Debate: Proximal LAD CTO With Nice Collaterals - To Treat or Not to Treat

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Disclosure

- **Speaker: Dr. Kambis Mashayekhi**

☑ I have the following potential conflicts of interest to declare:

- **Personal:** **None**

- **Institutional:**

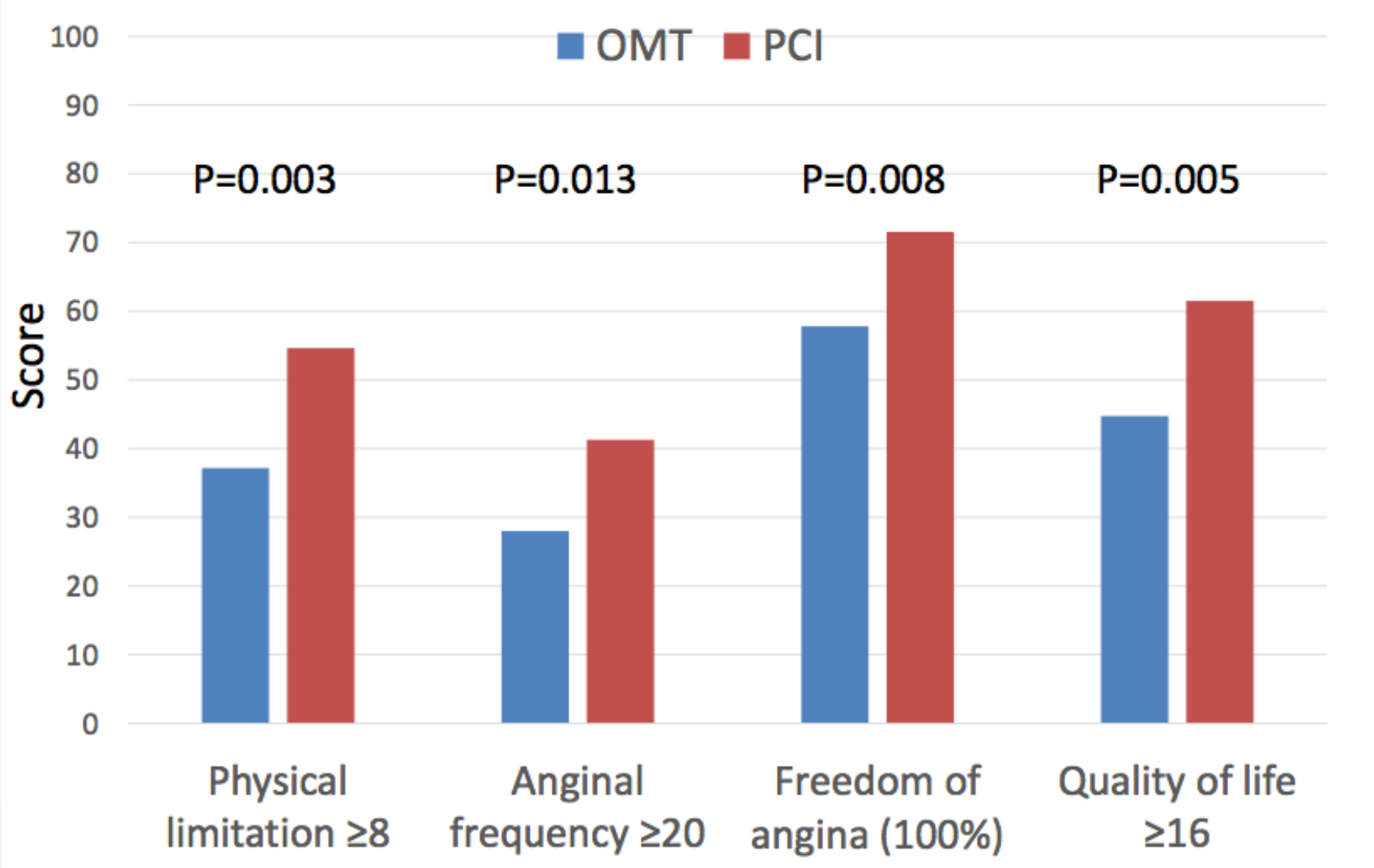
Speaker honoraria, consultancy fees, and research grants from Abbott, Abiomed, Asahi Intecc, Astra Zeneca, Biotronik, Boston, Cardinal Health, Daiichi-Sankyo, Medtronic, Philips Healthcare Shockwave, SIS, Teleflex, Terumo.

Thought Process

- How symptomatic is the patient?
- How old and how fit is the patient? What about his co-morbidities?
- Is the CTO in the setting of a multi-vessel disease or not?
- How is the left ventricular function?
- Is the myocardium viable?
- Is the patient a heart failure patient?
- How complex is the lesion?

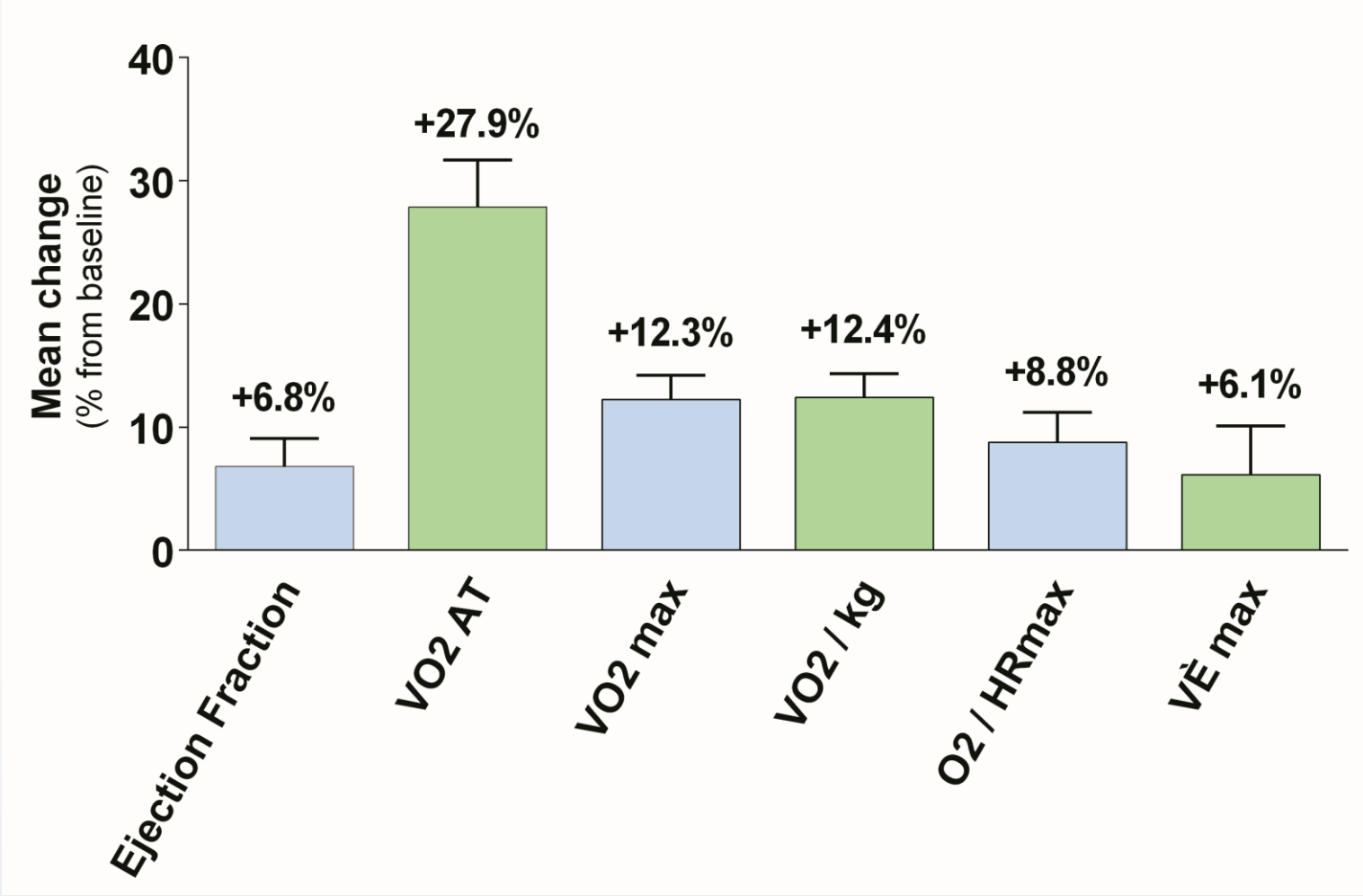
SYMPTOMS

Euro-CTO Trial
SAQ Subscales – Significant Changes



Werner GS et al. *Eur Heart J*. 2018;39(26):2484-2493

Improving Cardiopulmonary Exercise Capacity in Patients With CTO-PCI



Mashayekhi et. al, JACC 2017

ISCHEMIA

The Role Of Collaterals

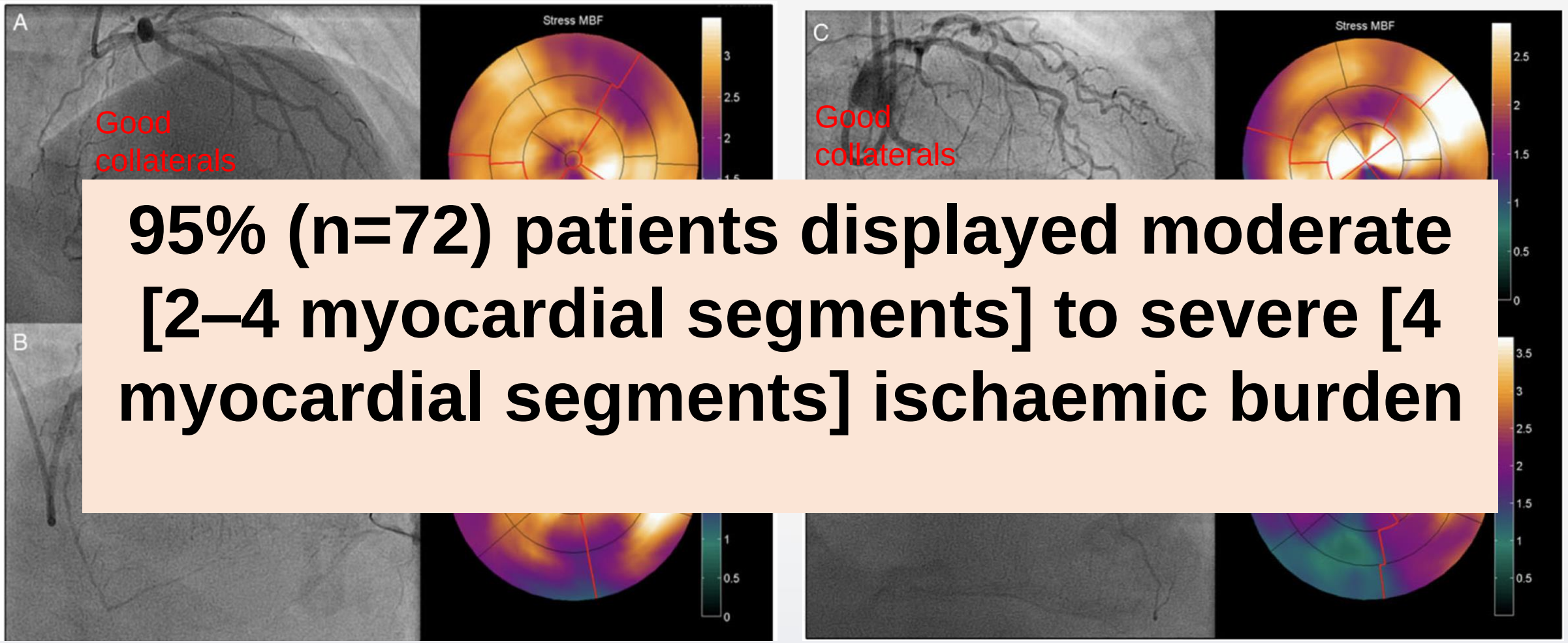
Interventional

To provide visualization & access to the vessel beyond the occlusion

Physiological

To preserve the integrity of the myocardium and ventricular function

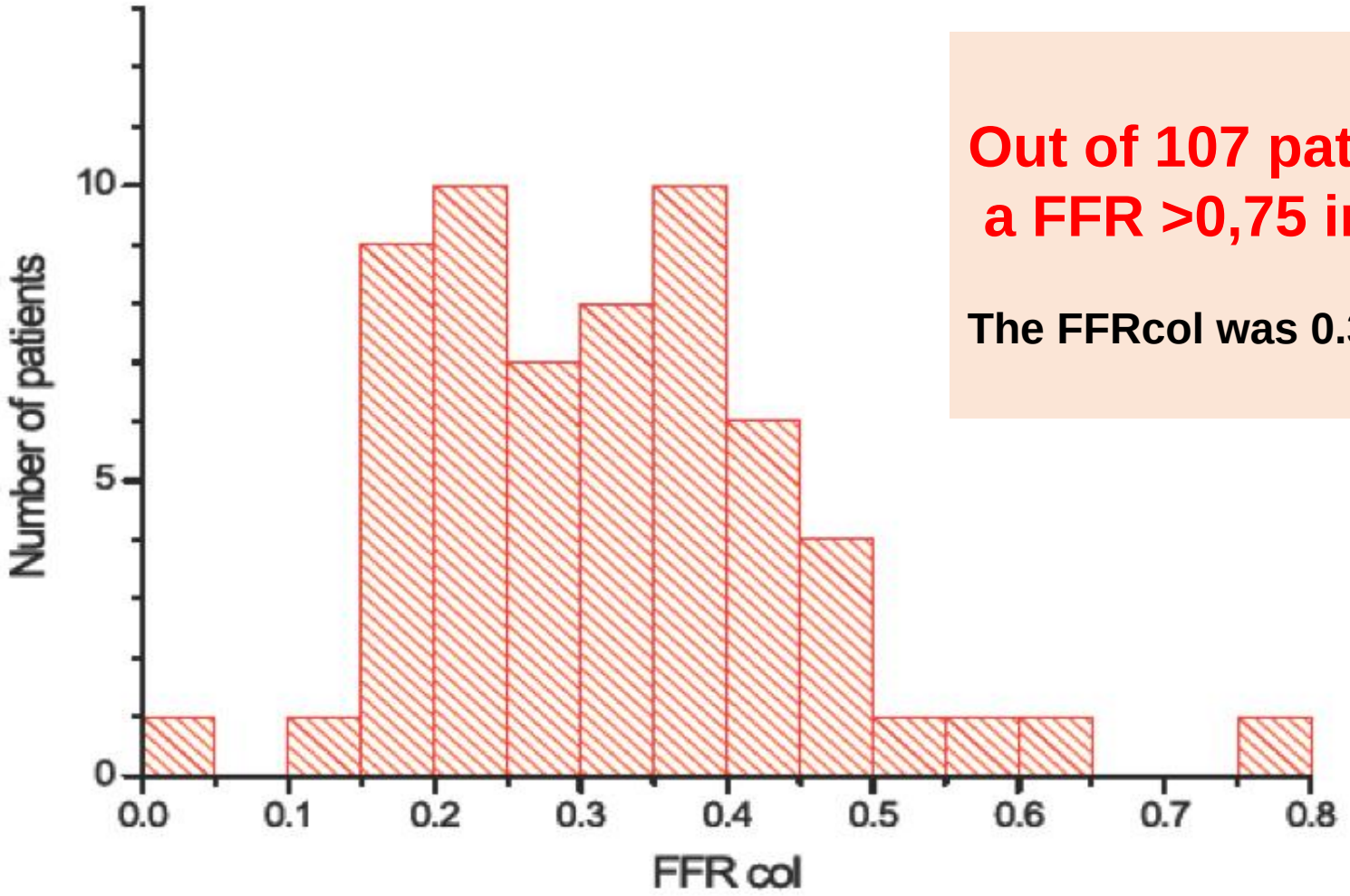
Lacking relationship between the collateral state and stress myocardial perfusion



95% (n=72) patients displayed moderate [2–4 myocardial segments] to severe [4 myocardial segments] ischaemic burden

Stuifzand WJ et al. EHJ Cardiovasc Imaging 2017

The collateral flow is not sufficient to prevent myocardial ischemia in CTO patients



Out of 107 patients, only 1 had a FFR >0,75 in the CTO region

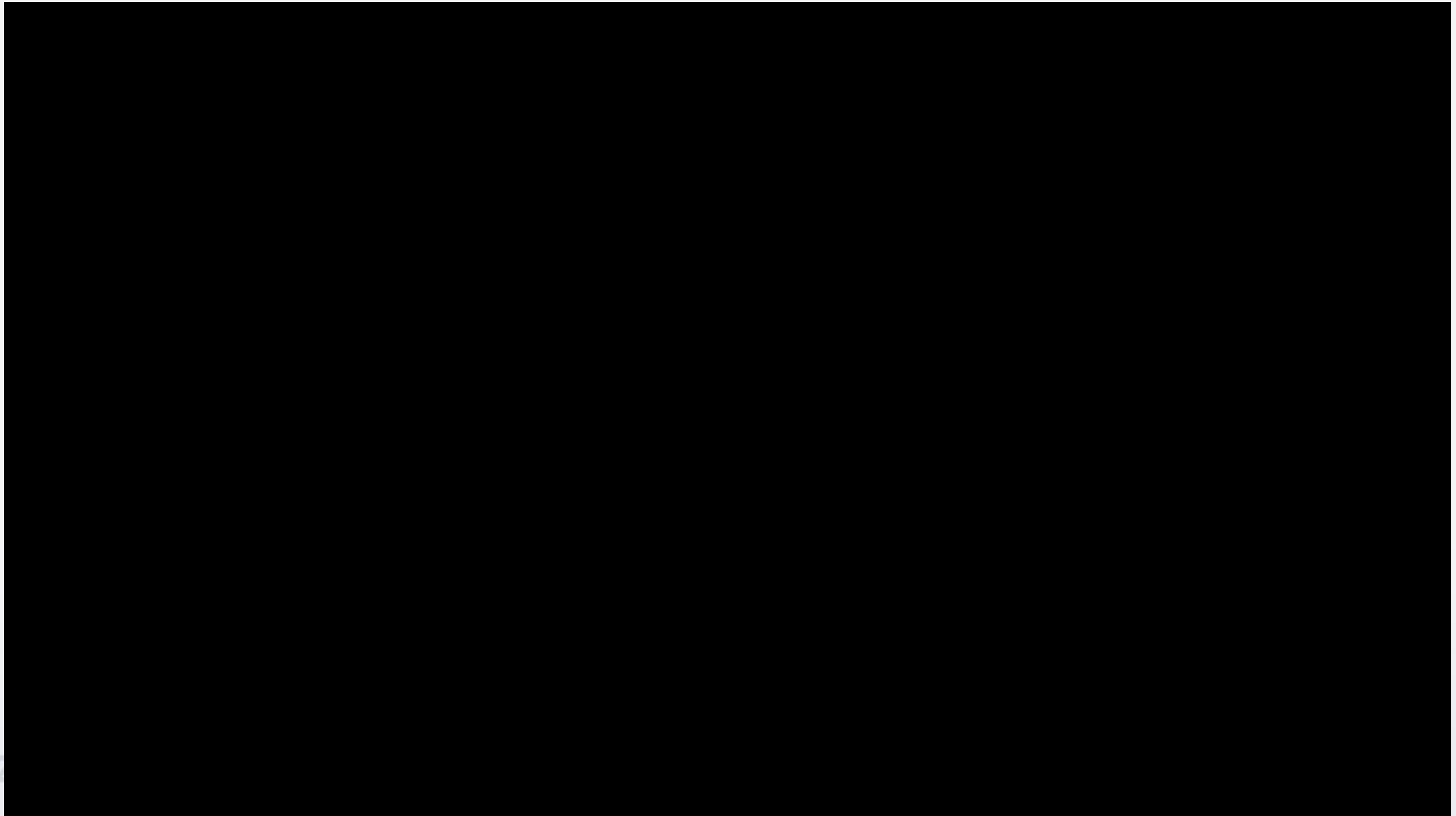
The FFRcol was 0.32 ± 0.13 [0.03 to 0.78]

Werner G. et al, European Heart Journal 2006

PROGNOSIS

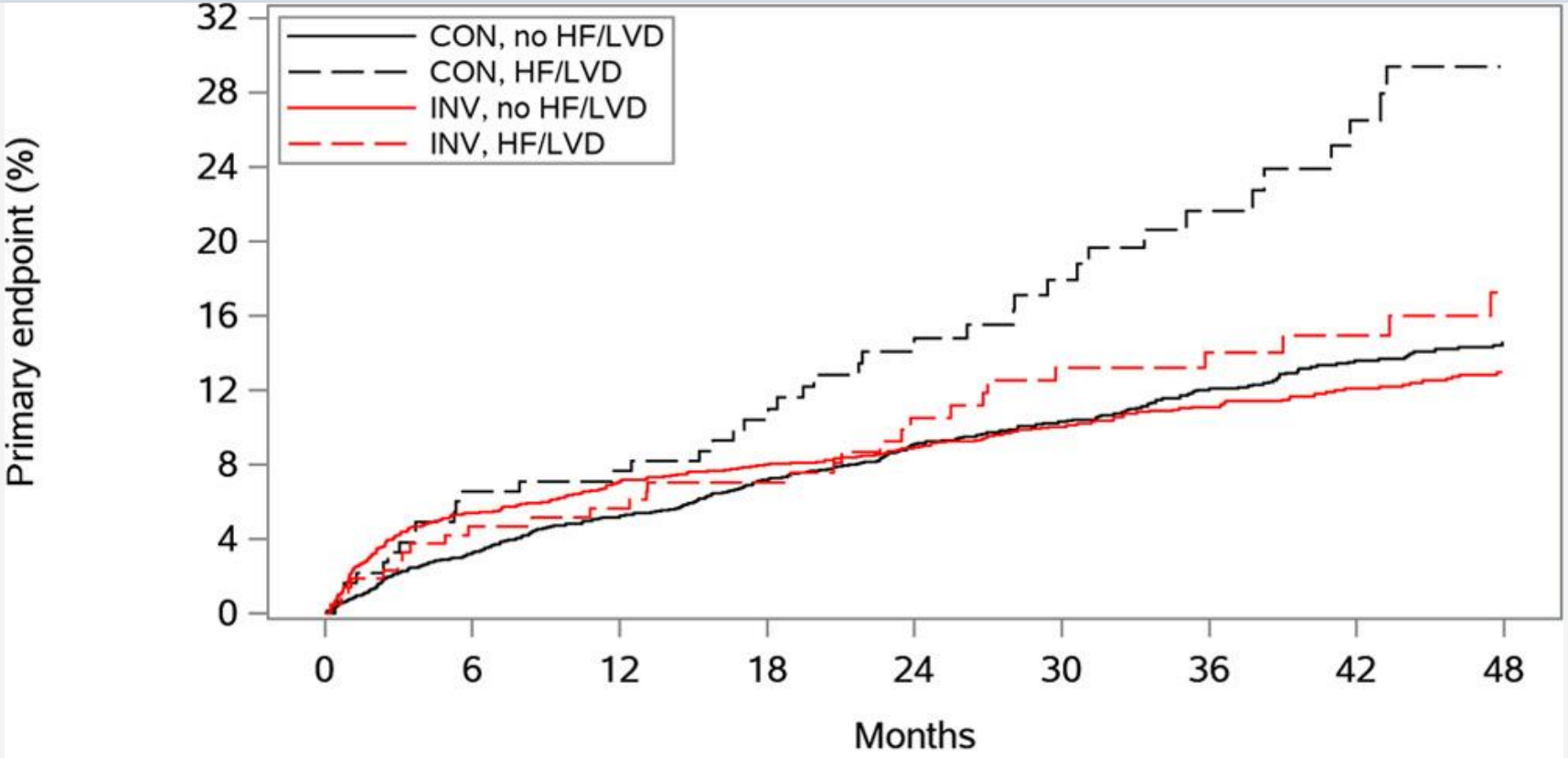
CHIP CTO CASE for EuroPCR 2021

Angiographic Syntax Score = 90.5, 4year mortality for PCI 99,9%



Initial Invasive Versus Conservative Management of Stable Ischemic Heart Disease in Patients With a History of Heart Failure or Left Ventricular Dysfunction (≥35% but <45%)

Insights From the ISCHEMIA Trial



Subjects at Risk

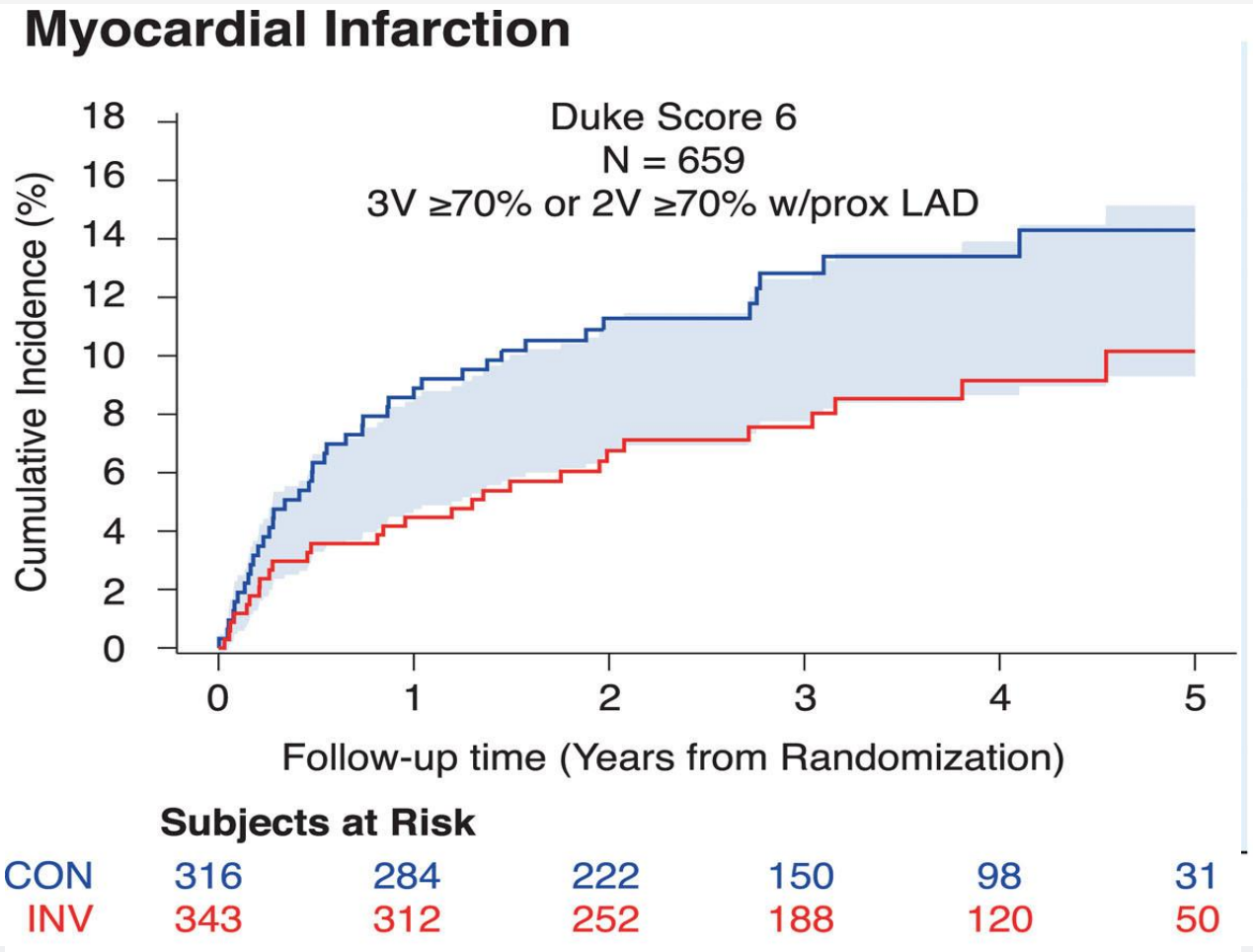
CON, no HF/LVD	2404	2311	2260	2114	1781	1469	1222	947	690
CON, HF/LVD	184	172	169	156	124	98	77	56	43
INV, no HF/LVD	2372	2218	2164	2040	1764	1455	1189	913	670
INV, HF/LVD	214	203	199	185	143	121	103	84	63

*composite of cardiovascular death, nonfatal myocardial infarction, or hospitalization for unstable angina, HF, or resuscitated cardiac arrest

Lopes et al Circulation. 2020 Nov 3;142(18):1725-1735

ISCHEMIA Trial

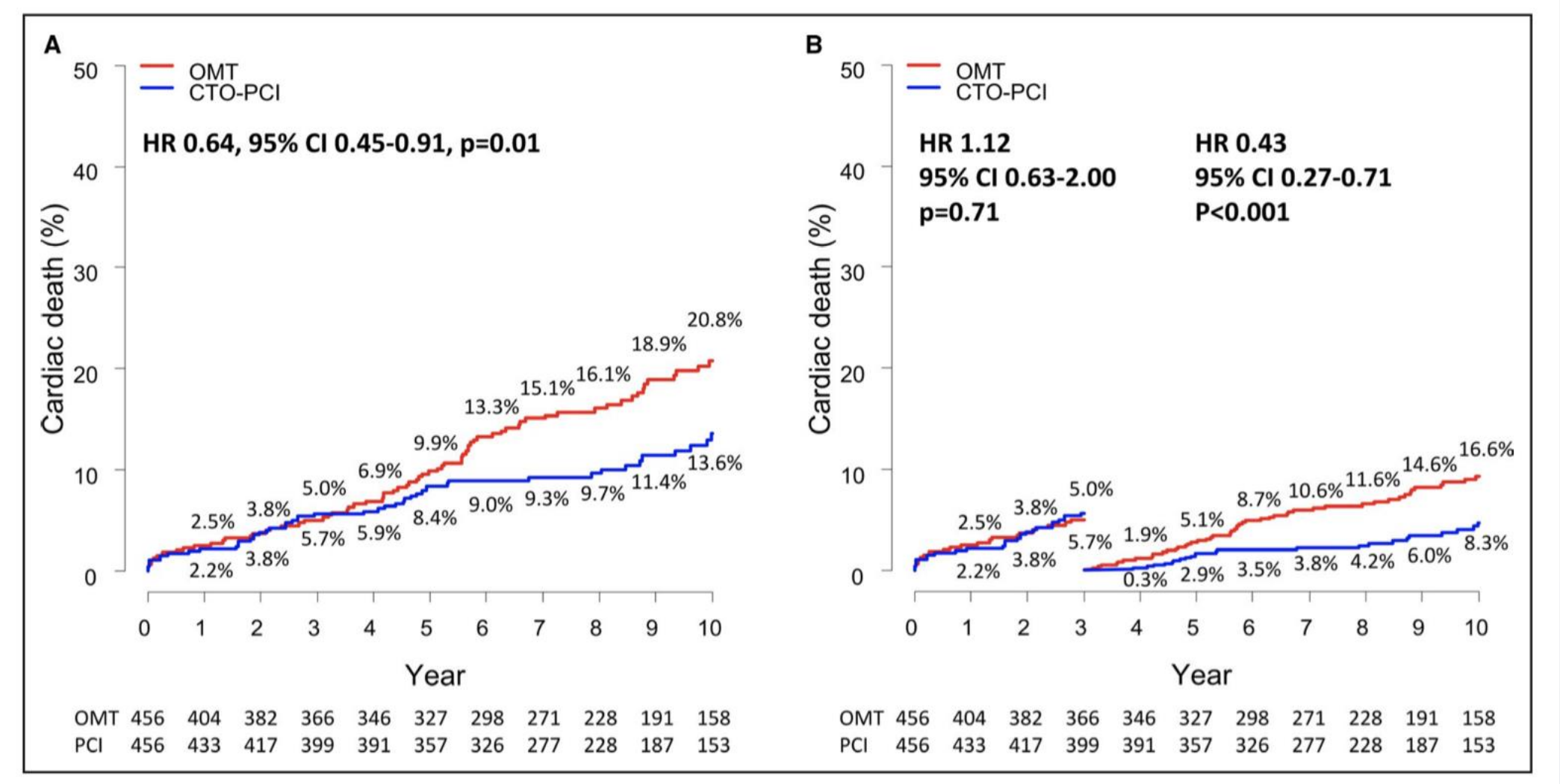
	N	4-Year Rate	Hazard Ratio (95% CI)	P-value
All-Cause Mortality				<.001
3V ≥70% or 2V ≥70% w/prox LAD	659	7.8%	2.34 (1.41, 3.89)	
2V ≥70% or 3V ≥50% or 70% prox LAD	894	5.4%	1.49 (0.89, 2.49)	
1V ≥70% or 2V ≥50	743	3.3%	ref	
1V ≥50%	179	3.6%	0.81 (0.31, 2.16)	
Myocardial Infarction				<.001
3V ≥70% or 2V ≥70% w/prox LAD	659	11.2%	1.70 (1.17, 2.47)	
2V ≥70% or 3V ≥50% or 70% prox LAD	894	8.3%	1.16 (0.80, 1.68)	
1V ≥70% or 2V ≥50	743	7.8%	ref	
1V ≥50%	179	5.7%	0.45 (0.19, 1.05)	
Primary Endpoint				<.001
3V ≥70% or 2V ≥70% w/prox LAD	659	16.0%	1.96 (1.41, 2.72)	
2V ≥70% or 3V ≥50% or 70% prox LAD	894	12.4%	1.44 (1.05, 1.98)	
1V ≥70% or 2V ≥50	743	9.8%	ref	
1V ≥50%	179	6.3%	0.55 (0.27, 1.10)	



Lopes RD et al. Circulation. 2020 Oct 13;142(15):e236]. *Circulation*.

10years Outcomes: OMT vs. CTO PCI

Clinical Outcomes in the Propensity Score–Matched Population (78.9% MVD)

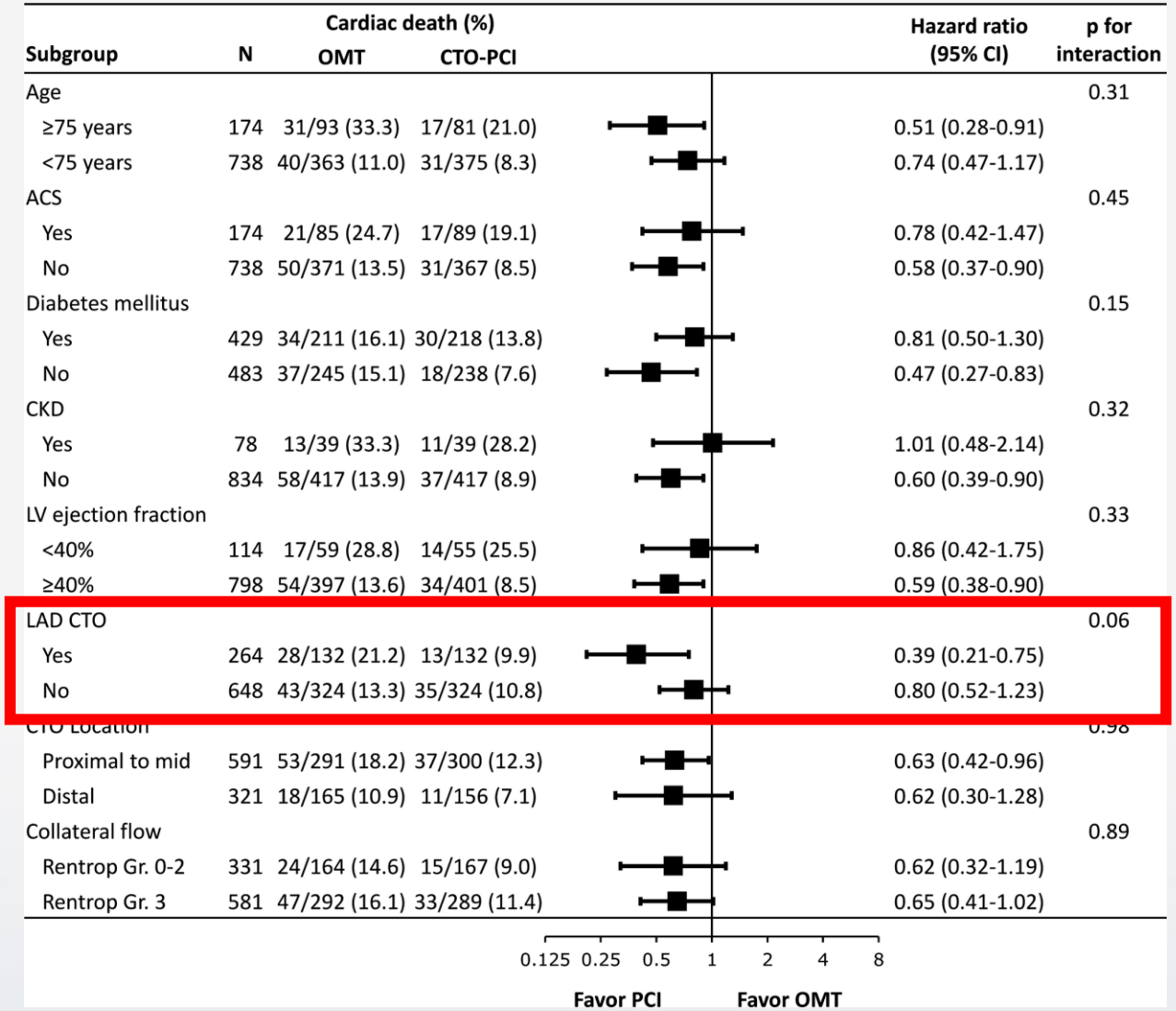


Park TK et al. J Am Heart Assoc. 2021 Mar

10years Outcomes: OMT vs. CTO PCI

Clinical Outcomes in the Propensity Score–Matched Population (78.9% MVD)

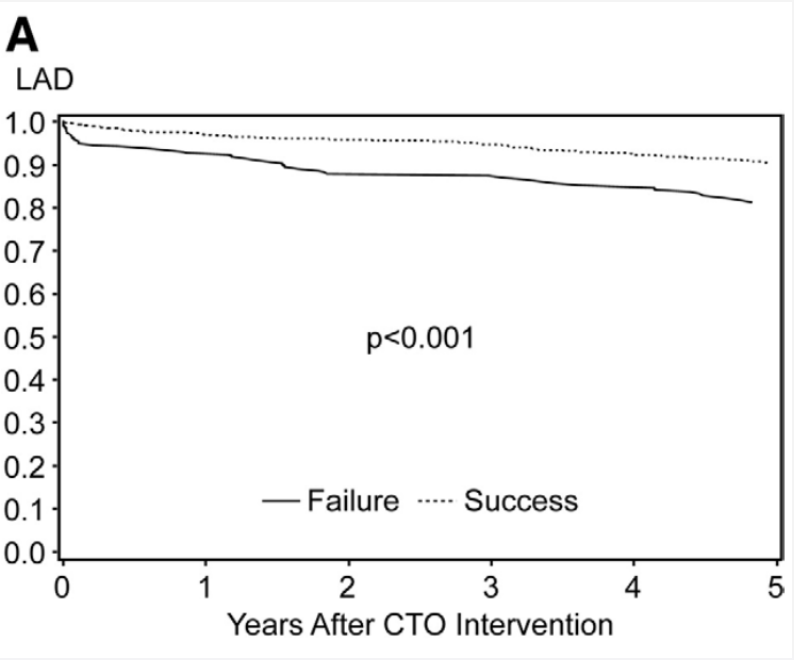
Among the patients with CTO of the left anterior descending artery, the 10-year rate of cardiac death was lower in the CTO-PCI group than in the OMT group (9.9% versus 21.2%; HR, 0.39 [95% CI, 0.21–0.75]; P=0.004

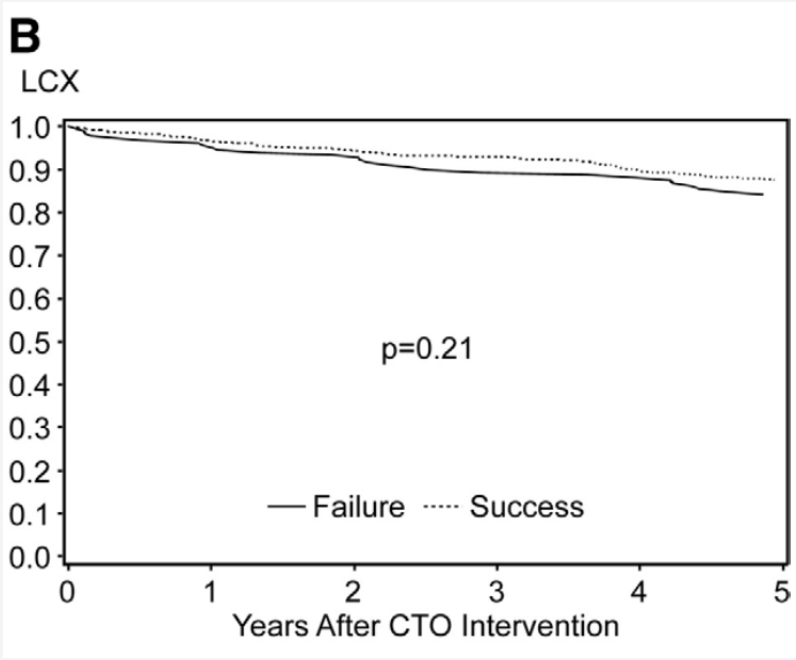


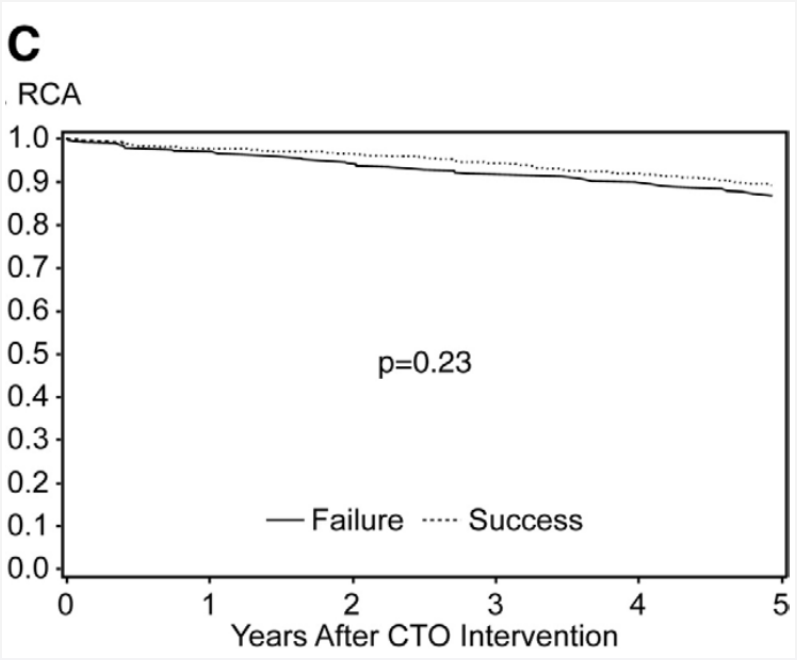
Park TK et al. J Am Heart Assoc. 2021 Mar

Improvement in Survival Following Successful CTO-PCI after 5 years

n=2608







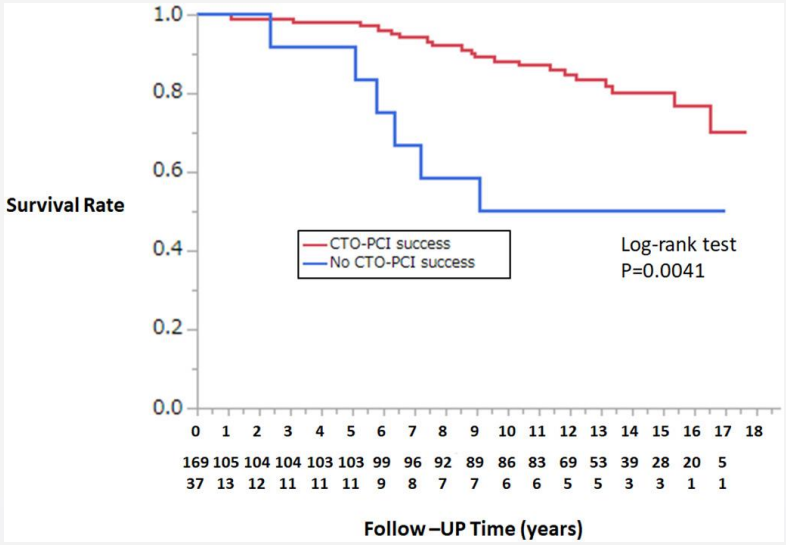
In multivariable analysis, CTO PCI success in the LAD group remained associated with decreased mortality risk (HR: 0.61, 95% CI: 0.42 to 0.89)

Safley DM, *JACC Cardiovasc Interv*. 2008;1(3):295-302.

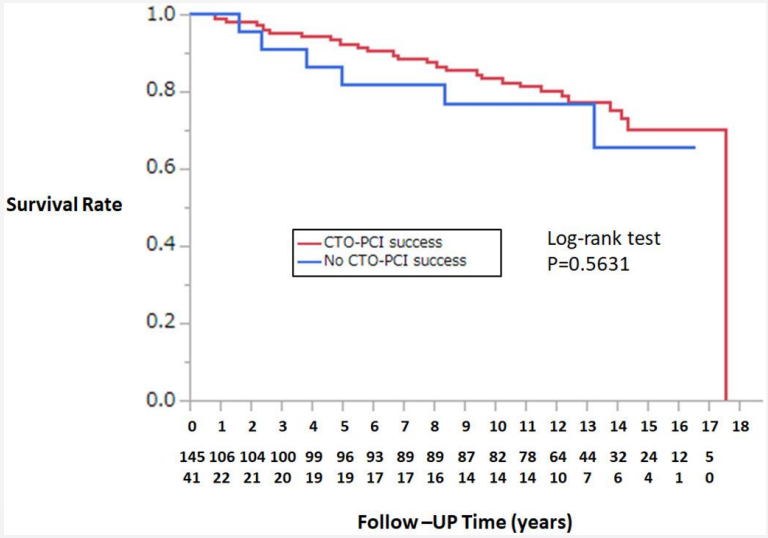
Survival rate of successful or unsuccessful CTO-PCI

10-year follow-up data also suggest that successful PCI of a CTO located in the LAD is associated with improved long-term survival.

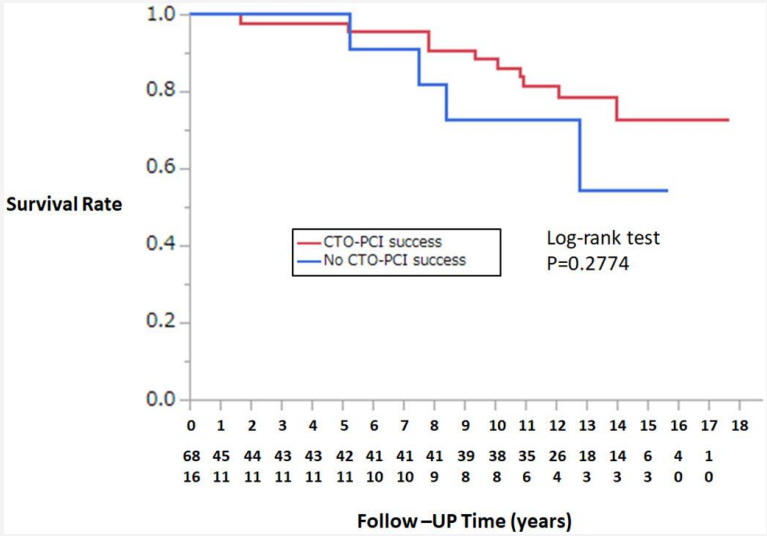
LAD



RCA



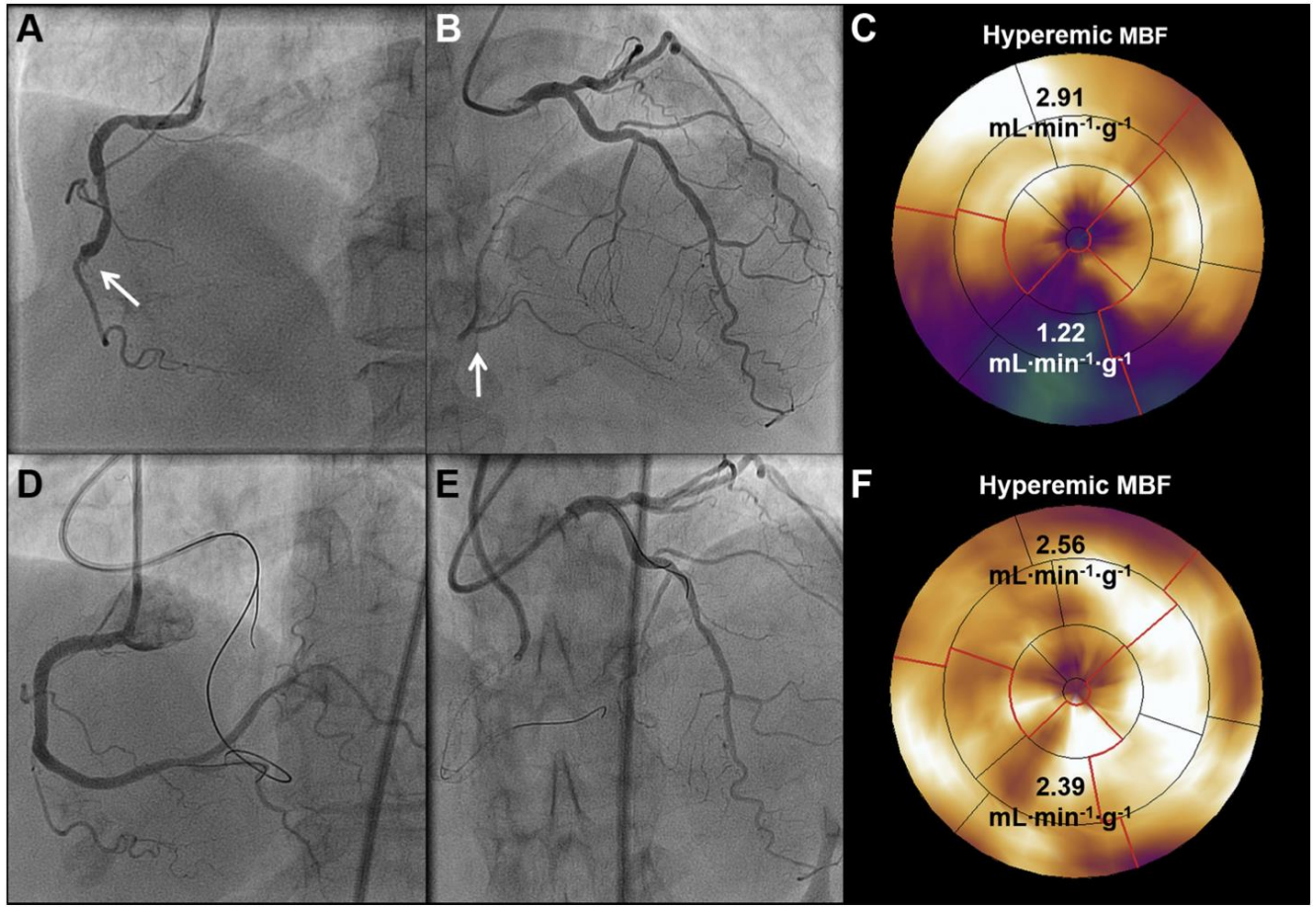
LCX



Yoneda K. *Cardiovasc Revasc Med*. 2021;25:44-46.

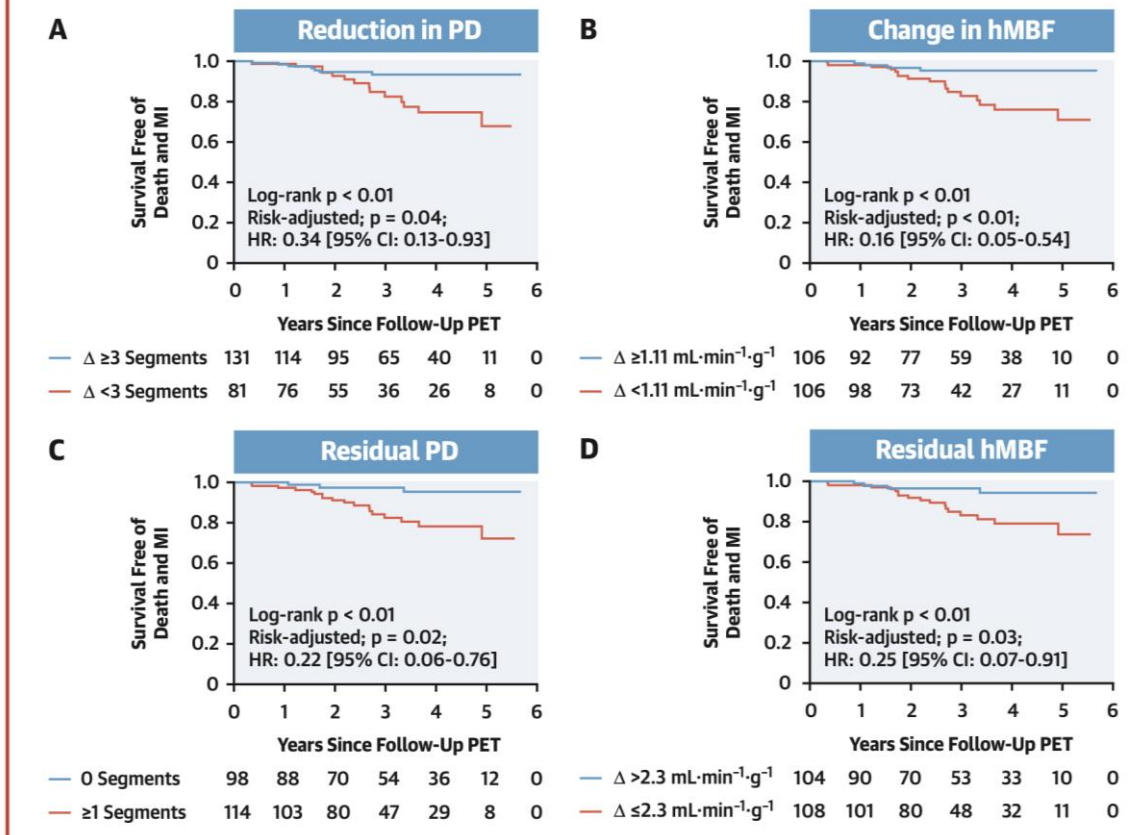
QUALITY OF REVASC

Ischemic Burden Reduction and Long-Term Clinical Outcomes After CTO PCI



Schumacher SP et al. *JACC Cardiovasc Interv*. 2021;14(13):1407-1418.

CENTRAL ILLUSTRATION Long-Term Prognosis Among 212 Patients With a CTO and $^{15}H_2O$-PET Myocardial Perfusion Imaging Before and 3 Months After Successful PCI

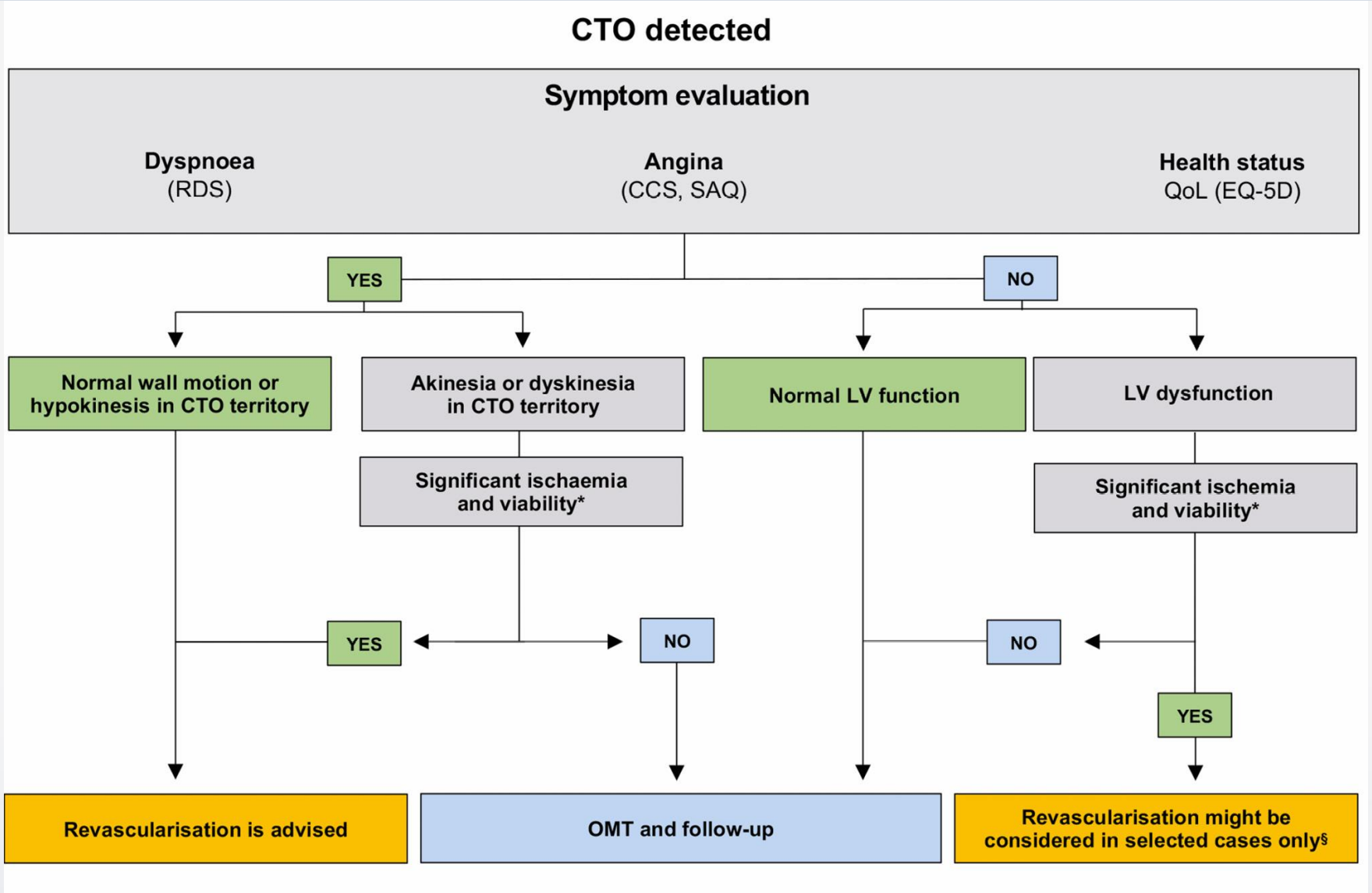


Schumacher, S.P. et al. J Am Coll Cardiol Intv. 2021;14(13):1407-18.

Survival free of death and nonfatal MI. Patients stratified according to the reduction in PD **(A)** and change in hMBF **(B)** in the CTO area after PCI. Patients stratified according to the residual PD **(C)** and hMBF **(D)** in the CTO area at 3-month follow-up PET. CI = confidence interval; CTO = chronic coronary total occlusion; hMBF = hyperemic myocardial blood flow; HR = hazard ratio; MI = myocardial infarction; PCI = percutaneous coronary intervention; PD = perfusion defect; PET = positron emission tomography.

RECOMMENDATION

Consensus statement of the EAPCI, EACVI and the ESC Working Group on Cardiovascular Surgery



Galassi AR et al. *EuroIntervention*. 2024;20(3):e174-e184

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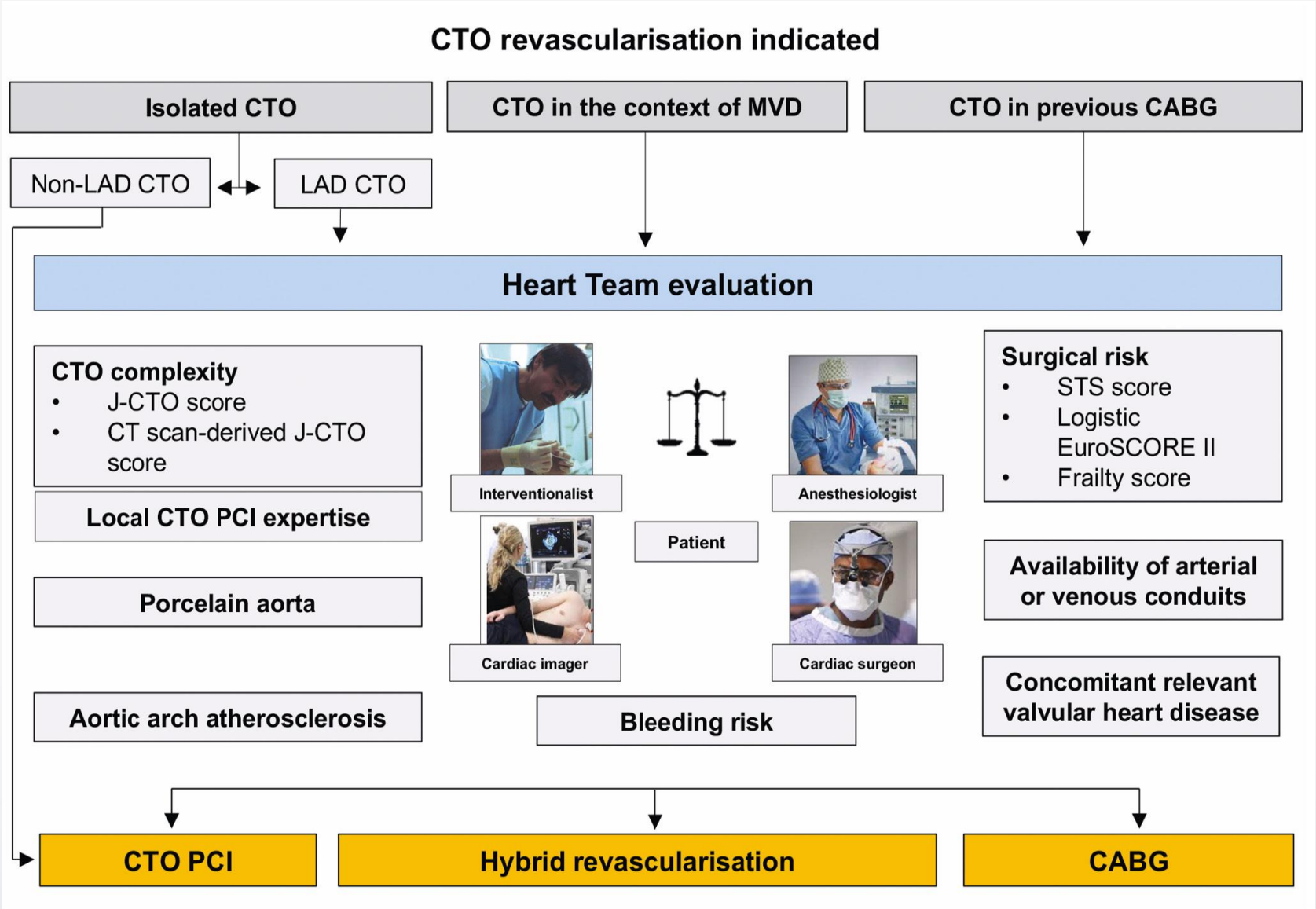

Galassi AR et al. *EuroIntervention*. 2024;20(3):e174-e184

REGIONAL VARIETY

Lessons from the world regarding CTO PCI:

Asia

Patient: “Why do we need to open this vessel?”

Doctor: “Why do you think god gave you three arteries if you could live with only one or two of them?”

Austria

Patient: “Am I able to leave with this disease?”

Doctor: ”Sure! You know, if god closed that artery, no one ever should open it!”

EURO CTO CLUB

19th – 21st September 2024

16th Experts Live CTO

The annual Euro CTO meeting

Co-organized with: CTO Essentials 2024

More information online: www.eurocto2024.eu