New Postoperative Atrial Fibrillation After Coronary Artery Bypass Grafting Increases The Incidence Of Late-onset Atrial Fibrillation

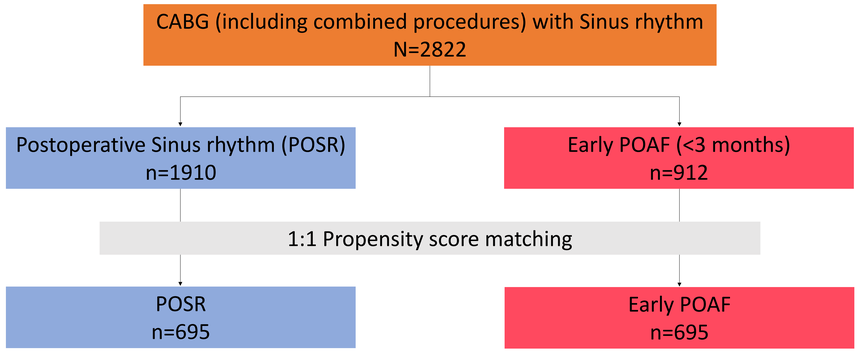
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BACKGROUND

- Postoperative Atrial fibrillation (POAF) after cardiac surgery is the most frequent complication of 30 to 50%. Still, it is often transient, and it is common to return to sinus rhythm upon discharge.
- However, there are few reports about late-onset developed AF after cardiac surgery. Therefore, we investigated late-onset AF incidence and its risk factors after coronary artery bypass grafting (CABG).

Methods

- Among patients undergoing CABG including valvular surgery and/or aortic surgery between 2002 and 2019, 2822 patients with preoperative sinus rhythm were analyzed.
- Primary endpoint: the incidence of late-onset AF (>3 months)
- Mean follow-up: 5.8 years



Results

Baseline characteristics

Variable	Before Propensity Score Matching			After Propensity Score Matching		
	POSR n=1910	POAF n=912	p value	POSR n=695	POAF n=695	p value
Age	67.0 ± 10.8	71.3 ± 8.6	<0.01	71.1 ± 8.6	71.1 ± 8.5	0.99
Male sex	1494 (78.2%)	746 (81.8%)	0.03	575 (82.7%)	563 (81.1%)	0.40
Hypertension	1426 (74.7%)	713 (78.2%)	0.04	539 (77.6%)	552 (79.2%)	0.40
Dyslipidemia	1489 (78.0%)	648 (71.1%)	<0.01	528 (76.0%)	523 (75.3%)	0.75
Diabetes	1075 (56.3%)	431 (47.3%)	<0.01	336 (48.4%)	340 (48.9%)	0.83
Hemodialysis	202 (10.6%)	110 (12.1%)	0.24	80 (11.5%)	69 (9.9%)	0.34
Peripheral arterial disease	279 (14.6%)	190 (20.8%)	<0.01	140 (20.1%)	133 (19.1%)	0.64
Ejection fraction	57.3 ± 13.7	56.4 ± 14.1	0.12	58.1 ± 13.4	57.4 ± 13.6	0.37
$CHADS_2$	2.1 ± 1.2	2.3 ± 1.3	<0.01	2.2 ± 1.3	2.3 ± 1.2	0.72
euro SCORE II	2.7 ± 3.9	4.1 ± 6.2	<0.01	3.0 ± 3.8	3.4 ± 3.9	0.11
Isolated CABG	1661 (87.0%)	662 (72.6%)	<0.01	536 (77.1%)	526 (75.7%)	0.77
Concomitant Aortic valve surgery	160 (8.4%)	133 (14.6%)		101 (14.5%)	100 (14.4%)	
Concomitant Mitral valve surgery	51 (2.7%)	79 (8.7%)		36 (5.2%)	41 (5.9%)	
Concomitant Aortic surgery	38 (2.0%)	38 (4.2%)		22 (3.2%)	28 (4.0%)	
Operation time	293 ± 94	319 ± 112	<0.01	297 ± 95	311 ± 109	0.01
Cross clamp time	116 ± 47	123 ± 57	0.14	114 ± 39	121 ± 60	0.19
Left atrial appendage amputation	707 (37.1%)	326 (35.8%)	0.50	286 (41.3%)	276 (39.7%)	0.55

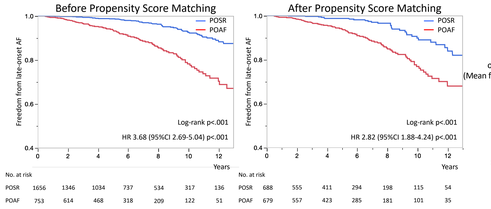
Early clinical outcomes

Variable	Before Propensity Score Matching			After Propensity Score Matching		
	Sinus n=1910	POAF n=912	p value	Sinus n=695	POAF n=695	p value
ICU stay	1.9 ± 2.4	3.7 ± 11.1	<0.01	2.0 ± 1.9	3.0 ± 9.4	<0.01
Postoperative hospital stay	11.6 ± 9.2	16.9 ± 24.2	<0.01	12.3 ± 10.2	15.9 ± 23.1	<0.01
Hospital death	31 (1.6%)	18 (2.0%)	0.51	2 (0.3%)	2 (0.3%)	1.00
Blood transfusion	629 (33.0%)	430 (47.2%)	<0.01	279 (40.2%)	301 (43.3%)	0.24
Stroke	17 (0.9%)	34 (4.0%)	<0.01	6 (0.9%)	21 (3.1%)	<0.01
Respiratory complications	88 (4.6%)	96 (11.0%)	<0.01	30 (4.3%)	54 (7.9%)	<0.01
Acute renal failure	103 (5.4%)	100 (11.0%)	<0.01	43 (6.2%)	67 (9.6%)	0.02
Mediastinitis	6 (0.3%)	8 (0.9%)	0.06	1 (0.1%)	5 (0.7%)	0.09
Surgical site infection	39 (2.0%)	29 (3.2%)	0.07	14 (2.0%)	23 (3.3%)	0.13

Risk factors associated with late-onset AF

Cox Proportional Hazards Model	Univariate		Multivariate	
	HR (95% CI)	P value	HR (95% CI)	P value
Age	1.03 (1.00-1.05)	0.03	1.02 (0.99-1.05)	0.07
Male sex	0.88 (0.55-1.40)	0.58		
BMI>30	0.85 (0.12-6.22)	0.87		
Hypertension	1.23 (0.50-3.01)	0.65		
Dyslipidemia	0.77 (0.52-1.14)	0.20		
Diabetes	1.05 (0.73-1.51)	0.73		
Chronic kidney disease (eGFR<60)	1.65 (1.15-2.38)	<0.01	1.44 (0.99-2.09)	0.06
Hemodialysis	2.74 (1.54-4.87)	<0.01		
Previous stroke	2.33 (1.55-3.50)	<0.01	2.05 (1.35-3.10)	<0.01
Peripheral arterial disease	1.32 (0.85-2.04)	0.22		
Ejection fraction<50%	1.19 (0.79-1.79)	0.40		
Left atrial appendage amputation	1.22 (0.70-2.13)	0.47		
POAF	2.82 (1.88-4.24)	<0.01	2.80 (1.86-4.22)	<0.01
Isolated CABG	reference		reference	
Concomitant Aortic valve surgery	1.44 (0.84-2.47)	0.18	1.30 (0.75-2.23)	0.35
Concomitant Mitral valve surgery	1.40 (0.65-3.03)	0.39	1.37 (0.63-2.99)	0.43
Concomitant Aortic surgery	3.12 (1.53-6.61)	<0.02	2.48 (1.19-5.16)	0.01

Freedom from late-onset AF



Incidence of late-onset AF



Conclusions

- Postoperative AF was an independent risk factor for late-onset AF after CABG.
- Careful rhythm observation is necessary because the incidence of late-onset AF after CABG is not small.