

ASA vs. Clopidogrel vs. Oral Anticoagulant After Interventional Transcatheter Mitral Valve Replacement: A Pooled Network Meta-analysis

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Background:

Mitral valve diseases, increasingly common with age, present challenges for valve replacement surgeries. Bioprosthetic valves and transcatheter mitral valve replacement (TMVR) offer alternatives, yet optimal post-surgery anticoagulant strategies remain unclear. Studies comparing warfarin, aspirin, and direct oral anticoagulants (DOACs) show mixed results.

Aim and objectives:

The present study aims to assess the efficacy and safety of aspirin, clopidogrel, and oral anticoagulants post-TMVR, aiding clinical decision-making.

Methods:

We followed the Cochrane Handbook and PRISMA guidelines. A thorough search was conducted across various databases until December 27, 2023, using specific terms. Eligibility criteria included patients undergoing mitral valve replacement (MVR) and interventions with ASA, Clopidogrel, or oral anticoagulants in RCTs or cohort studies. The quality assessment used Cochrane's risk of bias tool for RCTs, ROBINS-I for nonrandomized trials, and Newcastle-Ottawa Scale for cohort studies. Data extraction covered study characteristics and outcomes including thromboembolic events, bleeding events, TIAs, stroke, and mortality. Statistical analysis included RR and MD calculations, with heterogeneity assessed using I² and Chi² statistics.

Result:

The results of our study involved an extensive literature search, initially identifying 6520 articles, which narrowed down to nine articles after screening. These articles, including cohorts, RCTs, and non-randomized clinical trials, involved a total of 2715 participants, with 2175 included in the final analysis. The quality assessment revealed varying degrees of bias across studies. In terms of outcomes, the network meta-analysis highlighted that Warfarin + Aspirin was the most effective intervention in reducing thromboembolic events (RR = 0.19, 95% CI 0.05; 0.73) and mortality (RR = 0.09, 95% CI 0.01; 0.89) compared to Aspirin alone, with Warfarin alone showing insignificant results. However, no significant differences were observed in bleeding events or strokes between the interventions. Additionally, the analysis found no significant heterogeneity among the included studies for most outcomes. The rate of TIAs in the warfarin group was 3% (95% CI 2%; 5%) and the rate of TIAs in the aspirin group was 4% (95% CI 2%; 10 %), with an insignificant difference (P = 0.39). The analysis showed insignificant heterogeneity (I² = 41%, p = 0.16).

Conclusion:

The analysis suggests that combining warfarin and aspirin may be more effective than using each drug alone in reducing thromboembolic, bleeding, and mortality events.

Keywords:

ASA, Clopidogrel, Anticoagulant, Mitral valve replacement, Network meta-analysis.