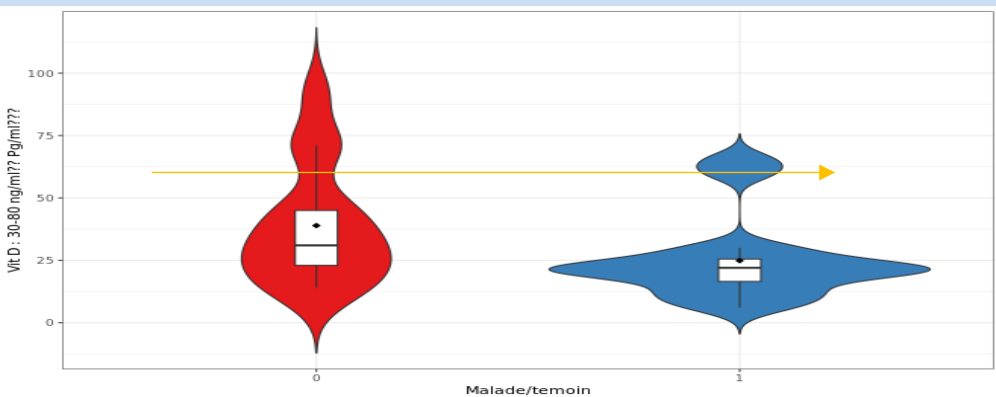


# Influence of Vitamin D Levels on the Development of Post Operative Atrial Fibrillation following major lung resection. A multi-center prospective observational study

Patrick Bagan<sup>1</sup>, Kaouther Aissa<sup>1</sup>, Richard Abdou Rabi<sup>2</sup>, Julien Epailly<sup>2</sup>, Rym Zaimi<sup>1</sup>, Bassel Dakhil<sup>1</sup>, Florence De Domicis<sup>2</sup>;  
<sup>1</sup>victor dupouy Hospital, Thoracic and Vascular Surgery, Argenteuil, France,  
<sup>2</sup>Amiens Picardie University Hospital, Thoracic Surgery, Amiens, France

Table 1 Vit Level in POAF patient (Blue) and in Control patients (Red).  
 lower normal value threshold (yellow arrow)



several mechanisms have been proposed to explain how vitamin D deficiency can affect pathways relevant to POAF development, including **catecholamine excess, activation of the renin-angiotensin system, and electrical anomalies.**

*Barsan M, Brata AM, Ismaiel A, et al. The pathogenesis of cardiac arrhythmias in vitamin D deficiency. Biomedicines 2022;10:1239. doi:10.3390/biomedicines10061239.*

## Objective :

*Postoperative atrial fibrillation (POAF) is a recognised complication in approximately 10% of major lung resections. It has been suggested that serum vitamin D (VitD) deficiency may be one of the critical factors influencing the onset of POAF, especially in the period after cardiac surgery.*

This multicentric study aimed at evaluating prospectively the VitD level in patients presenting POAF following major lung resections for non small cell lung cancer compared to a group control operated on during the same period.

## Method :

A multicentric prospective analysis was performed in two Thoracic centers from january 2024 to October 2024. Serum level of 25(OH)D was assessed in all patients without chronic atrial fibrillation who diagnosed POAF following major lung resection excepting pneumonectomy . The control group was matched for age, sex and type of procedure and had their vitamin D levels measured on the same day . A Mann Whitney test was carried out to assess the influence of vitamin D on the occurrence of POAF. The secondary endpoint was the assessment of the extended hospital stay associated with POAF.

## Result :

During the study period, 235 major lung resections were performed. POAF occurred in 16 patients (6.8%). The POAF group was composed by 13 male and 3 female with a mean age of 68.4 years (60-84). The lung resections were a lobectomy (n=12) and a segmentectomy (n=4). POAF occurred postoperatively between Day 0 and Day 7. POAF conversion to sinus rythm was achieved in all patients by beta-blocker alone (n=9), amiodarone alone (n=2), beta-blocker and amiodarone combination (n=2), chest tube mobilization (n=2) and antibiotherapy for pneumonia (n=1).

During the same period, the group control was composed by 16 patients (13M, 3 F) with a mean age of 66.8 years (50-78). **The median serum Vitamin D level in POAF group was 20 ng/l [14.1-28] This level was significantly lower compared to the control group (44.9 ng/l [30-50], p<0.01).** Table1.

**POAF increased mean hospital stay by 4 days** (POAF group 9.23 days vs Control group 5.08 days, p<0.001).

## Conclusion

**In this small sample of lung cancer patients, the level of Vit D measured was significantly very low. Vitamin D deficiency may be an aggravating factor of POAF occurrence.**

Pre-operative measurement of vitamin D could reduce post-operative morbidity and the length of hospital stay by correcting severe deficiencies. **A large-scale study may help to clarify this hypothesis.**