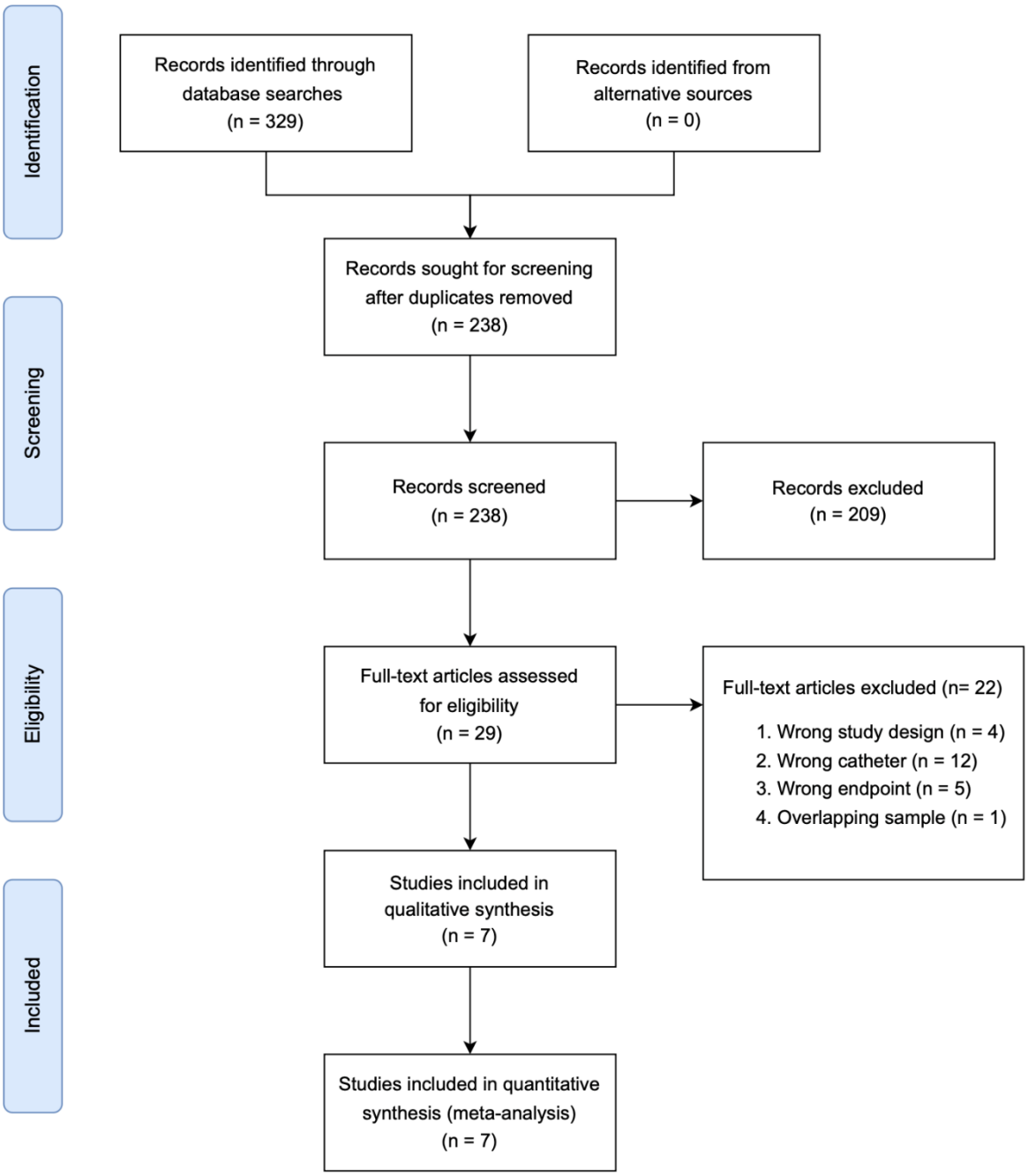
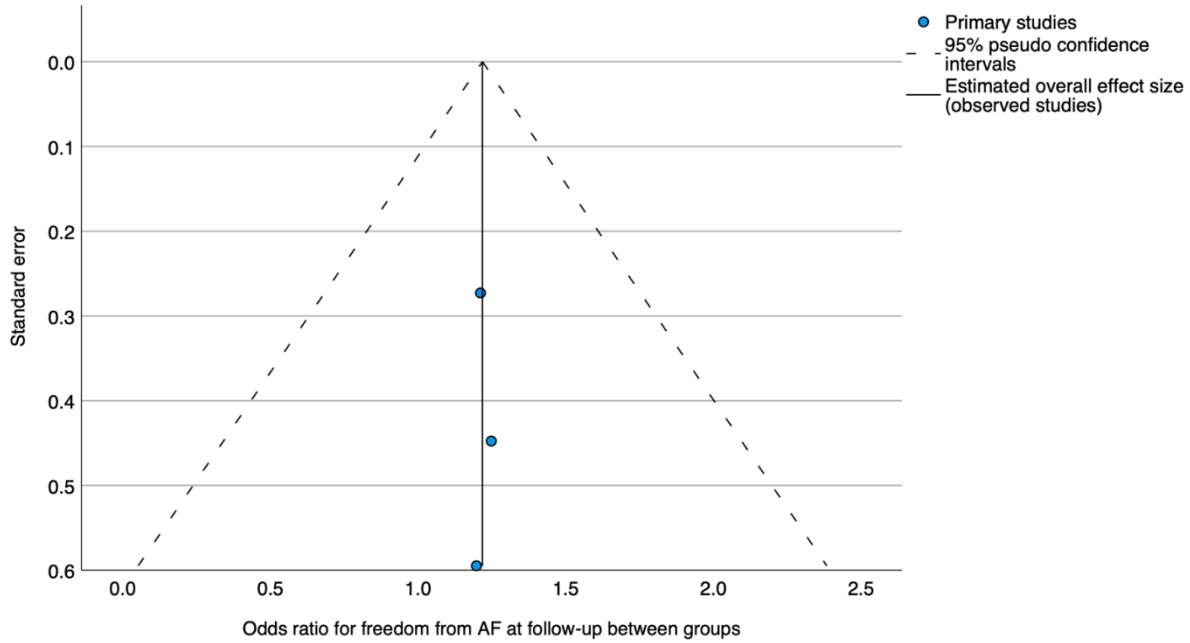
Supplementary Material

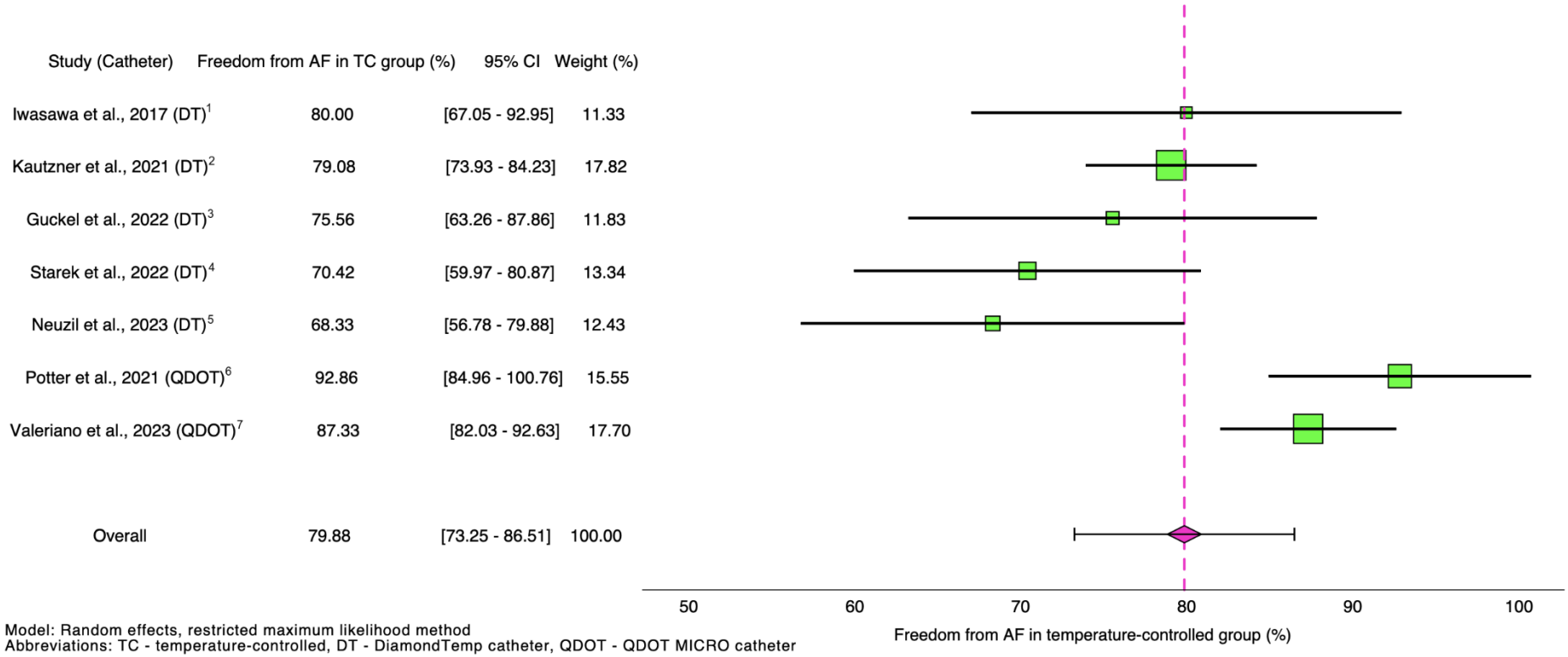
Supplementary Figure 1. PRISMA Flowchart



Supplementary Figure 2. Funnel plot of studies included in comparative meta-analysis of freedom from AF.

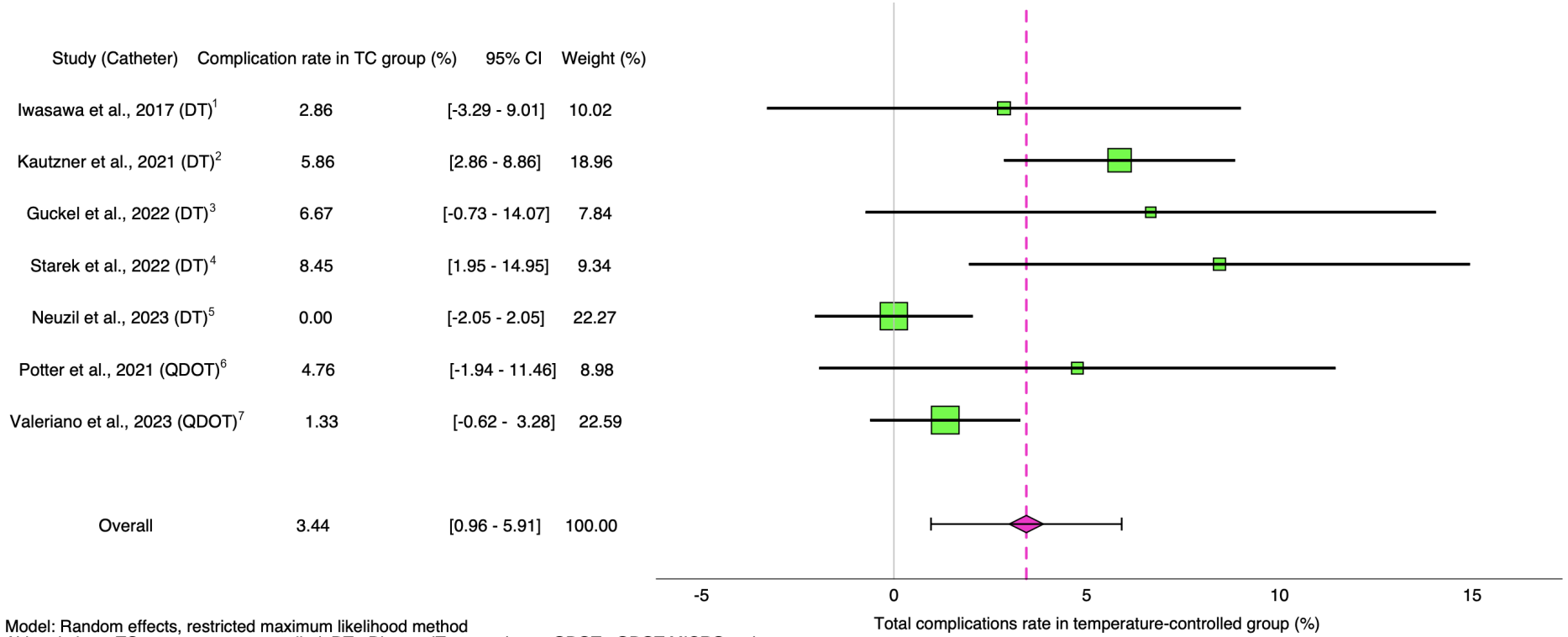


Supplementary Figure 3. Proportional meta-analysis of rates of freedom from AF



Model: Random effects, restricted maximum likelihood method
Abbreviations: TC - temperature-controlled, DT - DiamondTemp catheter, QDOT - QDOT MICRO catheter

Supplementary Figure 4. Proportional meta-analysis of total complication rates



Model: Random effects, restricted maximum likelihood method
Abbreviations: TC - temperature-controlled, DT - DiamondTemp catheter, QDOT - QDOT MICRO catheter

Supplementary Table 1. Egger's regression-based test for studies included in comparative meta-analysis of freedom from AF[a]

Parameter	Coefficient	Std. Error	t	Sig. (2-tailed)	95% Confidence Interval	
					Lower	Upper
(Intercept)	0.192	0.5994	0.321	0.802	-7.423	7.808
SE[b]	0.021	2.0503	0.010	0.993	-26.030	26.073

a. Fixed-effects meta-regression

b. Standard error of effect size

Supplementary Table 2. Effect size estimates for trim-and-fill analysis of studies included in comparative meta-analysis of freedom from AF

	Number	Effect Size	Std. Error	Z	Sig. (2-tailed)	95% Confidence Interval	
						Lower	Upper
Observed	3	0.198	0.1688	1.175	0.240	-0.133	0.529
Observed + Imputed[a]	3	0.198	0.1688	1.175	0.240	-0.133	0.529

a. Number of imputed studies: 0

PRISMA Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Title
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Introduction
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Introduction
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Methods
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Methods
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Methods
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Methods
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Methods
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Methods
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Methods
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Methods
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Methods
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Methods
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Methods
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Methods
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of	Methods

Section and Topic	Item #	Checklist item	Location where item is reported
		statistical heterogeneity, and software package(s) used.	
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Methods
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Methods
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Methods
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Methods
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Supplementary information
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	
Study characteristics	17	Cite each included study and present its characteristics.	Table 1
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Table 1
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Figures 1-4
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Results
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Results
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Results
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Results
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Results
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Results
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Discussion
	23b	Discuss any limitations of the evidence included in the review.	Discussion
	23c	Discuss any limitations of the review processes used.	Discussion
	23d	Discuss implications of the results for practice, policy, and future research.	Discussion
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Methods
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Methods
	24c	Describe and explain any amendments to information provided at	None made

Section and Topic	Item #	Checklist item	Location where item is reported
		registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	None
Competing interests	26	Declare any competing interests of review authors.	Conflicts declaration

References:

1. Iwasawa J, Koruth JS, Petru J, et al. Temperature-controlled radiofrequency ablation for pulmonary vein isolation in patients with atrial fibrillation. J Am Coll Cardiol 2017;70:542–53. https://doi.org/10.1016/j.jacc.2017.06.008; PMID: 28750697.
2. Kautzner J, Albenque JP, Natale A, et al. A novel temperature-controlled radiofrequency catheter ablation system used to treat patients with paroxysmal atrial fibrillation. JACC Clin Electrophysiol 2021;7:352–63. https://doi.org/10.1016/j.jacep.2020.11.009; PMID: 33516712.
3. Guckel D, Bergau L, Braun M, et al. Direct comparison of two 50 W high power short duration approaches-temperature- versus ablation index-guided radiofrequency ablation for atrial fibrillation. J Cardiovasc Electrophysiol 2022;33:2517–27. https://doi.org/10.1111/jce.15674; PMID: 36104929.
4. Starek Z, Lehar F, Jez J, et al. Efficacy and safety of novel temperature-controlled radiofrequency ablation system during pulmonary vein isolation in patients with paroxysmal atrial fibrillation: TRAC-AF study. J Interv Card Electrophysiol 2022;64:375–81. https://doi.org/10.1007/s10840-021-00986-0; PMID: 34089431.
5. Neuzil P, Poty H, de Chillou C, et al. Radiofrequency ablation using the second-generation temperature-controlled diamond tip system in paroxysmal and persistent atrial fibrillation: results from FASTR-AF. J Interv Card Electrophysiol 2023;66:343–51. https://doi.org/10.1007/s10840-022-01234-9; PMID: 35581464.
6. Potter TD, Grimaldi M, Jensen HK, et al. Temperature-controlled catheter ablation for paroxysmal atrial fibrillation: the QDOT-MICRO workflow StTudy. J Atr Fibrillation 2021;13:20200460. https://doi.org/10.4022/jafib.20200460; PMID: 34950350.
7. Valeriano C, Buytaert D, Fabbricatore D, et al. High efficiency single-catheter workflow for radiofrequency atrial fibrillation ablation in the QDOT catheter era. J Interv Card Electrophysiol 2024;67:817–26. https://doi.org/10.1007/s10840-023-01709-3; PMID: 38092999.