

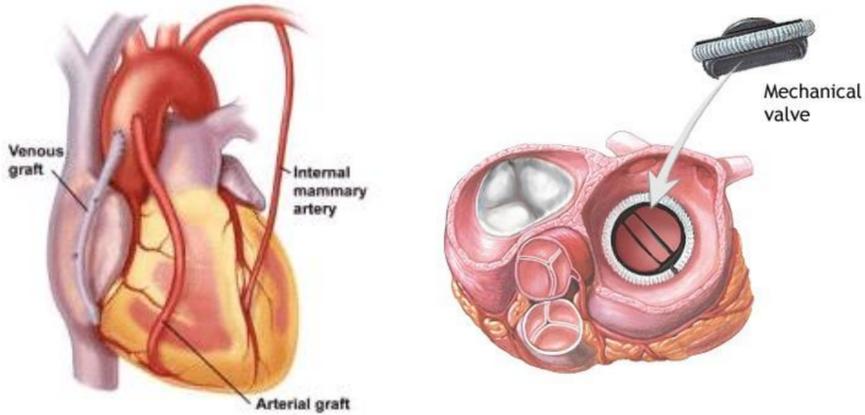


# Prevalence, predictive factors and recurrence of postoperative atrial fibrillation during early cardiac rehabilitation

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## Purpose

Postoperative atrial fibrillation (POAF) is one of the most common arrhythmias after cardiac surgery. It prolongs hospitalisation and increases in-hospital and late mortality as well.



**Figure 1. CABG and valve surgery- possible causes of POAF**

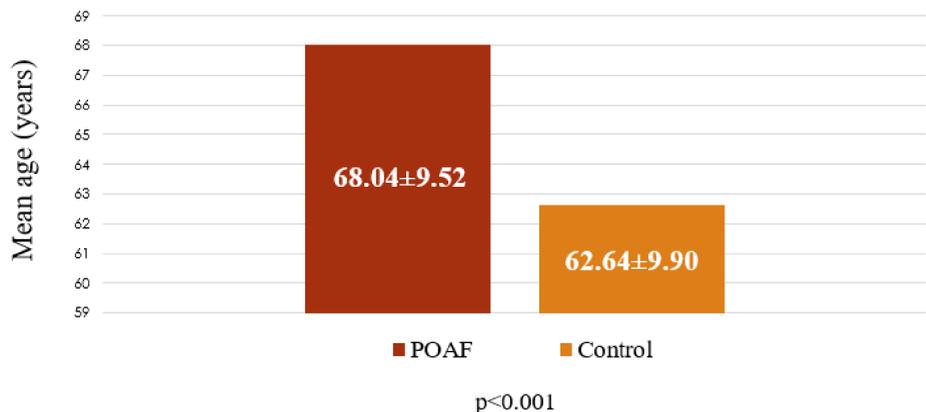
Our aim was to investigate the prevalence and possible predictive factors of POAF and detect its recurrence by a transtelephonic ECG (TTECG) system in patients with previous coronary artery bypass grafting (CABG), valve replacement or combined surgery.

## Methods

Data from 122 consecutive patients developing postoperative atrial fibrillation was analysed in our department between January 2017 and December 2018. Exclusion criteria included the history of atrial fibrillation (AF). Prevalence of POAF across different types of surgery was monitored, and any correlation with different clinical parameters were investigated. The results were compared to data from 173 patients in the control group, consisting of post-cardiac surgery patients without POAF. In both groups, TTECG system was used for the detection of late complications occurring at the patient's home.

## Results

In the POAF group, age was significantly higher than in the control group ( $68.04 \pm 9.52$  vs  $62.64 \pm 9.90$  years;  $p < 0.001$ ).



**Figure 2. Mean age in the POAF and control group**

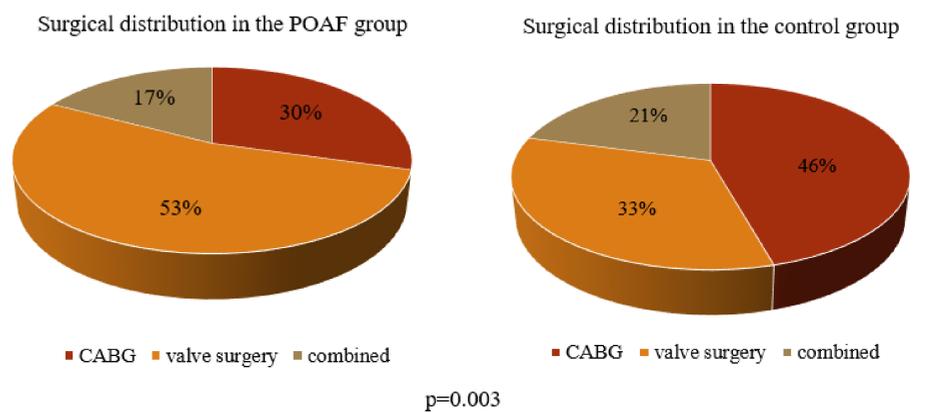
There was no significant difference between the POAF and control group in the prevalence of hypertension, diabetes, sex; preoperative treatment, left ventricular ejection fraction (LVEF) and pre- and postoperative C-reactive protein (CRP) levels.

In the POAF group, significantly higher pre- ( $42.78 \pm 6.52$  vs  $39.63 \pm 5.90$  mm;  $p < 0.001$ ) and postoperative ( $42.56 \pm 5.29$  vs  $39.54 \pm 5.38$  mm;  $p < 0.001$ ) left atrial diameters were detected.

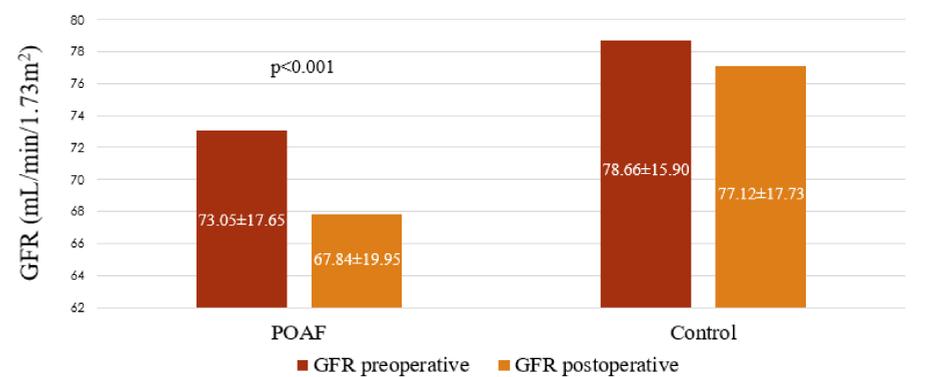
Also, significantly lower pre- ( $73.05 \pm 17.65$  vs  $78.66 \pm 15.90$  ml/min/1.73m<sup>2</sup>;  $p = 0.002$ ) and postoperative ( $67.84 \pm 19.95$  vs  $77.12 \pm 17.73$  ml/min/1.73m<sup>2</sup>;  $p < 0.001$ ) glomerular filtration rates (GFR) and lower postoperative hemoglobin (Hgb) levels were detected ( $105.15 \pm 9.66$  vs  $108.99 \pm 10.72$  g/L;  $p = 0.003$ ). Among POAF patients, TTECG was used in 39 cases (31.96%), and in 5 cases (12.8%) AF was recorded post-discharge.

	POAF (n=122)	Control (n=173)	p
BMI (kg/m <sup>2</sup> )	29.1 (±4.6)	29.5 (±4.8)	NS
CRP (mg/L) preoperative	5.1 (±8.9)	4.6 (±12.8)	NS
CRP (mg/L) postoperative	80.2 (±58.8)	64.9 (±36.4)	NS
GFR (mL/min/1.73m <sup>2</sup> ) preop.	73.1 (±17.7)	78.7 (±15.9)	0.002
GFR (mL/min/1.73m <sup>2</sup> ) postop.	67.8 (±19.9)	77.1 (±17.7)	<0.001
Hgb (g/L) postop.	105.2 (±9.7)	109 (±10.7)	0.003
Left atrium (mm) preop.	42.8 (±6.5)	39.6 (±5.9)	<0.001
Left atrium (mm) postop.	42.6 (±5.3)	39.5 (±5.4)	<0.001
LV EF (%) preop.	52.9 (±9.9)	53.3 (±9.2)	NS
LV EF (%) postop.	49.1 (±9.6)	49.4 (±8.8)	NS
Application of TTECG	39 (32.0%)	71 (41.0%)	-
AF recorded	5 (12.8%)	0 (0%)	-

**Table 1. Clinical parameters of the POAF and control group**



**Figure 3. There was significant difference between the POAF and control group regarding surgical distribution**



**Figure 4. Preoperative and postoperative GFR results in the POAF and control group**

Preoperative renal function was lower in the POAF group, and decreased significantly postoperatively.

## Conclusion

Our results demonstrate, that postoperative atrial fibrillation is significantly more prevalent in patients with higher age, decreased renal function, greater left atrial diameter and lower postoperative Hgb levels. It is important to note, that additional follow-up is needed if POAF occurs, for which the use of TTECG offers great support. Since GFR can deteriorate in POAF, monitoring is also recommended.

## Declaration of interest

The authors declare that they have no competing interests.