



**TRANSESOPHAGEAL ECHOCARDIOGRAPHY, COMPUTED TOMOGRAPHY, OR BOTH WHEN ASSESSING THE EFFICACY OF DIFFERENT LEFT ATRIAL APPENDAGE CLOSURE TECHNIQUES?**

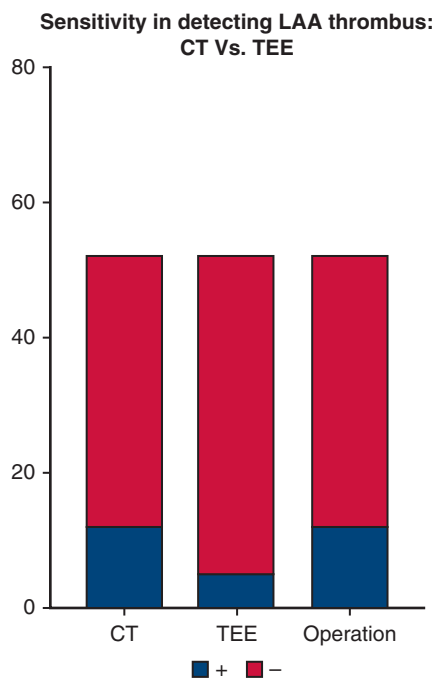


**To the Editor:**

We read with great interest the article by Petersen and colleagues.<sup>1</sup> Despite their excellent results, questions remain. Of particular interest is whether transesophageal echocardiography (TEE) or computed tomography (CT) is the best assessment tool for this issue.

Over the past 2 years, we have routinely used TEE and CT both preoperatively and postoperatively in patients undergoing concomitant atrial fibrillation radiofrequency ablation and left atrial appendage (LAA) closure in our institution. Although our data have not been published yet, a brief analysis (Figure 1) shows that CT appears to have superior sensitivity for detecting preoperative LAA thrombus compared with TEE. Prior studies similarly reported high diagnostic accuracy of CT for LAA thrombus detection, with sensitivity ranging from 92% to 100% when delayed imaging was used.<sup>2</sup> A possible explanation for this is that the high spatial resolution and 3-dimensional structural depiction of cardiac CT offer unique imaging planes of the left atrium and LAA, not appreciated with TEE, which has been the conventional preimaging modality of choice for LAA closure. Another possible explanation is that TEE accuracy is highly dependent on the operator's experience and skill. Due to the complex morphology of the LAA, TEE does not always provide a satisfactory display of the LAA and may miss thrombi smaller than 2 mm. In contrast, CT's noninvasive nature and non-fasting requirements limit patients discomfort.

Petersen and colleagues<sup>1</sup> reported a high success rate of LAA clipping and surgical excision (98.4% vs 93.1%); however, this does not rule out events such as the incidence of acute thrombosis after surgical LAA closure that often goes undetected by TEE<sup>3</sup> or the presence of a trabeculated LAA stump and residual LAA stump detected by CT. Recent studies by Caliskan and colleagues<sup>4</sup> and Lim and colleagues<sup>5</sup> similarly found an incidence of residual stump formation after LAA closure. Caliskan and colleagues<sup>4</sup> documented successful LAA occlusion in 43 patients (100%), as confirmed by intraoperative TEE and CT imaging. However, CT revealed residual LAA stumps in 11 out of 43 patients (26%) with a length <10 mm and a significant residual stump with a depth of >10 mm (12 mm) in 1 patient (2%).<sup>4</sup>



**FIGURE 1.** Evaluation of sensitivity in detecting left atrial appendage thrombus using computed tomography and transesophageal echocardiography.

A significant limitation of the study is its lack of an intraoperative TEE protocol, specifically the absence of serial TEE measurements, as mentioned by the authors. This may prevent a precise assessment of when the failure occurred in all of the study's patients.

Notwithstanding its limitations, Petersen and colleagues'<sup>1</sup> study makes a valuable contribution to our understanding of the efficacy of LAA closure techniques. We believe that both TEE and CT are indispensable in the context of a comparative analysis of different LAA closure techniques, and CT should be used as a complementary tool alongside TEE to provide more comprehensive evidence. Future research should aim to overcome this study's limitations by including both CT and TEE in assessing the efficacy of these closure techniques.

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**Conflict of Interest Statement**

The authors reported no conflicts of interest.

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