

Editorial



Feel Free to Use Aspirin before Coronary Artery Bypass Surgery

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► See the article “The Effects of Preoperative Aspirin on Coronary Artery Bypass Surgery: a Systematic Meta-Analysis” in volume 49 on page 498.

Aspirin is a cornerstone in the secondary prevention of established atherosclerotic cardiovascular disease.¹⁾ However, the use of aspirin before coronary artery bypass surgery (CABG) is undoubtedly a topic of debate because the potential benefits of preventing thrombotic events could be offset by the potential risk of bleeding.

CABG aims to reduce the long-term risk of death and myocardial infarction in patients with severe coronary artery disease.²⁾ However, CABG is also associated with its own perioperative thrombotic complications. In addition, many candidates for CABG are presented as acute coronary syndrome and have a history of previous myocardial infarction and coronary stent implantation.³⁾ Therefore, current guideline generally recommended the continuation of aspirin before elective CABG.⁴⁾ However, excessive perioperative bleeding due to perioperative aspirin use may increase the risk of reoperation and post-operative morbidity and mortality. Therefore, guideline also advocated preoperative discontinuation of aspirin in patients at high bleeding risk or low thrombotic risk.⁵⁾

Aspirin and Tranexamic Acid for Coronary Artery Surgery (ATACAS) trial was the largest randomized trial to assess a clinical challenging situation encountered frequently in daily practice. They enrolled 2,100 patients scheduled for elective CABG with increased perioperative risk. Aspirin taken within 4 days of CABG were excluded. Eligible patients were randomized to aspirin versus placebo. Patients received enteric-coated aspirin within 1-2 hours before CABG. Primary outcome (a composite of death and major thrombotic complications) did not differ significantly between groups, as well as reoperation for bleeding. Authors concluded that aspirin use before CABG resulted in neither a lower risk of death or thrombotic complications nor a higher risk of surgical bleeding or transfusion requirement.⁶⁾

In this issue for the *Korean Circulation Journal*, Hwang et al.⁷⁾ performed the largest meta-analysis to assess the impact of preoperative aspirin use on clinical outcomes of patients underwent CABG. They enrolled 9,101 patients from 12 randomized and 5 observational studies. They found that preoperative aspirin was not associated with the risk of perioperative myocardial infarction (8.7% vs. 10.4%; odds ratio [OR], 0.83; 95% confidence interval [CI], 0.66–1.04, p=0.10) and all-cause mortality (1.6% vs. 1.5%; OR, 0.98; 95% CI, 0.64–1.49,

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$p=0.92$). In addition, the risk of re-operation due to bleeding (3.2% vs. 2.4%; OR, 1.23; 95% CI, 0.94–1.60, $p=0.10$) was comparable in patients with or without preoperative aspirin use although preoperative aspirin use increased chest tube drainage. This study confirmed previous ATACAS randomized trial and suggested that there was no need for patients taking aspirin to stop before CABG if patient was indicated for aspirin use.

The study of Hwang et al.⁷⁾ is the largest meta-analysis to date. However, the study still appears to be underpowered to assess the perioperative thrombotic and bleeding events. Although statistically insignificant, aspirin use was associated with about 20% increase of the risk of reoperation due to bleeding and no aspirin use was associated with about 20% decrease of myocardial infarction. In addition, each study differed in the dose of aspirin (100–2,600 mg) and the duration of aspirin discontinuation (4–10 days). The aspirin group in ATACAS trial used 100 mg aspirin once just 1–2 hours before surgery. This regimen may be suboptimal to prevent thrombotic event during surgery. Such heterogeneity in meta-analysis dilutes the true benefit or risk of aspirin in CABG.

About 1% of patients scheduled for CABG die preoperatively. In the Synergy between percutaneous coronary intervention with Taxus and Cardiac Surgery study, preoperative cardiac events including cardiac death, stroke and myocardial infarction occurred in 0.9% of randomized CABG group during a mean time to procedure of 9.5 days. Preprocedural event rate was 3-fold higher in CABG group compared with percutaneous coronary intervention group. Therefore, antiplatelet therapy before CABG is very important to prevent thrombotic events.³⁾ However, methodologically, most study included in this meta-analysis evaluated thrombotic events after CABG, and such proportion was not studied.

Saphenous vein graft occlusion has been the major limiting factor of long-term outcome of CABG. Although the risk of saphenous vein failure increases with time, early occlusion occurs more commonly. Limited data showed that preoperative aspirin use was found to be associated with the beneficial effects on coronary-graft flow and reduced risk of early saphenous vein graft thrombosis.⁸⁾ Therefore, early saphenous vein graft occlusion would be a missing outcome of interest in this study.

This study may not resolve the issues of preoperative aspirin use in CABG and clinical decision will be based on a case-by-case considering the risk between thrombosis and bleeding. For patients at higher risk of thrombotic events including patients with a history of previous myocardial infarction or stroke, presenting with acute coronary syndrome, the continuation of aspirin before CABG would be reasonable. The discontinuation of aspirin before CABG would be acceptable in patients at higher risk of bleeding complications. Cardiologist and cardiac surgeons may have different interpretation and may weigh thrombotic risk and bleeding risk differently. Nevertheless, Hwang's meta-analysis makes physicians feel free to use aspirin before CABG.

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