

CHA₂DS₂-VASc Score Predicts Cardiovascular Complications After Robotic-Assisted Pulmonary Lobectomy

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CHA₂DS₂-VASc = Congestive heart failure, Hypertension, Age≥75y (doubled), Diabetes mellitus, Stroke (doubled), Vascular disease, Age 65-74y, Sex category (female)

Introduction

- The CHA₂DS₂-VASc score is a widely used clinical tool for assessing stroke risk in patients with atrial fibrillation.
- Robotic-assisted pulmonary lobectomy (RAPL) is a minimally invasive approach in the surgical management of lung cancer.
- Given the common usage of the CHA₂DS₂-VASc score, this study assessed its broader application as an assessment of perioperative risk of cardiovascular complications following RAPL in patients without pre-operative atrial fibrillation.

Study Design

- Retrospective Cross-Sectional

Methodology

- A cohort of 842 consecutive patients who underwent RAPL from September 2010 and April 2025 were retrospectively reviewed.
- Of those, 117 patients were excluded for having pre-operative atrial fibrillation.
- Eight preoperative variables were reviewed, and CHA₂DS₂-VASc scores were calculated for each patient.
- Post-operative incidence of atrial fibrillation (Afib), cerebrovascular accident (CVA), myocardial infarction (MI), and hypotension were recorded.
- Univariate analysis was used to evaluate associations between CHA₂DS₂-VASc scores and post-operative events.

Results

- Of 725 study patients, median age was 69 [IQR: 62-75] years.
- Four-hundred twenty-five patients (58.6%) were female, and median BMI was 27 [23.8-31.0] kg/m².
- The CHA₂DS₂-VASc score was a predictor of postoperative incidence of AFib, CVA, and hypotension (Table 1).
- CHA₂DS₂-VASc score was not significantly correlated with postoperative incidence of MI.

Conclusion

- The CHA₂DS₂-VASc score can be repurposed as a predictive tool for cardiovascular complications following RAPL.
- This study demonstrates the CHA₂DS₂-VASc score has utility in perioperative risk assessment in non-cardiac thoracic surgery.
- Further studies are warranted to assess clinical application.

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Table 1. Odds Ratios (OR) of adverse post-operative outcomes in association with high CHA₂DS₂-VASc scores

Outcome	Odds Ratio (95% Confidence Interval)	P-value
Cerebro-Vascular Accident	3.76 (1.73, 8.16)	<0.001
Atrial Fibrillation	1.38 (1.17, 1.63)	<0.001
Hypotension	1.47 (1.06, 2.03)	<0.020
Myocardial Infarction	2.91 (0.77, 6.23)	>0.100