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Individualized Decision-making Between CABG and PCI for Multivessel or LM Disease: Expert Surgeon's View

Mario Gaudino MD, PhD, MSCE Department of Cardiothoracic Surgery, Weill Cornell Medical College New York, NY, USA

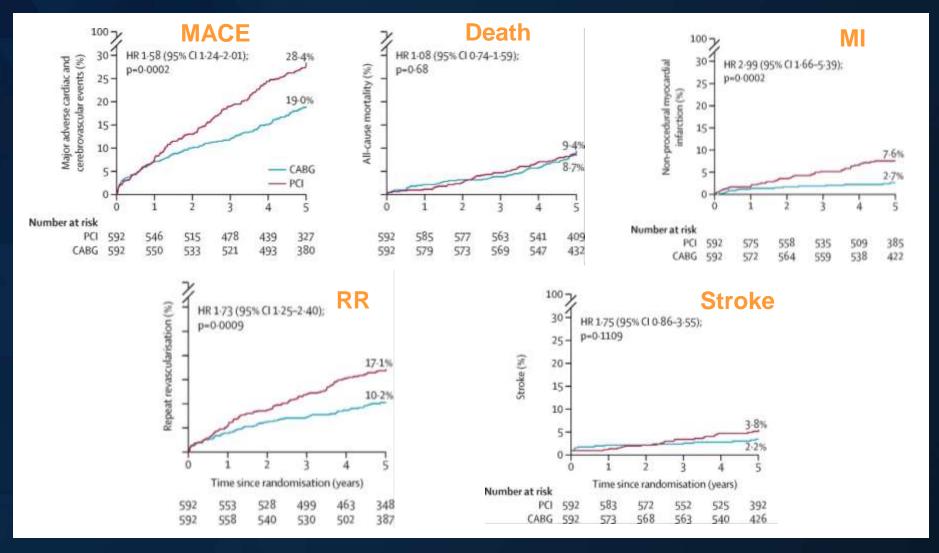
Disclosures

• No conflicts of interest

The "apparent" controversy

- Published evidence consistently shows very different risk profiles and time-varying benefit for PCI and CABG.
- In real world practice the majority of patients have clinical or anatomic characteristics that clearly drive the decision between the two treatment modalities
- The key is individualization of treatment to the patient and the local expertise
- Time to get over the controversy

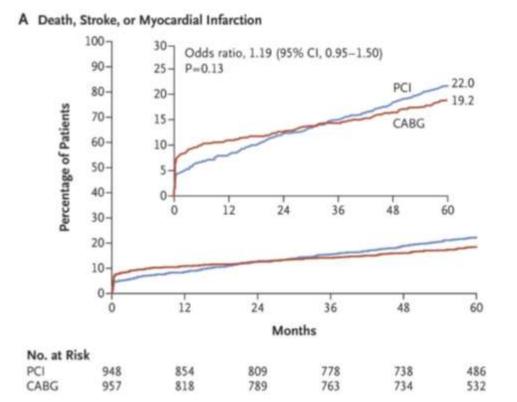
Kaplan-Meier estimates of 5-year clinical outcomes in intention-to-treat population – NOBLE trial

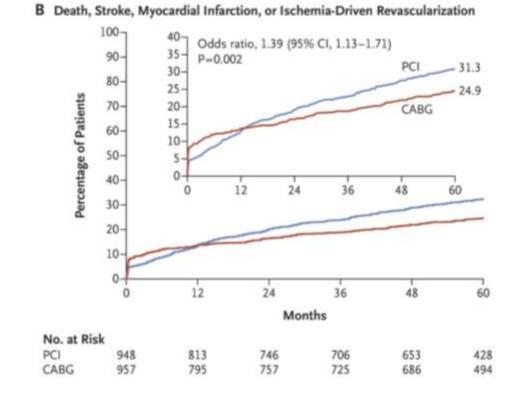


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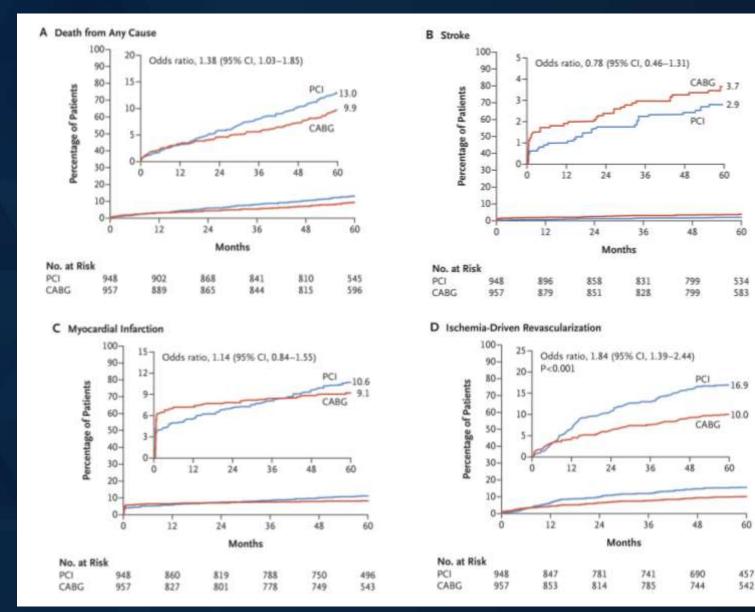
Holm et al. Lancet, 2019

Time-to-First-Event Curves for the Primary and Secondary Composite Outcomes through 5-Year Follow-up – EXCEL trial



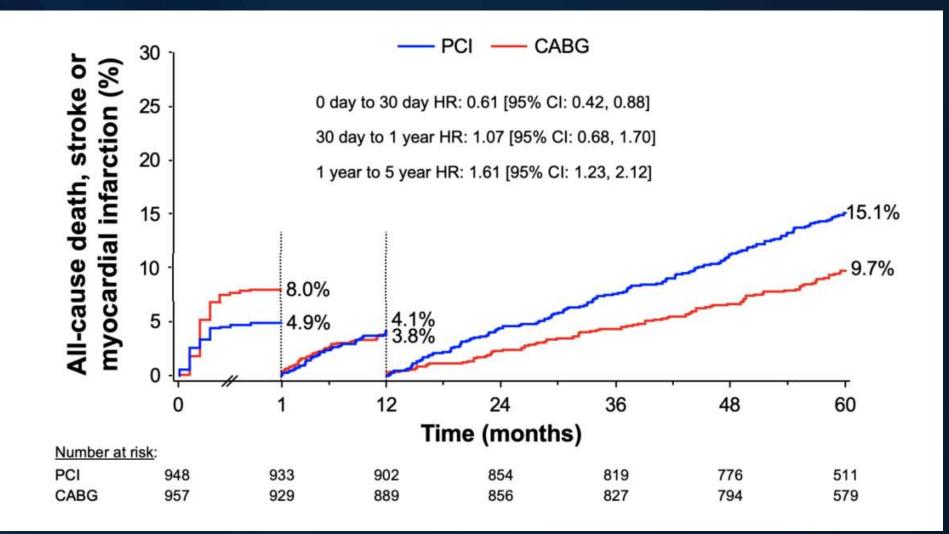


Time-to-First-Event Curves for the Components of the Primary and Secondary Composite Outcomes through 5-Year Follow-up – EXCEL trial



Stone et al. NEJM, 2019

Piecewise analysis for the primary composite outcome of death, stroke or myocardial infarction from 0 to 30 days, 30 days to 1 year, and 1 year to 5 years – EXCEL trial



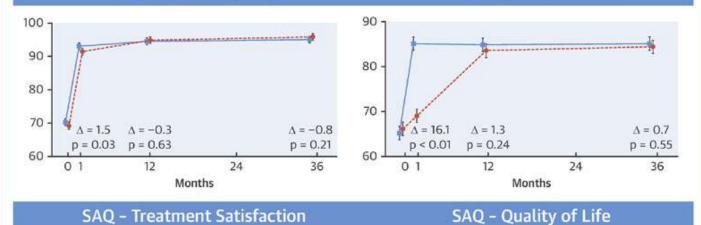
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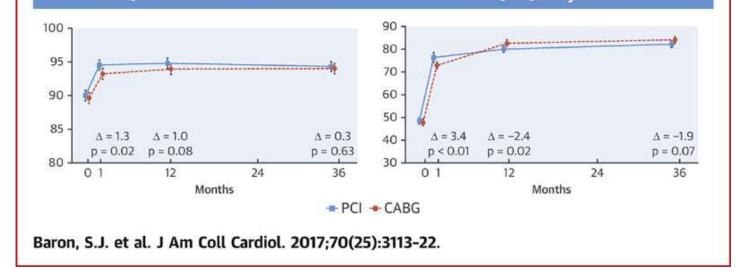
Stone et al. NEJM, 2019

CENTRAL ILLUSTRATION: Disease-Specific Health Status After PCI Versus CABG as Measured by the SAQ

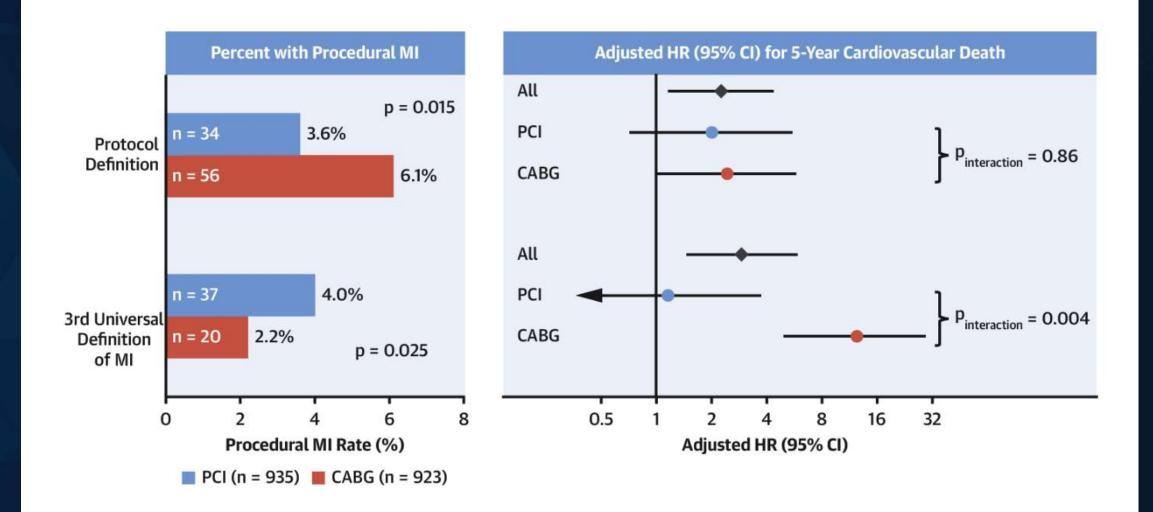
SAQ – Angina Frequency

SAQ – Physical Limitations





Incidence of different definitions of procedural myocardial infarction and their impact on cardiovascular mortality by treatment in the EXCEL Trial



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Gregson et al, JACC, 2020

Meta-analyses: Risk of death at latest follow-up

Study and Year	Active		Control							Role	ative risk [95% CI]
	Events	Ν	Events	Ν	Weight (%)					noa	11146 Hak [35 % Ci]
Risk of death											
NOBLE 5-year, 2019	54	592	50	592	22.4			H a -1			1.08 [0.75, 1.56]
SYNTAX 10-year, 2019	93	357	98	348	32.9			H a h			0.93 [0.73, 1.18]
EXCEL 5-year, 2019	119	948	89	957	31.3						1.35 [1.04, 1.75]
PRECOMBAT 5-year, 2015	17	300	23	300	11.4		۲				0.74 [0.40, 1.36]
Boudriot 1-year, 2011	2	100	5	101	2,0	٠					0.40 [0.08, 2.03]
REML Model for All Studies (C	Q = 7.28, df = -	4, p for hete	erogeneity = 0.	12; l ² = 42	.9%)			•			1.03 [0.82, 1.30]
						_				p for ov	erall effect = 0.779
						0.04	0.2	1	5	25	
								elative risk			

Ahmad et al. Eur Heart J, 2020

Meta-analyses: Risk of myocardial infarction at latest follow-up

Study and Year	Active		Control							Bol	ative risk [95% Cl]
	Events	Ν	Events	N	Weight (%)					nea	auve nak [35 /6 OI]
Risk of MI											
EXCEL 5-year, 2019	95	948	84	957	76.5			1- -1			1.14 [0.86, 1.51]
PRECOMBAT 5-year, 2015	6	300	5	300	4.3		⊢				1.20 [0.37, 3.89]
SYNTAX 5-year, 2014	28	357	16	348	16.8			-	-•		1.71 [0.94, 3.10]
Boudriot 1-year, 2011	3	100	3	101	2.4		•				1.01 [0.21, 4.89]
REML Model for All Studies (C	Q = 1.49, df = 3	3, p for hete	erogeneity = 0.	69; I ² = 0.0	0%)			•			1.22 [0.96, 1.56]
										p for ov	verall effect = 0.110
						_	1	1	1	1	
						0.04	0.2	1	5	25	
						DES be	etter < R	elative ris	k > CAE	3G better	

Ahmad et al. Eur Heart J, 2020

Meta-analyses: Risk of revascularization at latest follow-up

Study and Year	Acti	ve	Con	trol						Rel	ative risk [95% Cl]
	Events	Ν	Events	N	Weight (%)					THE.	
Risk of revascularization											
NOBLE 5-year, 2019	97	592	58	592	25.1				,		1.67 [1.23, 2.27]
EXCEL 5-year, 2019	153	948	92	957	39.6			H			1.68 [1.32, 2.14]
PRECOMBAT 5-year, 2015	38	300	21	300	9.0						1.81 [1.09, 3.01]
SYNTAX 5-year, 2014	90	357	49	348	23.5			+-	•		1.79 [1.31, 2.45]
Boudriot 1-year, 2011	14	100	6	101	2.8			Ļ			2.36 [0.94, 5.89]
REML Model for All Studies (C) = 0.62. df = 4	4. p for hete	arogeneity = 0.	96: I ² = 0.0	0%)			•			1.73 [1.49, 2.02]
		., p									
										p for ov	verall effect < 0.001
							1	i			
						0.04	0.2	1	5	25	
						DES be	etter < Re	elative risk	> CAE	3G better	

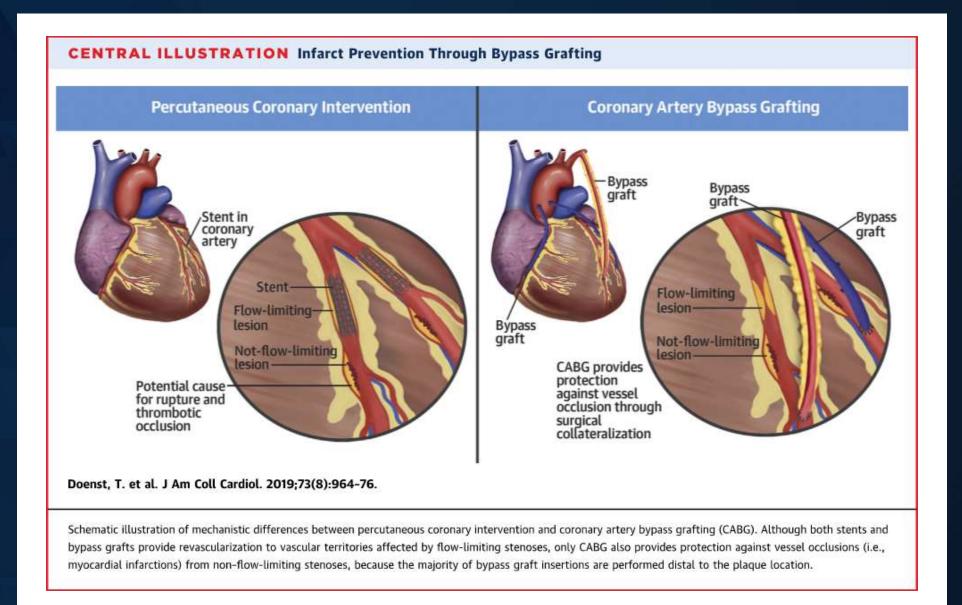
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Ahmad et al. Eur Heart J, 2020

Meta-analysis of randomized trials comparing the effect of coronary artery bypass grafting (CABG) versus percutaneous coronary intervention (PCI) comes at 5 years follow-up

	PCI		CABO	à		Odd	is Ratio		Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fi	xed, 95% Cl	1	M-H, Fixed, 95% Cl
1.3.1 All-cause mortal	lity (5-year	s)							
EXCEL	119	948	89	957	41.4%	1.40	[1.05, 1.87]		
NOBLE	54	592	50	592	24.3%	1.09	[0.73, 1.63]		
PRECOMBAT	17	300	23	300	11.6%	0.72	[0.38, 1.38]	()	
SYNTAX	45	357	48	348	22.7%	0.90	[0.58, 1.39]		
Subtotal (95% CI)		2197		2197	100.0%	1.13	[0.93, 1.38]		-
Total events	235		210				S 2 19		
Heterogeneity: Chi ² = 4 Test for overall effect: 2			7); l ² = 40	%					
1.3.2 Myocardial infar	ction (5-ye	ars)							
EXCEL	95	948	84	957	61.2%	1.16	[0.85, 1.58]		
NOBLE	59	592	31	592	22.7%	2.00	[1.28, 3.14]		
PRECOMBAT	6	300	5	300	4.0%	1.20	[0.36, 3.99]		
SYNTAX	28	357	16	348	12.1%	1.77	[0.94, 3.33]		
Subtotal (95% CI)	-কাজ-	2197	0	2197	100.0%	1.43	[1.13, 1.79]		-
Total events	188		136						2000
Heterogeneity: $Chi^2 = 2$ Test for overall effect: 2				3%					
1.3.3 Stroke (5-years)									
EXCEL	26	948	33	957	53.7%	0.79	[0.47, 1.33]		
NOBLE	21	592	12	592	19.5%	1.78	[0.87, 3.65]		-
PRECOMBAT	2	300	2	300	3.3%	1.00	[0.14, 7.15]		
SYNTAX	5	357	14	348	23.5%	0.34	[0.12, 0.95]		
Subtotal (95% CI)	1	2197		2197	100.0%	0.88	[0.61, 1.28]		
Total events	54		61						
Heterogeneity: Chi ² = 7 Test for overall effect: 2			Contraction of the state	%					
1.3.4 Repeat revascul	arization (5-years)						
	150	948	88	957	41.5%	1.86	[1.40, 2.46]		
				592	27.3%	1.80	[1.27, 2.55]		
EXCEL	97	592	58	0.00			Contraction of the second s		
EXCEL NOBLE		592 300	58	300	10.3%	1.93	[1.10, 3.37]		
EXCEL NOBLE PRECOMBAT	97	102220	100	10770		1.93 2.06	[1.10, 3.37] [1.40, 3.02]		
EXCEL NOBLE PRECOMBAT SYNTAX	97 38	300	21	300	10.3%				
EXCEL NOBLE PRECOMBAT SYNTAX Subtotal (95% CI)	97 38 90	300 357	21 49	300 348	10.3% 20.9%	2.06	[1.40, 3.02]		•
EXCEL NOBLE PRECOMBAT SYNTAX Subtotal (95% CI) Total events Heterogeneity: Chi ² = 0	97 38 90 375 0.27, df = 3	300 357 2197 (P = .90	21 49 216 5); 1 ² = 0%	300 348 2197	10.3% 20.9%	2.06	[1.40, 3.02]		•
EXCEL NOBLE PRECOMBAT SYNTAX Subtotal (95% CI) Total events Heterogeneity: Chi ² = 0 Test for overall effect: 2	97 38 90 375 0.27, df = 3	300 357 2197 (P = .90	21 49 216 5); 1 ² = 0%	300 348 2197	10.3% 20.9%	2.06	[1.40, 3.02]		•
EXCEL NOBLE PRECOMBAT SYNTAX Subtotal (95% CI) Total events Heterogeneity: Chi ² = 0	97 38 90 375 0.27, df = 3	300 357 2197 (P = .90	21 49 216 5); 1 ² = 0%	300 348 2197	10.3% 20.9%	2.06	[1.40, 3.02]	0.2	

Gallo et al. J Thorac Cardiovasc Surg, 2020



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Doenst et al. J Am Coll Cardiol, 2019

Conclusions/Take-home message

- PCI and CABG are different interventions that are performed in different patients with different aims.
- Surgery is associated with higher peri-procedural risk and discomfort and better clinical outcomes in the long term
- PCI assures outcomes comparable to surgery in the first 1-2 years after the procedure with much lower invasiveness.
- The two interventions are **complementary**, **not antagonists**

Thank you for your attention!!

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