

Left Atrial Appendage Closure Versus Oral Anticoagulation or Medical Therapy in Patients with Atrial Fibrillation: A Systematic Review and Meta-analysis of Randomized Trials

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Background: Left atrial appendage closure (LAAC) is an alternative stroke-prevention strategy for selected patients with atrial fibrillation (AF), but randomized comparisons with oral anticoagulation (OAC) or contemporary medical therapy have yielded mixed results across different control strategies and patient populations.

Methods: We searched PubMed, Embase, and Cochrane CENTRAL for randomized controlled trials comparing LAAC with OAC or best medical care in adults with AF. Meta-analysis of five randomized studies analyzing 5,404 patients was performed using study-level, longest-follow-up event counts. Random-effects models were used to calculate pooled Mantel-Haenszel risk ratios (RRs) with 95% confidence intervals (CIs) for outcomes including all-cause mortality, cardiovascular or unexplained mortality, all stroke, ischemic stroke, hemorrhagic stroke, systemic embolism, and major bleeding.

Results: Across the analyzed populations, LAAC, compared with OAC, was associated with higher risk of ischemic stroke (RR 1.46, 95% CI 1.14-1.86; $I^2 = 0\%$; $p=0.01$). No statistically significant differences were observed between the groups for all-cause death, cardiovascular or unexplained mortality, all stroke, hemorrhagic stroke, systemic embolism, and major bleeding.

Conclusions: In randomized evidence, LAAC was associated with a higher risk of ischemic stroke than control therapy, while other hard clinical outcomes were not significantly different. These findings should be interpreted cautiously given the limited number of trials, differing comparator strategies, nonuniform follow-up durations, and heterogeneity in endpoint definitions.