Comparison of Antithrombotic Regimens after Left Atrial Appendage Occlusion: A Systematic Review and Network Meta-analysis

P.E.P. Carvalho¹, D.M. Gewehr², I.A. Miyawaki³, A. Nogueira⁴, N. Felix⁵, B.R. Nascimento⁶, P. Garot⁷, A. Darmon⁷, P. Mazzone⁸, A. Preda⁸, L.F. Kubrusly², R. Cardoso⁹

¹Federal University of Minas Gerais, Belo Horizonte, Brazil
²Curitiba Heart Institute, curitiba, Brazil
³Federal University of Parana, Curitiba, Brazil
⁴Bahiana School of Medicine and Public Health, Salvador, Brazil
⁵Federal University of Campina Grande, Department of Medicine, Campina Grande, Brazil
⁶Federal University of Minas Gerais, Department of Internal Medicine, Belo Horizonte, Brazil
⁷Cardiovascular Institute Paris-Sud (ICPS), Massy, France
⁸San Raffaele Hospital, Milan, Italy
⁹Brigham And Women’S Hospital, Harvard Medical School, Boston, United States of America

Funding Acknowledgements: None.

Background: The optimal antithrombotic therapy following left atrial appendage occlusion (LAAO) in patients with non-valvular atrial fibrillation (AF) remains uncertain.

Purpose: This network meta-analysis aimed to compare the efficacy and safety of various antithrombotic strategies after LAAO.

Methods: We conducted a comprehensive search of MEDLINE, Cochrane, Embase, and ClinicalTrials.gov databases for studies that reported outcomes after LAAO, stratified by the antithrombotic therapies administered at discharge. Direct oral anticoagulants (DOACs), vitamin-K antagonists (VKAs), single antiplatelet therapy (SAPT), dual antiplatelet therapy (DAPT), DOAC plus SAPT, VKA plus SAPT, and no antithrombotic therapy were analyzed. We performed a frequentist random-effects model network meta-analysis to estimate the odds ratio (OR) with 95% confidence intervals (CI) for each strategy. The surface under the cumulative ranking curve (SUCRA) P-scores provided a ranking of treatments. Quality assessment and risk of bias were conducted in accordance with Cochrane recommendations.

Results: We included 39 studies comprising 10,573 patients with non-valvular AF. As shown in Figure 1, in the network comparison, DAPT (OR 0.33; 95% CI 0.14-0.73), DOAC (OR 0.31; 95% CI 0.11-0.84), DOAC plus SAPT (OR 0.15; 95% CI 0.03-0.68), and VKA (OR 0.29; 95% CI 0.10-0.87) were superior to no therapy in preventing device-related thrombosis (DRT). There was no significant difference between the therapies analyzed in terms of major bleeding (Figure 2). In the SUCRA analysis, DOAC plus SAPT had the highest probability of being the best strategy for preventing DRT, followed by VKA and DOAC monotherapies, respectively. DOAC monotherapy was associated with the lowest probability of major bleeding, followed by DOAC plus SAPT and VKA as monotherapy, respectively.

Conclusion: In patients with non-valvular AF undergoing LAAO, post-discharge therapy with DOAC as monotherapy reduces the incidence of DRT compared with no therapy and is associated with a lower probability of major bleeding compared with other therapies.
Figure 1. DRT

Antithrombotic therapies are reported in alphabetical order. Data are ORs (95% CI) in the column-defining therapy compared with the row-defining therapy. For DRT, ORs lower than 1 favors the column-defining treatment (i.e., the first in alphabetical order). Significant results are in bold and underlined.
Antithrombotic therapies are reported in alphabetical order. Data are ORs (95% CI) in the column-defining therapy compared with the row-defining therapy. For major bleeding, ORs lower than 1 favors the column-defining treatment (ie, the first in alphabetical order). Significant results are in bold and underlined.

Figure 2. Major bleeding