

# **Influence of Baseline HbA1c and Antiplatelet Therapy on 1-Year Vein Graft Outcome**

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# Disclosure

- The DACAB trial was funded by AstraZeneca; this post hoc analysis was not.
- Dr Zhu has served as a speaker for AstraZeneca, Johnson & Johnson, Medtronic, Novartis, and Sanofi.
- Dr Zhao has served as a speaker for AstraZeneca, Johnson & Johnson, and Medtronic.

# BACKGROUND

- Approximately 1/3 of patients with diabetes mellitus(DM) have CAD, and 2/3 deaths of them are attributable to CAD.
- For patients with DM and complex CAD, current guidelines made a preferred recommendation on CABG as the gold standard for myocardial revascularization.
- Although arterial grafts are the first choice, vein grafts remain the most commonly used graft worldwide, with occlusion rates of 11% within 1 year after surgery and 40% to 50% at 10 years.

# BACKGROUND

- Glycated hemoglobin (HbA1c) levels represent the glucose levels over the past 90 days and can be used to evaluate glycemic control.
- Higher preoperative HbA1c levels were associated with a higher cardiovascular risk and long-term mortality after CABG.
- However, the effect of HbA1c on vein graft outcome is still unclear, especially in the early term.

# OBJECTIVE

This post hoc subgroup analysis of the DACAB (NCT02201771) trial aimed to assess

- The association between baseline HbA1c and 1-year vein graft patency after CABG
- The effects of ticagrelor with or without aspirin vs aspirin alone on 1-year vein graft patency after CABG in patients with baseline HbA1c <6.5% vs  $\geq 6.5\%$ .

# METHODS

## *Data Source*

- DACAB trial was a multicenter, open-label, randomized trial that enrolled patients undergoing elective CABG in China.
- 500 patients were randomized 1:1:1 to receive antiplatelet therapy within 24 hours after CABG and for 1 year: Ticagrelor 90mg bid + Aspirin 100 mg qd (T+A); Ticagrelor 90 mg bid alone (T) ; or Aspirin 100 mg qd alone (A).
- Of them 405 patients with baseline HbA1c data available were grouped according to **Low HbA1c (<6.5%)** and **High HbA1c (≥6.5%)** subgroups.

# METHODS

## *Primary Outcome*

- The outcome of the grafts was assessed by CTA or CAG at 1 year after CABG and graded as FitzGibbon classification (A\B\O).
  - ✓ Grade A : total patency, to stenosis <50%.
  - ✓ Grade B : stenosis ≥50%, but not 100%.
  - ✓ Grade O : stenosis 100%, total occlusion.
- The primary outcome was defined as **Patency (FitzGibbon grade A)** vs Non-Patency (FitzGibbon grade B+O).

# RESULTS

## Baseline Characteristics

SYNTAX score				
Low (0-22)	33 (14.2)	21 (12.2)	0.767	
Intermediate (23-32)	137 (58.8)	100 (58.1)		
High ( $\geq 33$ )	63 (27.0)	51 (29.6)		
EuroSCORE				
Low (0-2)	99 (42.5)	74 (43.0)	0.559	
Medium (3-5)	104 (44.6)	70 (40.7)		
High ( $\geq 6$ )	30 (12.9)	28 (16.3)		
Medication use, baseline				
Beta blocker	213 (91.4)	160 (93.0)	0.553	
ACEI/ARB	150 (64.4)	110 (64.0)	0.930	
Statins	226 (97.0)	163 (94.8)	0.255	
Medication use, 1 y				
Beta blocker	220 (94.4)	162 (94.2)	0.920	
ACEI/ARB	121 (51.9)	100 (58.1)	0.215	
Statins	229 (98.3)	160 (93.0)	0.007	
Surgical procedure				
Pump use	35 (15.0)	32 (18.6)	0.337	
Total grafts, n	877	657	-	
Mean grafts/patient, n	3.8	3.8	-	
IMA use	192 (82.4)	144 (83.7)	0.727	



# RESULTS

## *Vein Graft outcome between baseline HbA1c subgroups*

**TABLE 2** One-Year Vein Graft Outcome Between Baseline HbA1c  $\geq 6.5\%$  and  $< 6.5\%$

1-Year Outcome	HbA1c $< 6.5\%$	HbA1c $\geq 6.5\%$	HbA1c $\geq 6.5\%$ vs. $< 6.5\%$ Adjusted OR (95% CI)	P Value
Per graft	n = 678	n = 512		
FitzGibbon grade A	584 (86.1)	399 (77.9)		
FitzGibbon grade B	19 (2.8)	19 (3.7)		
FitzGibbon grade O	75 (11.1)	94 (18.4)		
Patency (A)	584 (86.1)	399 (77.9)	1.69 (1.08–2.64) <sup>a</sup>	0.021
Nonocclusion (A+B)	603 (88.9)	418 (81.6)	1.70 (1.04–2.79) <sup>b</sup>	0.034
Per patient	n = 233	n = 172		
FitzGibbon grade A	177 (76.0)	113 (65.7)		
FitzGibbon grade B	10 (4.3)	13 (7.6)		
FitzGibbon grade O	46 (19.7)	46 (26.7)		
Patency (A)	177 (76.0)	113 (65.7)	1.62 (1.01–2.60) <sup>a</sup>	0.048
Nonocclusion (A+B)	187 (80.3)	126 (73.3)	1.41 (0.86–2.32) <sup>b</sup>	0.174

# RESULTS

## *Vein Graft outcome between baseline HbA1c subgroups*

**TABLE 3** Baseline HbA1c Treated as Continuous Variable and Vein Graft Outcome 1 Year After CABG

1-Year Outcome	Patency (FitzGibbon Grade A)		Nonocclusion (FitzGibbon Grade A+B)	
	OR Adjusted for Nonpatency (95% CI)	P Value	OR Adjusted for Occlusion (95% CI)	P Value
Per graft	1.25 (1.08-1.45)	0.003	1.25 (1.07-1.46)	0.004
Per patient	1.29 (1.10-1.52)	0.002	1.26 (1.07-1.48)	0.007

CI = confidence interval; HbA1c = glycated hemoglobin; OR = odds ratio, OR was adjusted for age, sex, medical history of hypertension and hyperlipidemia, SYNTAX score, target vessel distribution, antiplatelet therapy, and statin use at 1 year after coronary artery bypass graft; SYNTAX = Synergy Between Percutaneous Coronary Intervention With Taxus and Cardiac Surgery.

# RESULTS

## Artery Graft outcome between baseline HbA1c subgroups

**Table S5.** One-year artery graft outcome between baseline HbA1c  $\geq 6.5\%$  and  $<6.5\%$

	HbA1c $<6.5\%$	HbA1c $\geq 6.5\%$	P
1-year outcome	n (%)	n (%)	
Per graft	N=191	N=131	
Fitzgibbon grade A	185 (96.9)	128 (97.7)	
Fitzgibbon grade B	1 (0.5)	1 (0.8)	
Fitzgibbon grade O	5 (2.6)	2 (1.5)	
Patency (A)	185 (96.9)	128 (97.7)	0.743
Non-occlusion (A+B)	186 (97.4)	129 (98.5)	0.705
Per patient	N=189	N=131	
Fitzgibbon grade A	183 (96.8)	128 (97.7)	
Fitzgibbon grade B	1 (0.5)	1 (0.8)	
Fitzgibbon grade O	5 (2.7)	2 (1.5)	
Patency (A)	183 (96.8)	128 (97.7)	0.742
Non-occlusion (A+B)	184 (97.3)	129 (98.5)	0.705

# RESULTS

## Vein graft outcome *among randomized antiplatelet treatments* in HbA1c subgroups

**TABLE 4** 1-Year Vein Graft Outcome Among Randomized Antiplatelet Treatments in Baseline HbA1c Subgroups

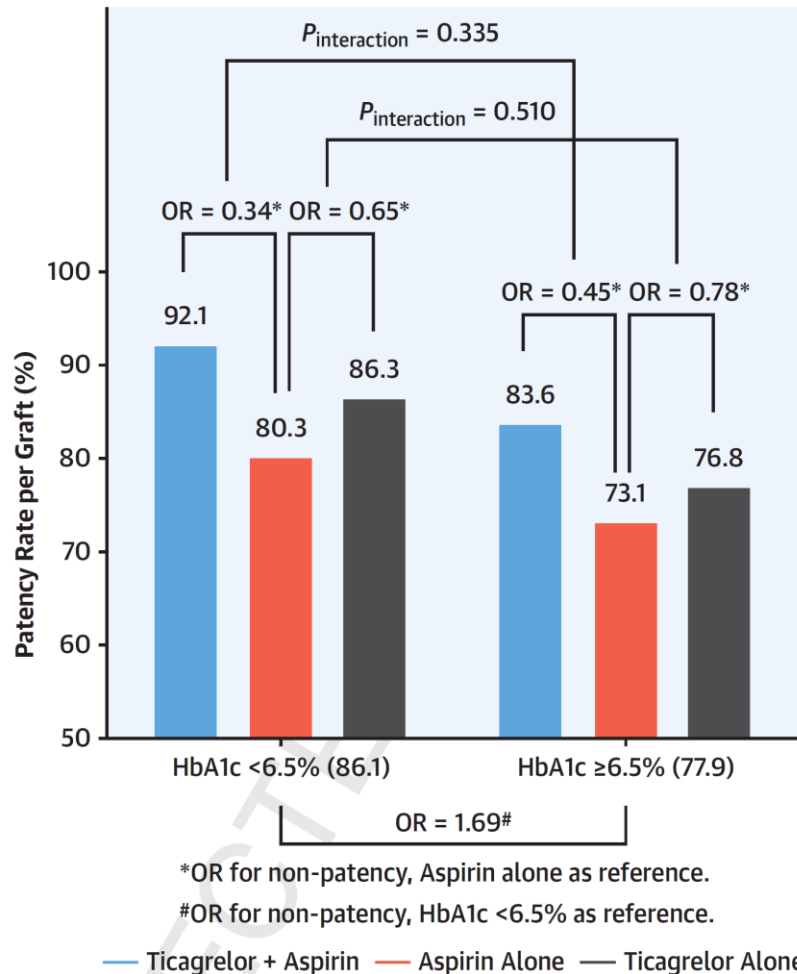
1-Year Patency	T+A		T		A		T+A vs A		T vs A	
	n	n (%)	n	n (%)	n	n (%)	Adjusted OR <sup>a</sup> (95% CI)	Interaction P Value	Adjusted OR <sup>a</sup> (95% CI)	Interaction P Value
Per graft										
HbA1c<6.5%	229	211 (92.1)	211	182 (86.3)	238	191 (80.3)	0.34 (0.15-0.75)	0.335	0.65 (0.30-1.40)	0.510
HbA1c≥6.5%	171	143 (83.6)	185	142 (76.8)	156	114 (73.1)	0.45 (0.19-1.09)		0.78 (0.36-1.70)	
Per patient										
HbA1c<6.5%	79	67 (84.8)	73	55 (75.3)	81	55 (67.9)	0.43 (0.19-0.99)	0.973	0.77 (0.35-1.69)	0.269
HbA1c≥6.5%	59	46 (78.0)	60	35 (58.3)	53	32 (60.4)	0.42 (0.16-1.10)		1.03 (0.44-2.42)	

1-year nonocclusion	T+A		T		A		T+A vs A		T vs A	
	n	n (%)	n	n (%)	n	n (%)	Adjusted OR <sup>b</sup> (95% CI)	Interaction P	Adjusted OR <sup>b</sup> (95% CI)	Interaction P
Per graft										
HbA1c<6.5%	229	213 (93.0)	211	188 (89.1)	238	202 (84.9)	0.40 (0.17-0.94)	0.664	0.69 (0.29-1.66)	0.154
HbA1c≥6.5%	171	147 (86.0)	185	150 (81.1)	156	121 (77.6)	0.49 (0.18-1.31)		0.79 (0.34-1.84)	
Per patient										
HbA1c<6.5%	79	68 (86.1)	73	60 (82.2)	81	59 (72.8)	0.52 (0.22-1.21)	0.818	0.67 (0.29-1.57)	0.620
HbA1c≥6.5%	59	49 (83.1)	60	40 (66.7)	53	37 (69.8)	0.51 (0.18-1.45)		1.19 (0.49-2.92)	

# Conclusion

**CENTRAL ILLUSTRATION** 1-Year Vein Graft Outcome Between the Baseline HbA1c Subgroups



Zhu, Y. et al. JACC: Asia. 2021;■(■):■-■.

- In the DACAB trial, higher baseline HbA1c was associated with lower vein graft patency 1 year after CABG.
- Ticagrelor + Aspirin improved 1-year vein graft patency vs aspirin, irrespective of baseline HbA1c level.
- Multiple artery grafts might be a more appropriate choice for these patients with poor glycemic control.

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