

EVALUATING THE RISK OF PREOPERATIVE DIABETES ON DEVELOPMENT OF POSTOPERATIVE ATRIAL FIBRILLATION AFTER ROBOTIC-ASSISTED PULMONARY LOBECTOMY

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INTRODUCTION

- Previous literature has consistently suggested that diabetes mellitus is a significant risk factor for development of postoperative atrial fibrillation (POAF). This arrhythmia can complicate recovery and is associated with increased morbidity and mortality
- Diabetes mellitus, characterized by chronic hyperglycemia, leads to various systemic complications that may influence cardiac health, including endothelial dysfunction, inflammation, and autonomic neuropathy. These pathophysiological changes can predispose diabetic patients to arrhythmias.

METHODS

- This study retrospectively analyzed 655 patients without preoperative history of atrial fibrillation and who underwent robotic-assisted video-thoroscopic (RAVT) lobectomy between September 2010 and August 2022 by the same surgeon. This study evaluated the presence of comorbidities, such as diabetes, coronary artery disease, heart failure, and kidney failure, among others, and the development of POAF.

RESULTS

- Out of 106 patients with preoperative diabetes, 21 (19.8%) developed POAF after RAVT lobectomy.
- Diabetic patients had a higher risk of developing POAF (OR=2.13; 95% CI: 1.23-3.70; p=0.006) compared to non-diabetic patients.
- Diabetic patients who developed POAF did not differ significantly in rates of hypertension (p=0.98), hyperlipidemia (p=0.61), obesity (p=0.67), coronary artery disease (p=0.42), or cardiomyopathy (p=0.17) compared to those without POAF.
- There was a trend towards increased POAF risk for diabetic patients with chronic kidney disease, but it was not statistically significant (p=0.09).
- Smoking history did not increase the risk of POAF; those who developed POAF reported an average of 51.6 pack-years, while patients without POAF had 45.7 pack-years (p=0.60).
- No notable difference was found in the preoperative forced expiratory volume in 1 second as a percentage of predicted (FEV1%) between diabetics who did and did not develop POAF (84.5% vs 85.2%, p=0.88).

Table 1: Characteristics

Variables	Diabetics who did not develop atrial fibrillation (N = 85)	Diabetics who developed atrial fibrillation (N = 21)	p-value
Age (yrs)	69.8 ± 0.9	74.0 ± 1.1	0.03
Hypertension n, (%)	61 (71.8%)	15 (71.4%)	0.98
Hyperlipidemia n, (%)	54 (63.5%)	15 (71.4%)	0.61
Cardiomyopathy ,n,(%)	2 (2.4%)	2 (9.5%)	0.17
Coronary artery disease or previous MI, n (%)	21 (24.7%)	7 (33.3%)	0.42
Obesity, n (%)	40 (47.1%)	10 (47.6%)	0.67
Chronic Kidney Disease, n (%)	3 (3.5%)	3 (14.3%)	0.09
Peripheral Vascular Disease, n (%)	10 (11.8%)	4 (19.0%)	0.47

DISCUSSION

- Individuals with preoperative diabetes have an elevated risk of developing POAF following RAVT pulmonary lobectomy. However, it is important to note that common health complications often associated with diabetes, such as obesity, hyperlipidemia, and kidney disease, did not contribute to risk of POAF development.

CONCLUSIONS

- Given these findings, clinical practice should emphasize rigorous preoperative diabetes assessment and glycemic control, particularly in older patients. Further research is recommended to explore a potential link between chronic kidney disease and POAF in diabetic patients. Implementing these insights could lead to improved perioperative management and outcomes for diabetic patients undergoing RAVT lobectomy.

REFERENCES

- Leopoulou M, Theofilis P, Kordalis A, et al. Diabetes mellitus and atrial fibrillation-from pathophysiology to treatment. *World J Diabetes*. 2023;14(5):512-527. doi:10.4239/wjd.v14.i5.512
- Bohne LJ, Johnson D, Rose RA, Wilton SB, Gillis AM. The Association Between Diabetes Mellitus and Atrial Fibrillation: Clinical and Mechanistic Insights. *Front Physiol*. 2019;10:135. Published 2019 Feb 26. doi:10.3389/fphys.2019.00135

