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Efficacy and safety of catheter ablation for atrial arrhythmias in patients with cardiac amyloidosis: an updated systematic review and meta-analysis

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Background: Atrial fibrillation, atrial flutter, and atrial tachycardia are common and often poorly tolerated in cardiac amyloidosis (CA). Catheter ablation may restore sinus rhythm, but the durability and safety of this approach remain uncertain. We updated the available evidence on arrhythmia recurrence, repeat ablation, safety, hospitalization, and mortality after catheter ablation in adults with CA.

Methods: The search was conducted through 31th May 2026 using PubMed/MEDLINE, Scopus, Web of Science, Embase, and supplemented by backward citation searching. Randomized and observational studies of adults with transthyretin or light-chain CA undergoing catheter ablation for atrial fibrillation, atrial flutter, or atrial tachycardia were eligible. Overlapping National Inpatient Sample, TriNetX, and single-centre cohorts were not treated as independent for the same outcome. Single-arm event proportions were pooled using a random-effects logit model with restricted maximum-likelihood estimation. Comparative effect estimates were summarized separately because their estimands and comparator groups differed.

Results: Twelve clinical cohorts comprising 433 ablated patients contributed extractable recurrence data. Atrial arrhythmia recurred in 176 patients, with a pooled recurrence proportion of 41.8% (95% confidence interval [CI] 27.9–57.2%; I^2=83.0%). Five cohorts comprising 212 patients reported first repeat ablation; 42 patients underwent re-ablation, corresponding to a pooled proportion of 20.3% (95% CI 10.8–35.0%; I^2=62.5%). In the largest contemporary international cohort, recurrence occurred in 58.3%, first re-ablation in 23.1%, periprocedural complications in 5.5%, and death in 10.3% over a median 22.7 months. Contemporary matched and administrative-database studies generally associated ablation with lower mortality or hospitalization than medical therapy, but estimates were observational, heterogeneous, and potentially affected by residual confounding and overlapping populations.

Conclusions: Catheter ablation provides meaningful rhythm control for selected patients with CA, but approximately two in five experience recurrent atrial arrhythmia and one in five undergo repeat ablation. Outcomes appear more favorable in earlier-stage disease. Considerable heterogeneity, non-standardized monitoring, variable follow-up, and exclusively observational evidence preclude firm causal conclusions. Prospective multicentre studies with standardized rhythm surveillance and stage-specific reporting are needed.

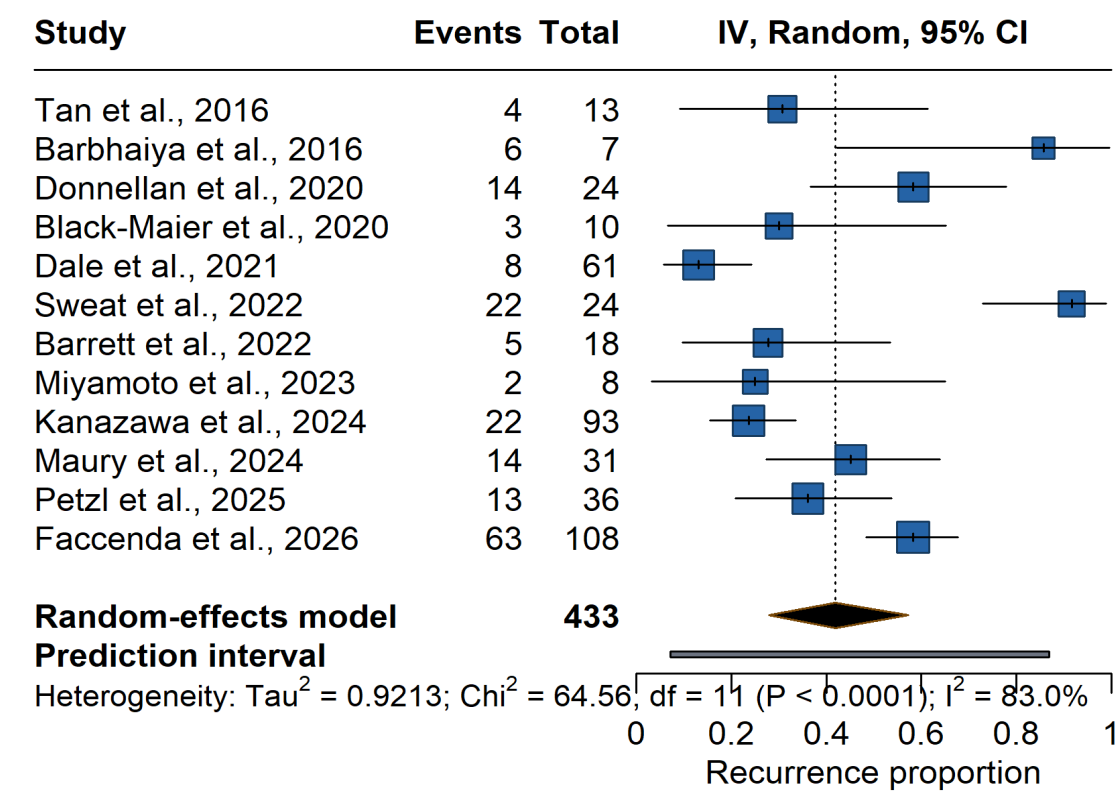


Figure 1. Atrial arrhythmia recurrence after catheter ablation in cardiac amyloidosis

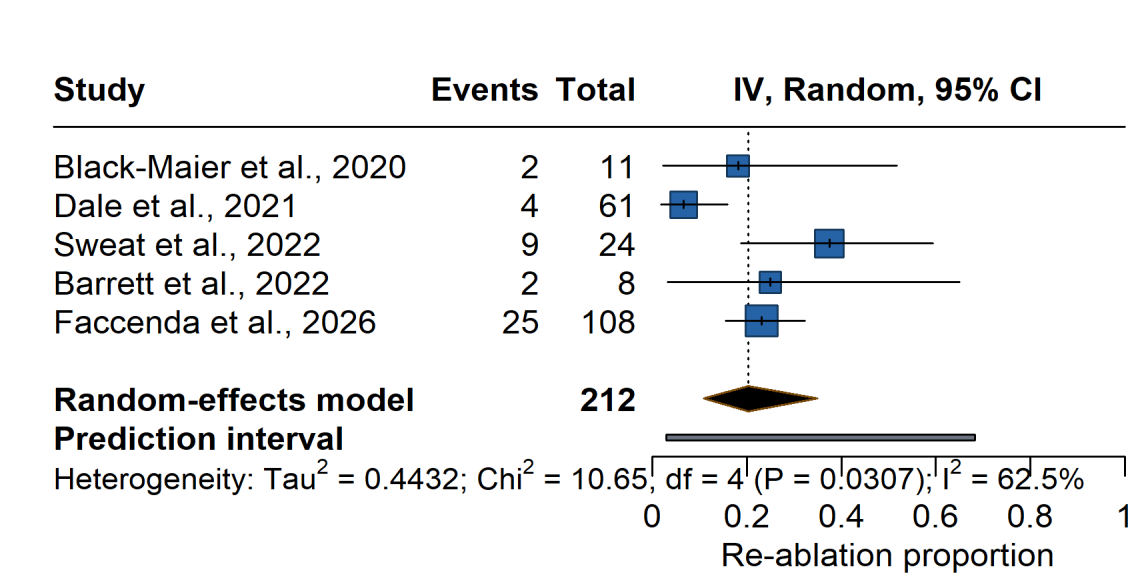


Figure 2. Repeat ablation after catheter ablation in cardiac amyloidosis

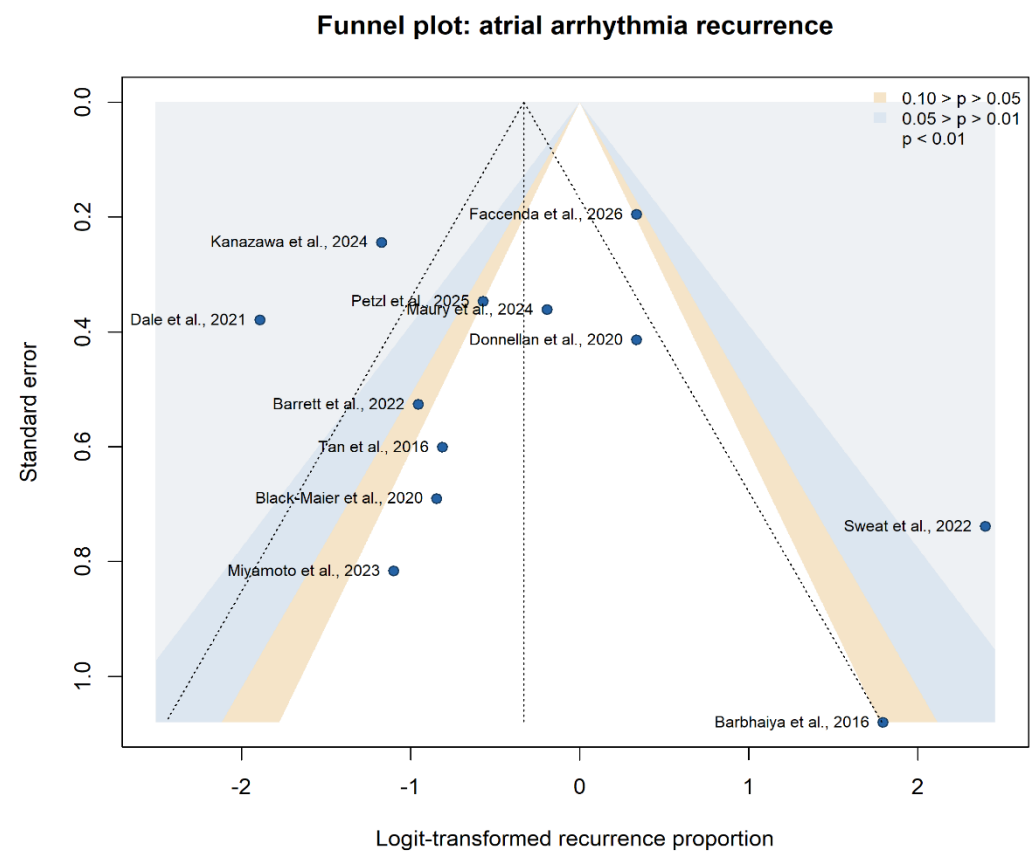


Figure 3. Funnel plot assessing the small study effect. Visual inspection of the funnel plot and formal asymmetry testing did not identify evidence of small-study effects (Egger's test, t=0.082, df = 10, P=0.937; Begg's test, Kendall's τ=0.091, z=0.411, P=0.681), although these findings should be interpreted cautiously because of the limited number of studies and substantial heterogeneity.

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