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Commentary: Making it look like open cardiac surgery and better

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The field of minimally invasive cardiac surgery (MICS) has made significant strides over the past 2 decades, equaling or surpassing standard, open approaches. Valve surgery through a mini thoracotomy, with or without robotic assistance, is now routinely performed at many academic and private centers. Additional procedures for atrial fibrillation (AF) including left atrial appendage (LAA) occlusion (LAAO) can be challenging using a MICS approach, and therefore, the indications and technique have been debated.

The 2016 European Society of Cardiology guidelines stated surgical occlusion or exclusion of the LAA may be considered for stroke prevention in patients with AF undergoing cardiac surgery.¹ Disappointingly, the recommendations were only classified as IIB and level of evidence B. A meta-analysis in 2018, including 3 small randomized, controlled trials, showed a reduction in mortality and stroke at 30 days in patients subjected to LAAO.² Finally, the Left Atrial Appendage Occlusion (LAAOS) III trial, published in 2021, prospectively randomized 4811 participants with AF to LAAO or not during cardiac surgery. The risk of stroke was reduced by a third in the LAAO group without an increase in surgical complications. Moreover, the benefit was superior beyond 30 days even in the setting of anticoagulation.³ We cannot ignore it anymore; we must occlude the LAA during cardiac surgery in patients with AF.

During robotically assisted MICS, exclusion of the LAA with suture has been the practice of many surgeons with satisfactory results; however, Kanderian and colleagues⁴ have previously shown a low rate of successful exclusion

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CENTRAL MESSAGE

MICS is performed broadly. Recent trials have concluded that the LAA should be occluded in patients with AF to prevent stroke, which can be achieved through a minimally invasive approach.

with suture (23%) compared with excision of the LAA (73%). Current studies have shown consistently high success rates of LAA clipping, thus supporting this technique for MICS over excision.⁵

In this edition of *The Journal of Thoracic and Cardiovascular Surgery*, Rhee and colleagues⁶ elegantly demonstrated the feasibility of LAA clipping during MICS, closing the gap with standard sternotomy surgery. The authors retracted the aorta, pulled the appendage with a 5-0 polypropylene suture, and clipped the LAA through a mini thoracotomy. Complete exclusion of the LAA was successful in 92.2% of 108 patients, an outstanding result. The definition of success was very stringent: less than 10 mm distance between the left circumflex artery and the device without contrast leakage and evidence of remnant pectinate muscle at the left atrial side on the postoperative computed tomography scan. No major surgical complications were reported. We believe the authors should be commended for pushing forward the MICS field.

In addition, Antaki and colleagues⁷ took the technique further and demonstrated the safety of left chest robotic stand-alone LAA clipping. The population was AF patients with a high risk of thromboembolic stroke and intolerance to oral anticoagulants. Oral anticoagulants were discontinued in 41 of 42 patients and no cases of 30-day stroke, myocardial ischemia, or new arrhythmias were observed.

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Disclosures: The authors reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication Nov 9, 2021; revisions received Nov 9, 2021; accepted for publication Nov 16, 2021.

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J Thorac Cardiovasc Surg 2021; ■:1-2

0022-5223/\$36.00

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<https://doi.org/10.1016/j.jtcvs.2021.11.037>

There was no reported thromboembolic stroke or transient ischemic attack at 12 months. In this regard, MICS appears to surpass open sternotomy.

The conclusions of this study have led to further questions: Is it safe to take our patients off anticoagulation after LAAO? Is clipping superior and safer compared with LAA amputation in open surgery? Can robotically assisted clipping compete with percutaneous devices in patients with standalone AF? We look forward to these answers in future studies.

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