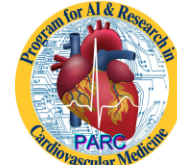


Predictors of Left Atrial Appendage Occlusion Device Related Thrombus TED-F₂ Risk Score

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Background

- Left Atrial Appendage (LAA) occlusion (LAAO) is performed to prevent LAA thrombus and cardioembolic stroke in patients with atrial fibrillation (AF).^{1,2}
- There is ~4% risk of LAAO device related thrombus (DRT) which can cause stroke.³
- Identifying patients at high risk of DRT would enable closer surveillance to prevent possible stroke post LAAO.

Research Questions

- To create a risk score to predict DRT in patients receiving LAAO.

Methods

- From LAAO registry at KUMC, 26 patients identified with DRT.
- 3 Control patients without DRT per case were chosen at random.
- Predictor variables were obtained from transesophageal echocardiogram (TEE) reports and images, transthoracic echocardiogram reports, and clinical chart review.^{4,5}
- The LAAO device depth was measured from the device to the peak of the left atrial ridge in the 45° TEE view (Figure).

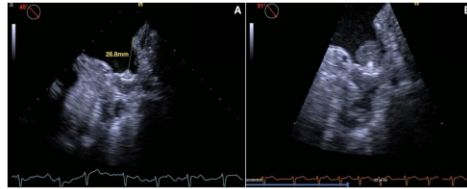
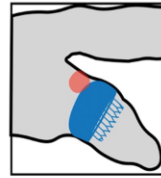


Figure 1: TEE image of depth measurement and image of thrombus on LAAO device

Conclusion

The TED-F₂ Risk Score for Prediction of DRT after LAAO

- History of VTE - 1 point
- LAAEv ≤ 20 cm/sec - 1 point
- Implant Depth > 2 cm - 1 point
- AF rhythm at the time of implant - 2 points



Results

- 26 DRT patients, average age 77.7 ± 9.7 years, 34.6% females.
- Predictors of DRT as shown in the Table created TED-F₂ score.
- TED-F₂ score ≥ 3 had 12.5 (95% CI 3.8-41.1, p < 0.0001) fold odds of DRT.

Table. Multivariable model for LAAO DRT risk predictors

Variable	Uni- variate O.R.	p-value	Multivariate O.R.	p-value	TED-F ₂ score points
History of venous thromboembolism	5.55	0.01	2.48	0.3	1
LAA Emptying velocity ≤ 20 cm/s	3.67	0.01	2.29	0.1	1
Implant Depth > 2 cm	3.60	0.02	2.27	0.2	1
Rhythm at implant atrial Fibrillation	7.67	0.0001	4.52	0.009	2

References

- Noheria A, Syed FJ, DeSimone CV, Asrivatham S. Optimization Of Stroke Prophylaxis Strategies In Nonvalvular AF -Drugs, Devices Or Both? *J Atr Fibrillation* 2015; 8:1156.
- Friberg L, Rosenqvist M, Lip GY. Evaluation of risk stratification schemes for ischemic stroke and bleeding in 182 678 patients with atrial fibrillation: the Swedish Atrial Fibrillation cohort study. *Eur Heart J* 2012;33:1500-05.
- Duckkipati SR, Kar S, Holmes DR et al. Device-Related Thrombus After Left Atrial Appendage Closure: Incidence, Predictors, and Outcomes. *Circulation* 2018; 138:874-885.
- Baghdadi S, Tabak C, Smith RP et al. As Opposed to Atrial Fibrillation, Presence or History of Atrial Flutter Does Not Impact Left Atrial Appendage Emptying Velocity Assessed by Transesophageal Echocardiogram. *J Am Soc Echocardiogr* 2023; 36:e38.
- Tabak CA, Baghdadi S, Smith R et al. Presence of Moderate-to-Severe or Severe Mitral Regurgitation is Associated with an Increase in Left Atrial Appendage Emptying Velocity. *J Am Soc Echocardiogr* 2023; 36:e59.

Conflicts of Interest - None

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