

LETTER FROM THE EDITOR

Left Atrial Appendage Occlusion During Cardiac Surgery: Update on LAAOS III

Bradley P. Knight, MD, FACC, FHRS, Editor-in-Chief

Dear Readers,

It is established that patients with atrial fibrillation (AF) are at an increased risk of stroke because of the potential for thrombus formation in the left atrial appendage (LAA) that can embolize to the brain. It is also clear that the discontinuation rate of anticoagulation remains quite high despite the availability of newer anticoagulants aside from warfarin, due to bleeding and intolerance. In addition, it is true that many patients with AF undergo cardiac surgery. Therefore, it would be logical to remove or occlude the LAA at the time of cardiac surgery in these patients with AF undergoing open heart surgery if the risk were low. This practice has been common, but the data are limited.

Based on the results of the LAAOS III study, it seems that it should now be standard of care to “treat” the LAA in patients who have a history of AF and are undergoing cardiac surgery.

Dr. Richard Whitlock and colleagues published results from the Left Atrial Appendage Occlusion (LAAOS) III trial in June 2021.¹ Dr. Whitlock also discussed the data from LAAOS III during the third annual Catheter and Surgical Therapies for Atrial Fibrillation (CAST-AF) symposium, held in Chicago and virtually on August 27, 2021.² The LAAOS III trial was very impressive for a number of reasons. One was the very large number of patients enrolled. Nearly 5000 patients with AF undergoing heart surgery were randomized 1:1 in a multicenter, randomized, controlled trial of LAA closure. The characteristics of the

patients and surgery were similar in each group. On average, patients were 71 years old, two-thirds were male, about half had non-paroxysmal AF, and over half had AF on their preoperative electrocardiogram. The average CHA₂DS₂-VASc score was 4.2. About 20% of patients underwent either isolated coronary bypass surgery or isolated valve replacement, but most had a combination of surgeries, with two-third of patients undergoing some valve operation. One-third of patients had concomitant surgical ablation for AF. In patients randomized to the occlusion group, occlusion was attempted 90% of the time, usually with the use of a cut and sew technique in 56% of patients, but devices were also used including staplers, closure devices, and suture closure from within. There was no increase in cross clamp time or other operative outcomes. Patients and their primary care doctors were blinded to their treatment group and all patients were asked to continue oral anticoagulation.

After a mean follow-up of three years, 4.8% of patients who had LAAO had an ischemic stroke or systemic embolism compared to 7.0%

who did not have occlusion ($P<.001$). Systemic embolism was rare. In this study as well as in other large clinical trials, a transient ischemic attack (TIA) with transient neurological symptoms was considered a stroke if imaging of the brain showed evidence of a stroke. Based on comments from Dr. Whitlock at the CAST-AF meeting, if these clinical TIAs were excluded from the analysis, the impact of LAAO was even greater. Based on the results of the LAAOS III study, it seems that it should now be standard of care to “treat” the LAA in patients who have a history of AF and are undergoing cardiac surgery.

Just as interesting as the primary outcome of the study is that LAAO reduced stroke even though 77% of patients continued to receive oral anticoagulation. Therefore, the LAAOS III study answers another common clinical question, which is whether anticoagulation should be stopped after patients with AF undergo surgical removal of their appendage. These data support additional comments from Dr. Whitlock during CAST-AF that patients should remain on oral anticoagulation despite surgical removal of their appendage unless they have relative or absolute contraindications to continue anticoagulation. ■

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References

- Whitlock RP, Belley-Cote EP, Paparella D, et al for LAAOS III Investigators. Left Atrial Appendage Occlusion during Cardiac Surgery to Prevent Stroke. *N Engl J Med.* 2021;384(22):2081-2091. doi: 10.1056/NEJMoa2101897
- 3rd Annual Catheter and Surgical Therapies for Atrial Fibrillation (CAST-AF). *Northwestern Medicine.* <https://northwestern.cloud-cme.com/course/courseoverview?P=5&EID=86984>

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