Efficacy and safety of anticoagulation use in patients with perioperative atrial fibrillation: A systematic review and meta-analysis

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Background
Perioperative atrial fibrillation (POAF) has been associated with an increased risk of thromboembolism and death after cardiac and noncardiac surgery.[1,2] However, the efficacy and safety of anticoagulation use in these populations is unclear.

Methods/Results
We searched MEDLINE, EMBASE, and CENTRAL for studies comparing therapeutic anticoagulation use versus no therapeutic anticoagulation use in patients with POAF after cardiac or noncardiac surgery. Studies were included if they enrolled ≥100 patients with POAF and described at least one outcome of interest. Outcomes included stroke and/or systemic embolism, death, venous thromboembolism, myocardial infarction, and bleeding. Procedures where therapeutic anticoagulation is routinely prescribed after surgery were excluded. Data were pooled using random-effects models stratified by cardiac versus noncardiac surgery. Summary risk ratios (RRs) for studies presenting multivariable adjusted results were meta-analyzed if appropriate.

After reviewing 13,584 citations, 20 observational studies met the inclusion criteria. No randomized trials were identified. Studies included 283,350 patients with POAF, of which 28.7% and 29.3% of patients received anticoagulation after cardiac and noncardiac surgery, respectively.

In patients undergoing cardiac surgery, there was a lower risk of stroke and/or systemic embolism (RR 0.71; 95%CI, 0.50-1.00; p=0.05; I^2=57%; 6 studies) (Figure) and venous thromboembolism (RR 0.40; 95%CI, 0.30-0.54; p<0.00001; I^2=0%; 2 studies) in patients using anticoagulation compared to no anticoagulation. The estimated short-term (i.e., within 30 days after surgery) and long-term (i.e., beyond the first 30 days after surgery) absolute risk reduction for stroke and/or systemic embolism for patients using anticoagulation was 1.3% (95%CI, 2.2-0) and 3 events per 1000 person-years (95%CI, 5-0), respectively. There were no significant differences in the risk of death (RR 1.04; 95%CI, 0.80-1.36; I^2=86%; 6 studies), myocardial infarction (RR 0.82; 95%CI, 0.41-1.64; I^2=74%; 1 study), or bleeding (RR 2.47; 95%CI, 0.82-7.41; I^2=98%; 2 studies).

In patients undergoing noncardiac surgery, no significant differences were seen in the risk of stroke and/or systemic embolism (RR 0.68; 95%CI, 0.40-1.16; I^2=91%; 2 studies) (Figure). There was a lower risk of death (RR 0.44; 95%CI, 0.35-0.50; p<0.00001; 1 study), but a higher risk of bleeding (RR 1.14; 95%CI, 1.04-1.25; 95%CI, 1.04-1.25; p=0.005; 1 study) in patients using anticoagulation compared to no anticoagulation.

Conclusion

There is a paucity of studies assessing the efficacy and safety of anticoagulation use in the large group of patients with POAF after cardiac or noncardiac surgery. High-quality randomized controlled trials are urgently needed to address this question.

References

1. Circ Arrhythm Electrophyiol 2020 13; 71-78.
2. Ann Thorac Surg 2021 111(2);544-554.

Figure

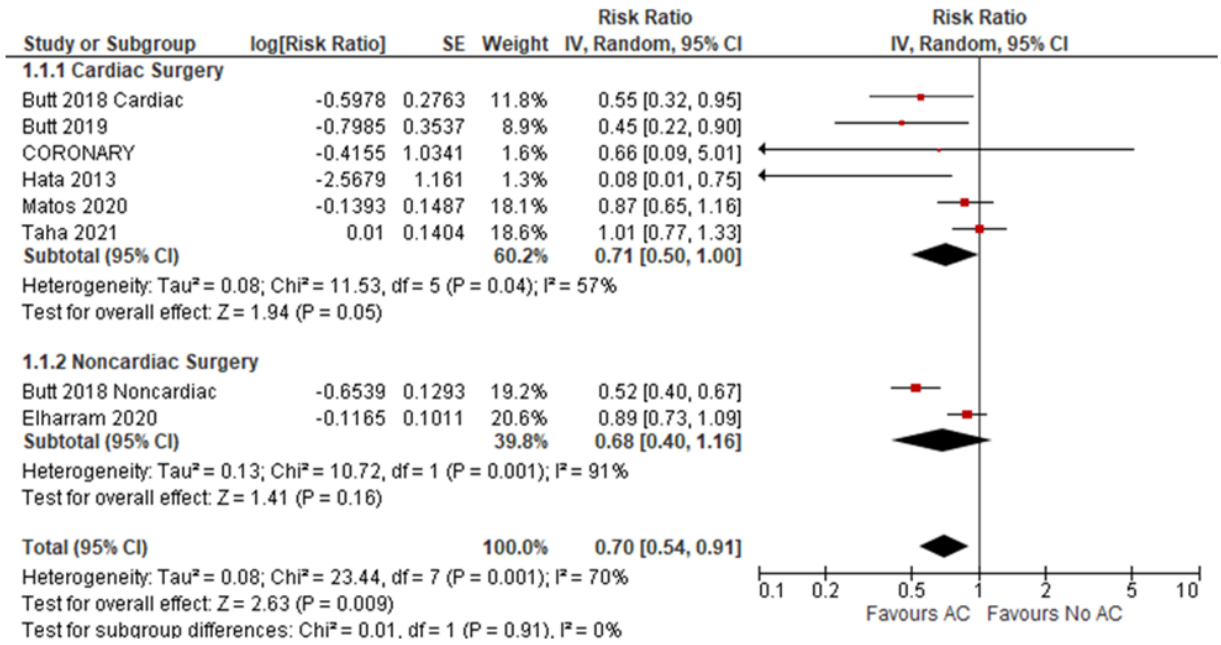

Figure. Forest plot for risk of stroke and/or systemic embolism in patients with POAF using therapeutic anticoagulation versus no anticoagulation.