

Multi-Detector Computed Tomography and Trans Esophageal Echocardiography for Left Atrial Appendage Occlude Device Sizing

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Background:

Atrial fibrillation (AF) may cause thromboembolic stroke. The left atrial appendage (LAA) is the thrombi source in more than 90% of strokes. Several devices have been developed to occlude the LAA. Inaccurate LAA orifice sizing may lead to repeated device insertion attempts. A mean of 1 ± 1.6 devices per patients (range 1-4) was reported, until optimal LAA closure was obtained.

The purpose of this study was to describe the preliminary experience using multi-detector CT (MDCT) and transesophageal echocardiography (TEE) for LAA device sizing.

Methods:

Inclusion criteria: CHADS₂score ≥ 1 and contraindication or inability to take oral anticoagulants. Exclusion criteria: iodine allergy, renal failure (creatinine >1.4), active asthma or COPD and weight > 120 kg.

All subjects underwent TEE and ECG gated MDCT scans. MDCT scans were performed using a 265-slice scanner with retrospective electrocardiographic gating. Scanning parameters: voltage 100-120 kV, effective tube current 800 to 1,235 mA, slice collimation 256 X 0.625 mm, gantry rotation 270 ms, and pitch of 0.2.

LAA maximal diameter (mm) was measured by TEE and MDCT and compared with final device size.

Results:

This prospective study cohort included 12 chronic AF patients (9 males, average age 76 years). The total number of devices used was 14 (1.2 devices per patient). Average TEE, MDCT and device diameters were 22.8, 27.5 and 25.2 mm, respectively. Paired T test P values for the TEE and MDCT VS device size were 0.079 and 0.14, respectively. Logarithmic Pearson correlation for the TEE and MDCT VS device size were 0.75 (P=0.005) and 0.63 (P=0.027), respectively. (N=13).

Conclusions:

MDCT LAA diameter measurements were larger than TEE measurements and correlated better with the final occlude device size implanted. These results suggest that MDCT could be an important adjunct modality for device sizing.