Commentary: To ligate or not to ligate the left atrial appendage at the time of robotic mitral valve repair? That is still the question

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Growing evidence suggests the left atrial appendage (LAA) is the predominant origin of thrombus in atrial fibrillation (AF), the most likely source of stroke, and that LAA elimination decreases stroke risk. This retrospective cohort analysis by Chikwe and colleagues1 attempts to further this evidence but falls short, demonstrating the need for a robust, randomized study to appropriately address the issue.

To their credit, the authors acknowledge limitations of the study. However, further scrutiny remains warranted. Several critical deficiencies are noted. The study groups are not matched, late evaluation of LAA closure was not performed, and late anticoagulation or antiarrhythmic use was not assessed.

The central problem with this study is the abrupt practice change in 2014, when LAA ligation rates jumped from 5.4% to 86.7%. When examining the comparison curves, the greatest difference is in the postoperative period (2.1% unligated, 0.5% ligated). Perioperative stroke most frequently stems from aortic disease, not the LAA. The Left Atrial Appendage Occlusion Study (LAAOS III) study, a randomized trial of 4770 patients with AF undergoing cardiac surgery, showed negligible difference in perioperative stroke, 2.2% in the ligated group and 2.7% in the unligated group, whereas the difference at 3.8 years was significant, 4.8% versus 7%.2 In LAAOS III, the ligated group had increased crossclamp and cardiopulmonary bypass times, with similar re-exploration rate; here, the ligated patients had lower cardiopulmonary bypass and crossclamp times, with lower re-exploration rate. This suggests profound technical differences that could contribute to perioperative stroke rate. Despite the subanalysis, including patients who underwent the maze procedure precludes parsing the effects of LAA ligation versus sinus restoration on stroke rate. With constant stroke rate, increased follow-up duration increases total stroke incidence. Only 32 ligated patients were followed for 6 years, 11 for 7 years, and 10 for 8 years, compared with 257, 217, and 174 unligated patients, respectively. Even propensity matching may not bridge this divide.

Late efficacy of ligation cannot be assumed. A randomized pilot study showed the failure rate of LAA internal ligation to be 60% using the same technique reported in the present study.3 Intraoperative TEE ensured complete LAA exclusion at time of surgery, but at 3 months, 60% showed a closure gap, LAA flow, or a LAA stump >1 cm in length. Comparisons between ligated and unligated LAAs are of little value without verifying LAA exclusion through the time of the measured variables. Late follow-up with TEE is essential to future study design. Comparing stroke incidence between failed versus intact LAA internal ligations would provide a powerful internal control.

The absence of long-term anticoagulation and antiarrhythmic data is significant. These drugs modify bleeding exploration rate; here, the ligated patients had lower cardiopulmonary bypass and crossclamp times, with lower re-exploration rate. This suggests profound technical differences that could contribute to perioperative stroke rate. Despite the subanalysis, including patients who underwent the maze procedure precludes parsing the effects of LAA ligation versus sinus restoration on stroke rate. With constant stroke rate, increased follow-up duration increases total stroke incidence. Only 32 ligated patients were followed for 6 years, 11 for 7 years, and 10 for 8 years, compared with 257, 217, and 174 unligated patients, respectively. Even propensity matching may not bridge this divide.

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The absence of long-term anticoagulation and antiarrhythmic data is significant. These drugs modify bleeding
risk, stroke incidence, and hemorrhagic stroke risk, all outcomes of interest in studying LAA ligation. In LAAOS III, at 3 years, 75% of ligated and 78% of unligated patients were on anticoagulation. Without late anticoagulation status, interpretation of the data is impossible.

Although this study represents an important first step toward discerning which patients may benefit from LAA ligation during robotic mitral valve repair, its limitations highlight the need for additional study.

References