious	not serious	not serious	none	1077	1078	<b>RR 0.67</b> (0.54 to 0.82)	<b>0 fewer per 1,000</b> (from 0 fewer to 0 fewer)	⊕⊕⊕⊕ High	CRITICAL
AFib recurrence (follow-up: mean 12 months)												
9	randomized trials	not serious	not serious	not serious	not serious	none	1077	1078	<b>RR 0.36</b> (0.24 to 0.54)	<b>0 fewer per 1,000</b> (from 0 fewer to 0 fewer)	⊕⊕⊕⊕ High	CRITICAL

CI: confidence interval; RR: risk ratio

Author(s): Elgendy et al (2018) [18]

Question: CA compared to MT for AFib

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CA	MT	Relative (95% CI)	Absolute (95% CI)		

All-cause mortality (follow-up: mean 26 months)

6	randomized trials	not serious	not serious	not serious	not serious	none	388	387	<b>RR 0.50</b> (0.34 to 0.74)	<b>0 fewer per 1,000</b> (from 0 fewer to 0 fewer)	⊕⊕⊕⊕ High	CRITICAL
---	-------------------	-------------	-------------	-------------	-------------	------	-----	-----	----------------------------------	---	--------------	----------

Heart Failure Hospitalization (follow-up: mean 26 months)

6	randomized trials	not serious	not serious	not serious	not serious	none	388	387	<b>RR 0.58</b> (0.41 to 0.81)	<b>0 fewer per 1,000</b> (from 0 fewer to 0 fewer)	⊕⊕⊕⊕ High	CRITICAL
---	-------------------	-------------	-------------	-------------	-------------	------	-----	-----	----------------------------------	---	--------------	----------

CI: confidence interval; RR: risk ratio

**Author(s):** Saylik et al (2023) [19]

**Question:** CA compared to MT for AFib

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CA	MT	Relative (95% CI)	Absolute (95% CI)		

All-cause mortality (follow-up: mean 12 months)

10	randomized trials	not serious	not serious	not serious	not serious	none			<b>RR 0.64</b> (0.50 to 0.82)	<b>1 fewer per 1,000</b> (from 1 fewer to 1 fewer)	⊕⊕⊕⊕ High	CRITICAL
----	-------------------	-------------	-------------	-------------	-------------	------	--	--	----------------------------------	---	--------------	----------

**CI:** confidence interval; **RR:** risk ratio

**Author(s):** Yu et al (2022) [20]

**Question:** CA compared to MT for AFib

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CA	MT	Relative (95% CI)	Absolute (95% CI)		

All-cause mortality (follow-up: mean 12 months)

8	randomized trials	not serious	not serious	not serious	not serious	none	834	859	<b>RR 0.60</b> (0.45 to 0.80)	<b>0 fewer per 1,000</b> (from 0 fewer to 0 fewer)	⊕⊕⊕⊕ High	CRITICAL
---	-------------------	-------------	-------------	-------------	-------------	------	-----	-----	----------------------------------	---	--------------	----------

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CA	MT	Relative (95% CI)	Absolute (95% CI)		

**Heart Failure Hospitalization (follow-up: mean 12 months)**

8	randomized trials	not serious	not serious	not serious	not serious	none	834	859	<b>RR 0.58</b> (0.46 to 0.73)	<b>0 fewer per 1,000</b> (from 0 fewer to 0 fewer)	⊕⊕⊕⊕ High	CRITICAL
---	-------------------	-------------	-------------	-------------	-------------	------	-----	-----	----------------------------------	---	--------------	----------

**CI:** confidence interval; **RR:** risk ratio

**Author(s):** Pan et al (2021) [21]

**Question:** CA compared to MT for AFib

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CA	MT	Relative (95% CI)	Absolute (95% CI)		

**All-cause mortality (follow-up: mean 16 months)**

6	randomized trials	not serious	not serious	not serious	not serious	none	388	387	<b>RR 0.31</b> (0.20 to 0.47)	<b>0 fewer per 1,000</b> (from 0 fewer to 0 fewer)	⊕⊕⊕⊕ High	CRITICAL
---	-------------------	-------------	-------------	-------------	-------------	------	-----	-----	----------------------------------	---	--------------	----------

**Heart Failure Hospitalizations (follow-up: mean 16 months)**

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CA	MT	Relative (95% CI)	Absolute (95% CI)		
6	randomized trials	not serious	not serious	not serious	not serious	none	388	387	<b>RR 0.56</b> (0.44 to 0.71)	<b>0 fewer per 1,000</b> (from 0 fewer to 0 fewer)	⊕⊕⊕⊕ High	CRITICAL

AFib recurrence (follow-up: mean 16 months)

6	randomized trials	not serious	not serious	not serious	not serious	none	-/388	-/387	<b>RR 0.36</b> (0.25 to 0.53)	<b>0 fewer per 1,000</b> (from 0 fewer to 0 fewer)	⊕⊕⊕⊕ High	CRITICAL
---	-------------------	-------------	-------------	-------------	-------------	------	-------	-------	----------------------------------	---	--------------	----------

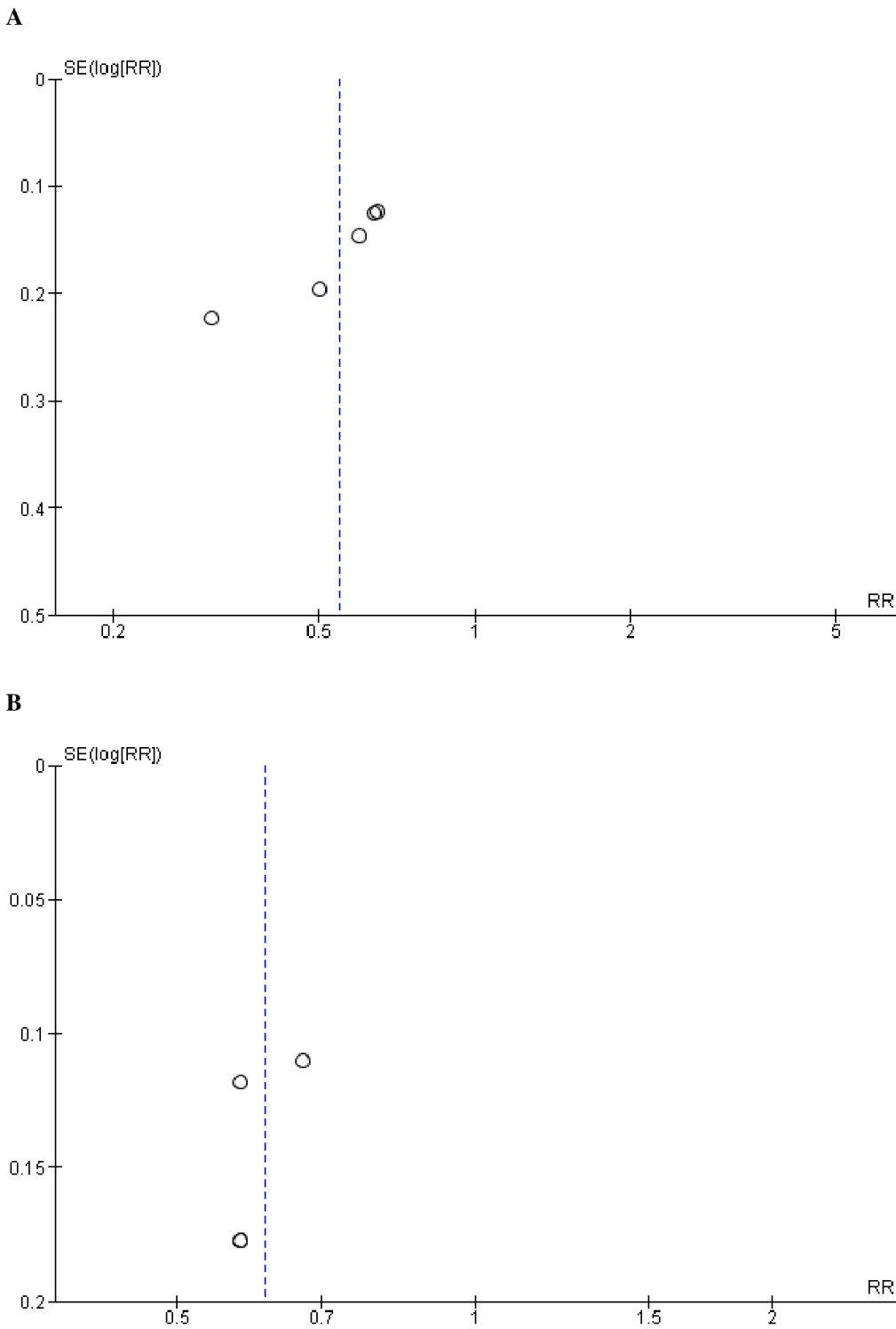
CI: confidence interval; RR: risk ratio



Supplementary Figure 1: Cochrane risk of bias assessment for individual Randomized controlled trials (RCTs)



Supplementary Figure S2: Funnel plots of primary efficacy outcomes



A) All-cause mortality, B) Heart failure hospitalization. The funnel plots showed no risk of publication bias; Std Error: Standard Error