Safety and Efficacy of Intracardiac Echocardiography versus Transesophageal Echocardiography for Implantation of Left Atrial Appendage Closure Devices: An Updated Systematic Review and Meta-Analysis

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Background
Intracardiac echocardiography (ICE) has emerged as an alternative to transesophageal echocardiography (TEE) to guide implantation of left atrial appendage closure (LAAC) devices in patients with atrial fibrillation and high bleeding risk.

Methods
- PubMed, EMBASE, Google Scholar and major national conference proceedings were systematically searched for studies comparing ICE and TEE in endocardial LAAC
- Efficacy outcomes included procedural success, duration and fluoroscopy time
- Safety outcomes included procedural complications
- Risk Ratios (RR), standardized mean difference (SMD) and corresponding 95% confidence intervals (CI) were calculated
- The analysis was performed using a random effect model

Aim
We reviewed the efficacy and safety of ICE compared to TEE in LAAC in this updated meta-analysis.

Results
- 8 observation studies comprising of 2468 patients (ICE: 600, TEE: 1868) met our inclusion criteria
- Watchman device was implanted in 3 studies, Amplatzer Cardiac Plug/Amulet in 3 studies and all three devices in remaining 2 studies
- Mean CHA2DS2-VASc (4.28 vs 4.32, p = 0.71) and HAS-BLED scores (3.20 vs 3.21, p = 0.96) were comparable between groups
- There was no significant difference in procedure success rate (RR: 1.01, 95% CI: 0.99 – 1.02, p= 0.41) (figure 1), procedure duration, fluoroscopy time or incidence of overall complications (RR: 0.87, 95% CI: 0.60 – 1.26, p = 0.46)

Conclusions
Our updated meta-analysis shows ICE is as effective and safe as TEE for implantation of LAAC devices.

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