

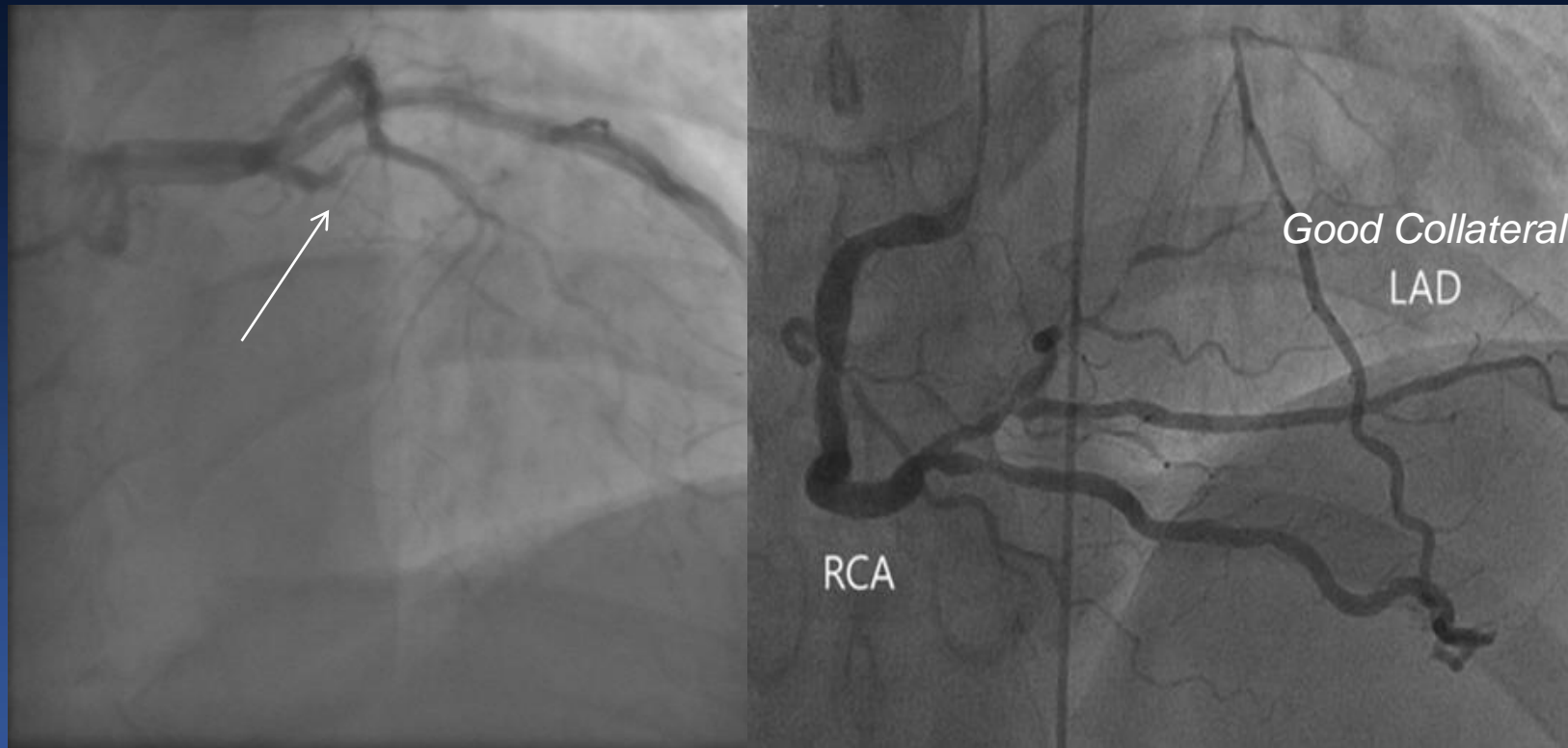
**CTO PCI,
Where Is the Benefit ?**
Insight from DECISION CTO study

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Asan Medical Center, Seoul, Korea

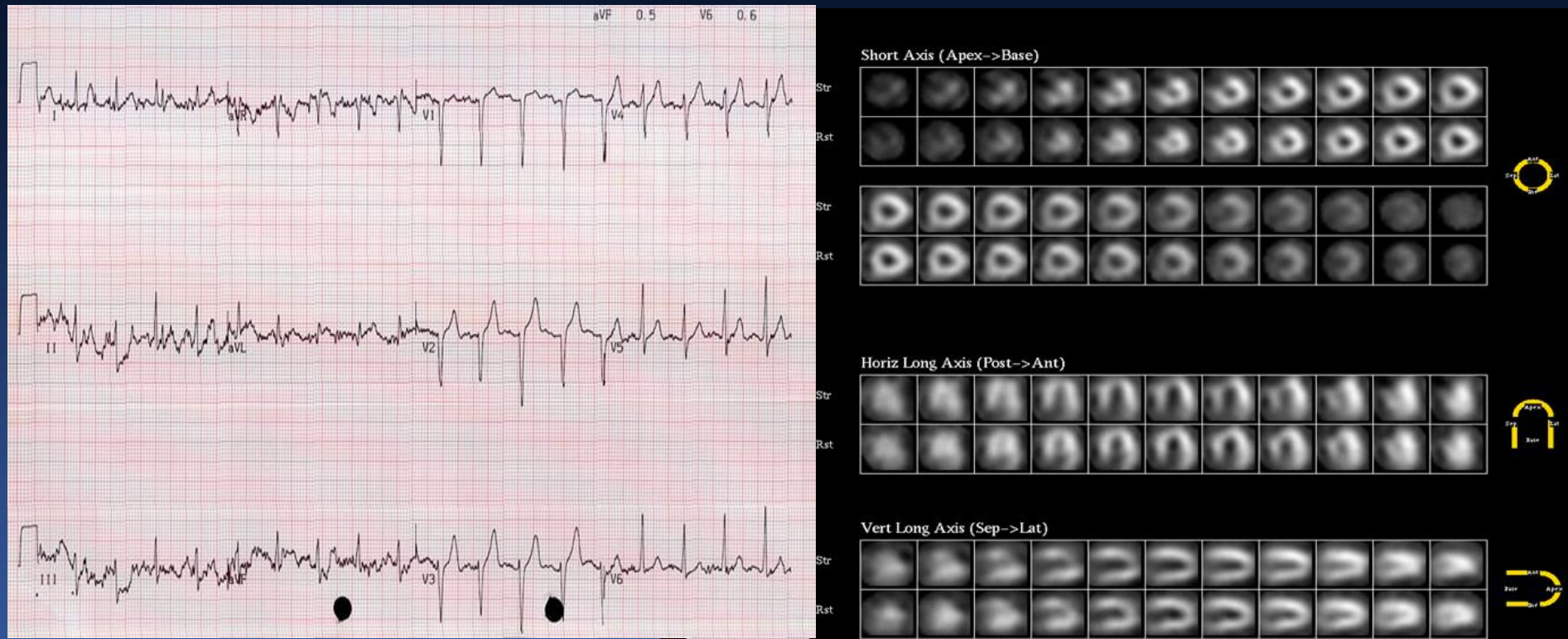
43/M, LAD CTO with Good Collateral

No Symptom

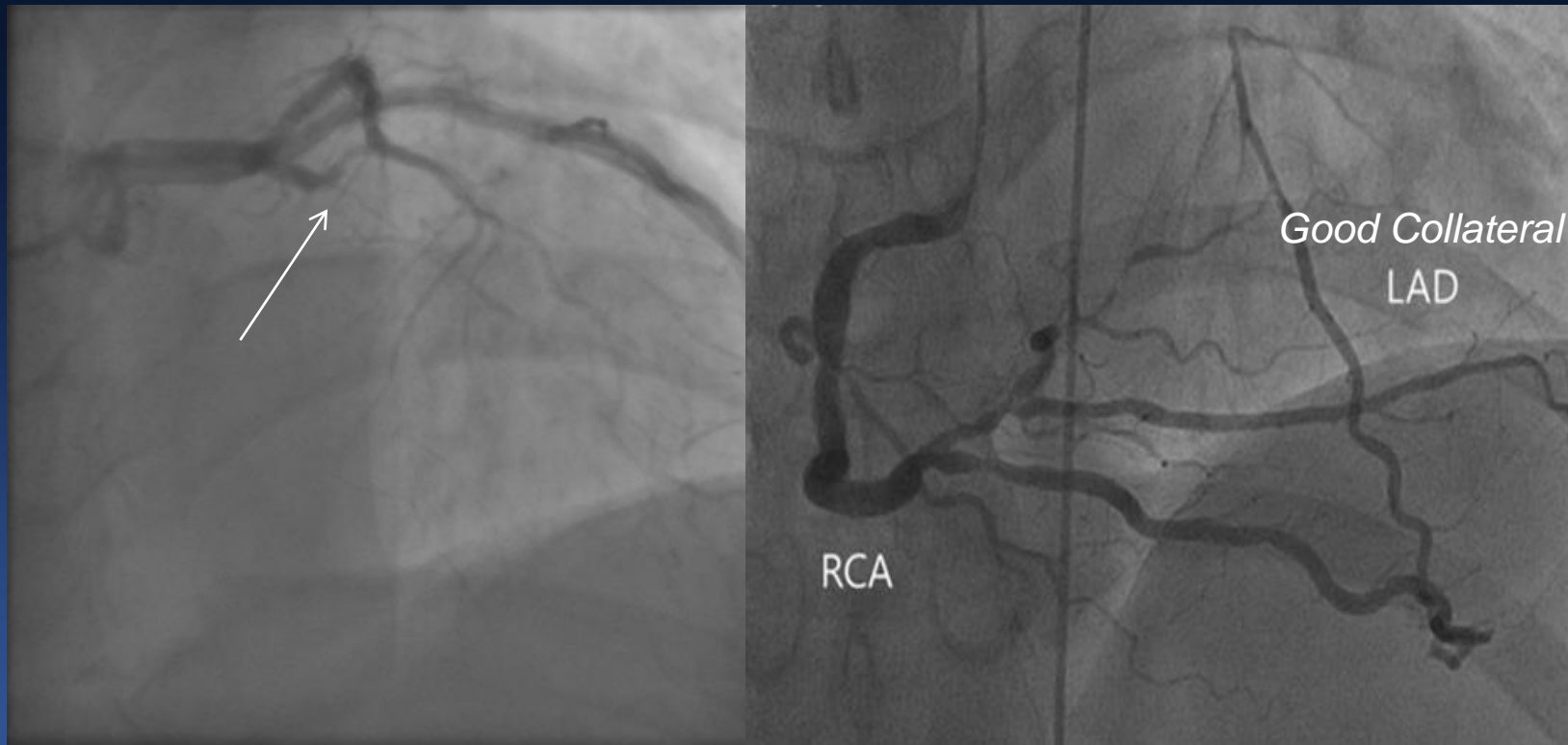


43/M, LAD CTO with Good Collateral

No Symptom, Negative TMT
Normal Thallium Perfusion Scan,



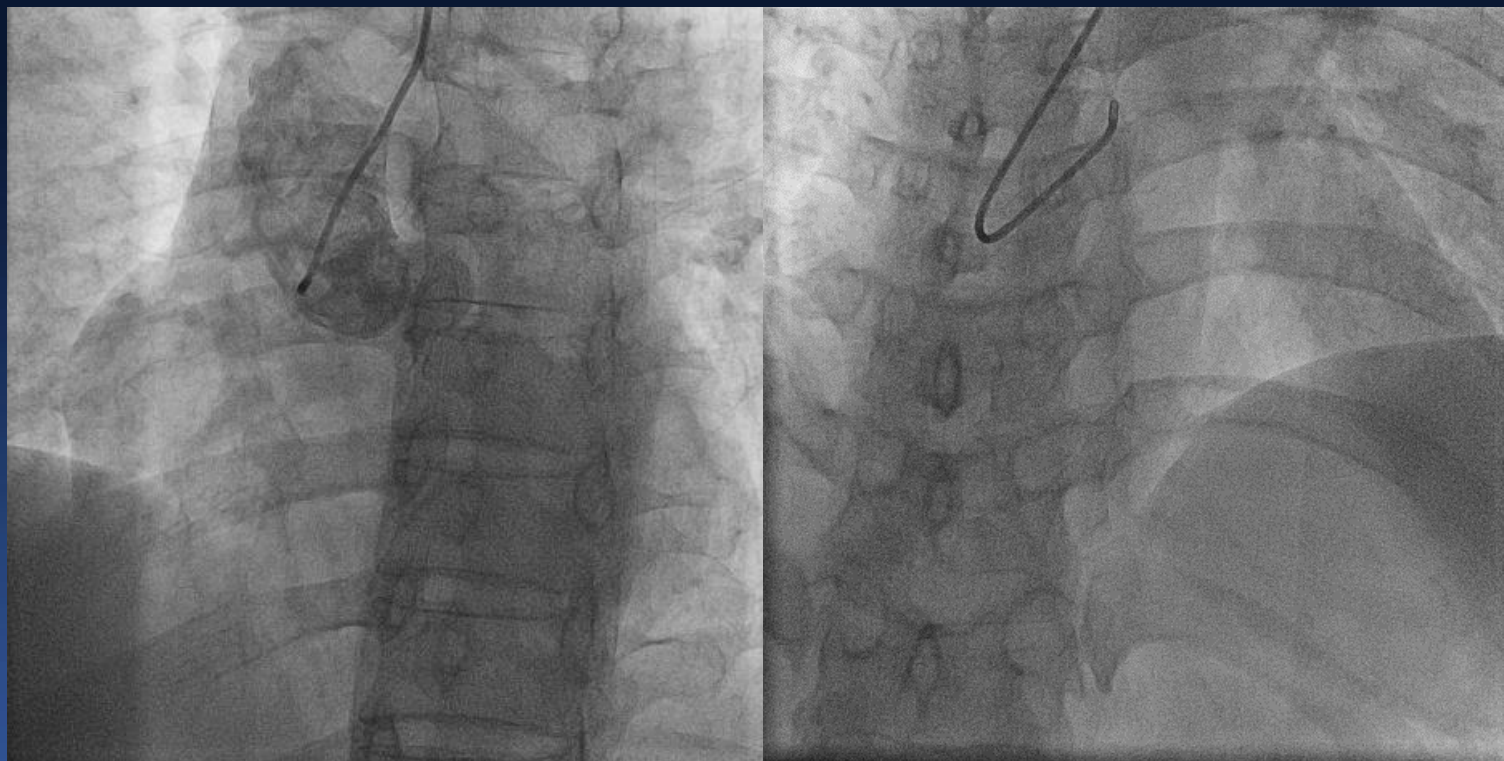
43/M, LAD CTO with Good Collateral
No Symptom, Negative TMT
Normal Thallium Perfusion Scan,



Do You Want to Open ?

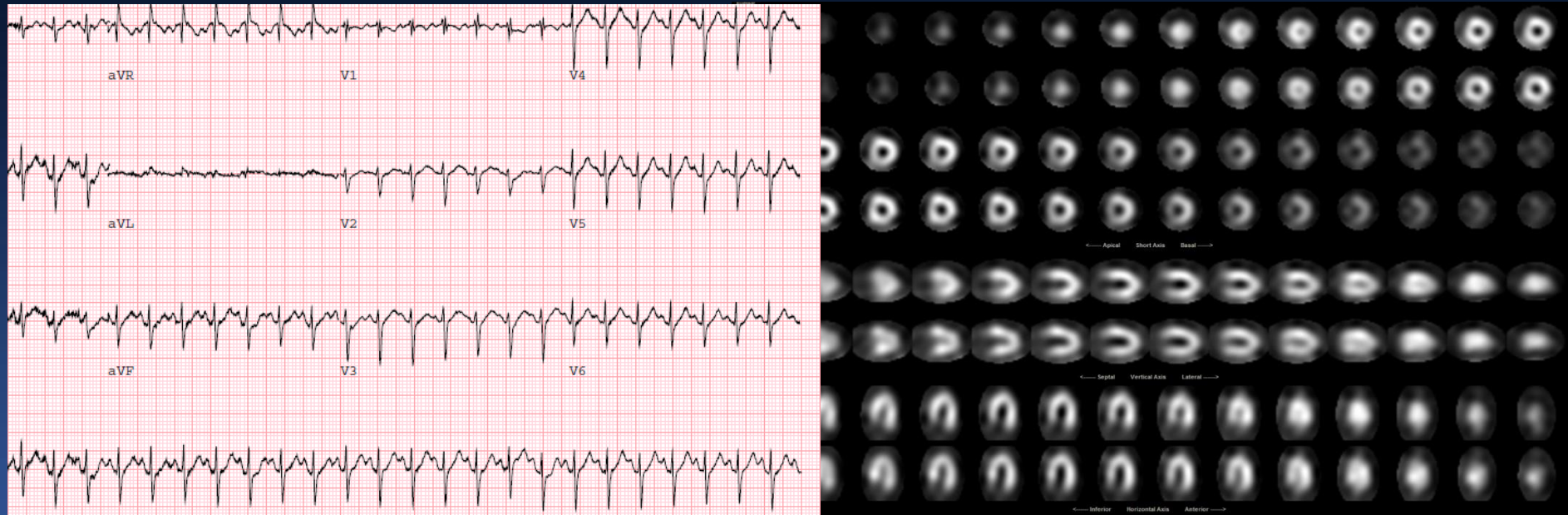
48/F, RCA CTO with Good Collateral

No Symptom

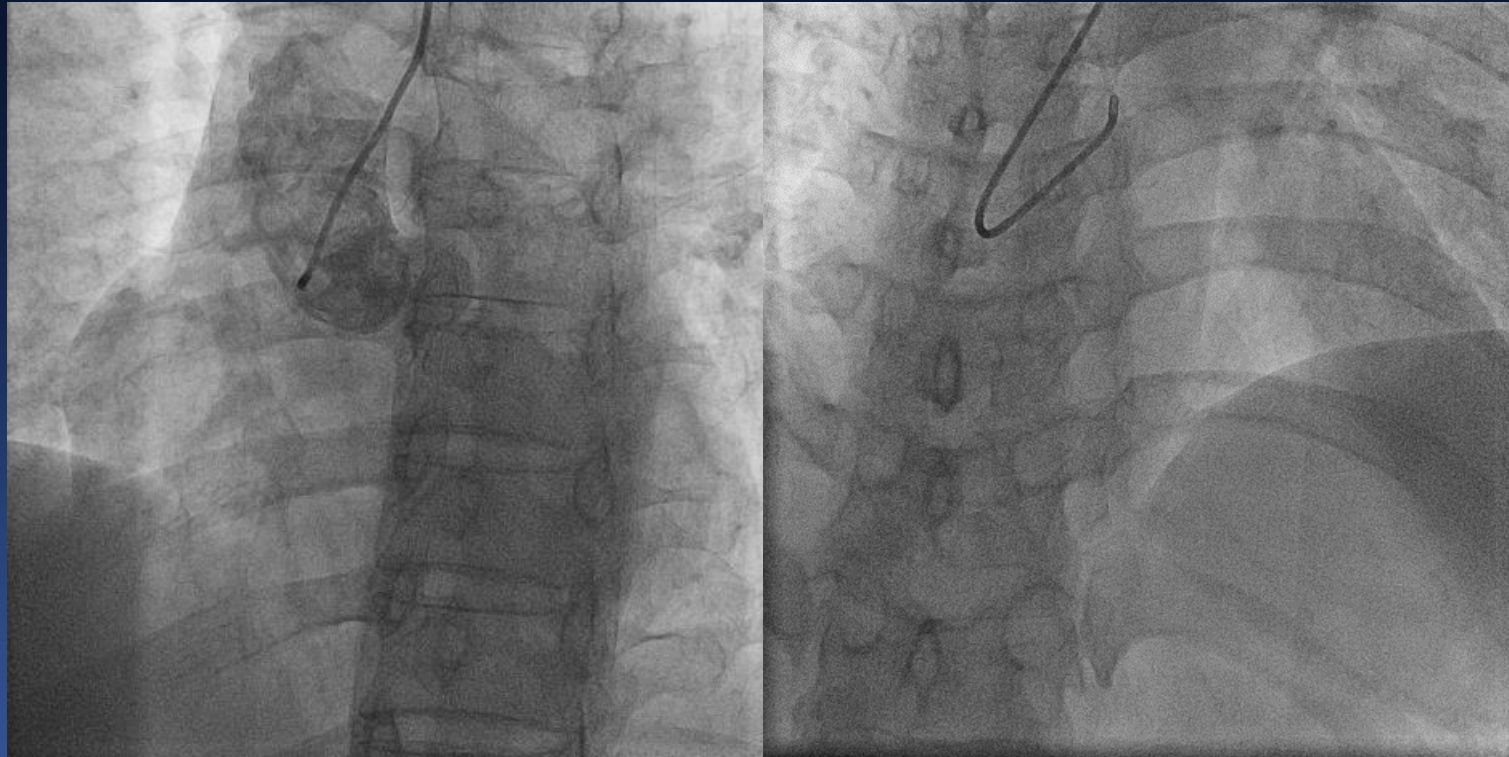


48/F, RCA CTO with Good Collateral

*No Symptom, Negative TMT
Normal Thallium Perfusion Scan,*

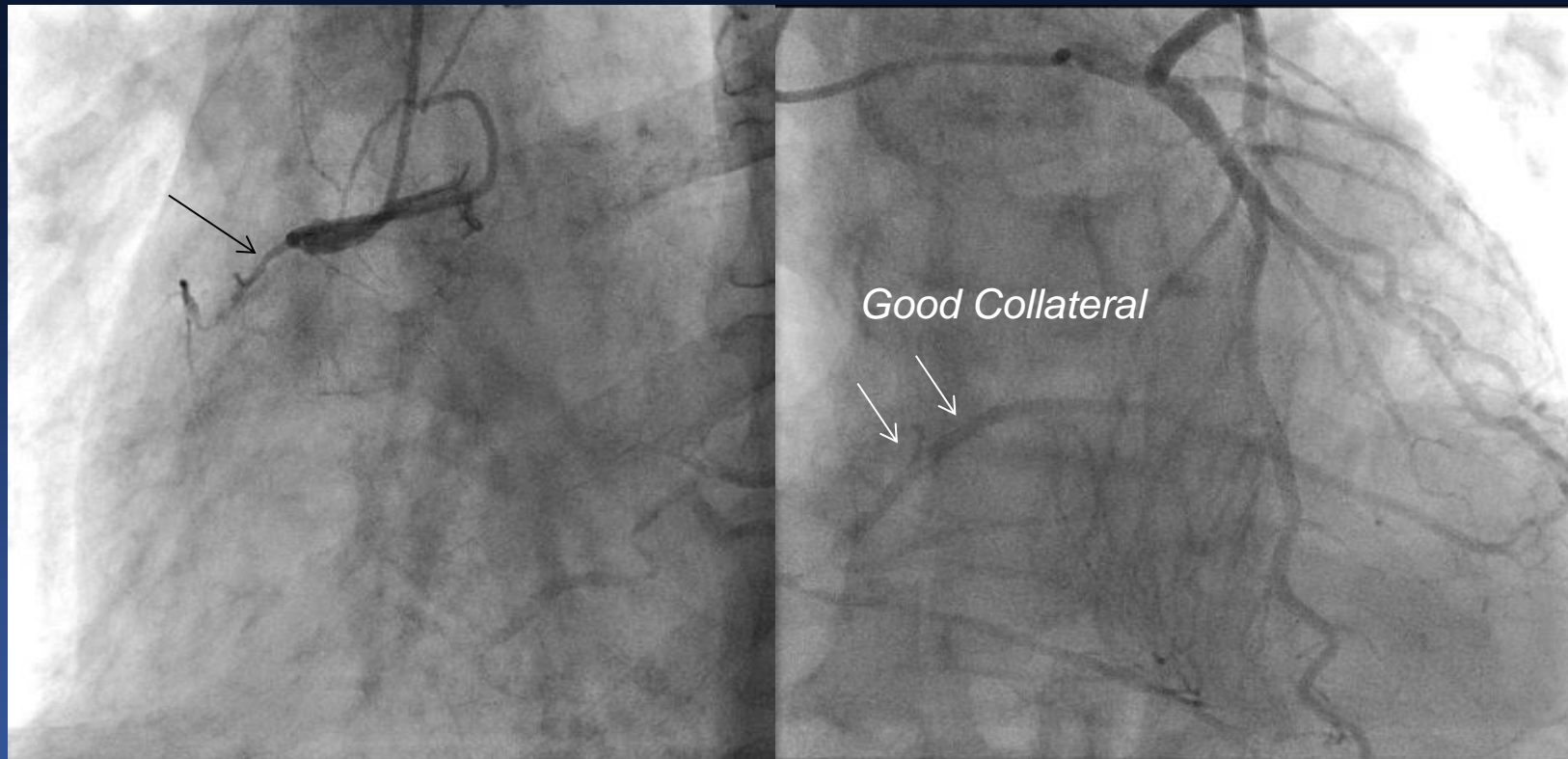


48/F, RCA CTO with Good Collateral
No Symptom, Negative TMT
Normal Thallium Perfusion Scan,



Do You Want to Open ?

75/M, RCA CTO with Good Collateral
No Symptom,
Medium Sized Reversible Ischemia,



75/M, RCA CTO with Good Collateral
*No Symptom,
Medium Sized Reversible Ischemia,
Negative TMT*



Do You Want to Open ?

Do You Still Want to Open ?

43/M, 48/F

No Symptom, No Ischemia

Good Exercise performance

75/M,

No Symptom, Small Ischemic Myocardium

Good Exercise Performance

PCI Classification

Cosmetic Angioplasty

Non-Viable,
Asymptomatic,
Small Ischemic
Myocardium,
FFR >0.80,
No Evidence of
Ischemia,

Symptomatic Angioplasty

For Angina
Relieve

Survival Angioplasty

Left Main and
3 Vessel-Disease

*For Large
Ischemic Burden*

Different Pathophysiologic Consideration of CTO Lesions

- 1. Various Ischemic Threshold
due to Various Collateral Circulation.**
- 2. No ruptures !
Clinically Stable.**

Improved **Quality of Life** ?

***They Are Already
Functionally Good Enough !***

Activities of Daily Life (% Peak VO_2) in CHF Patients and Healthy Subjects

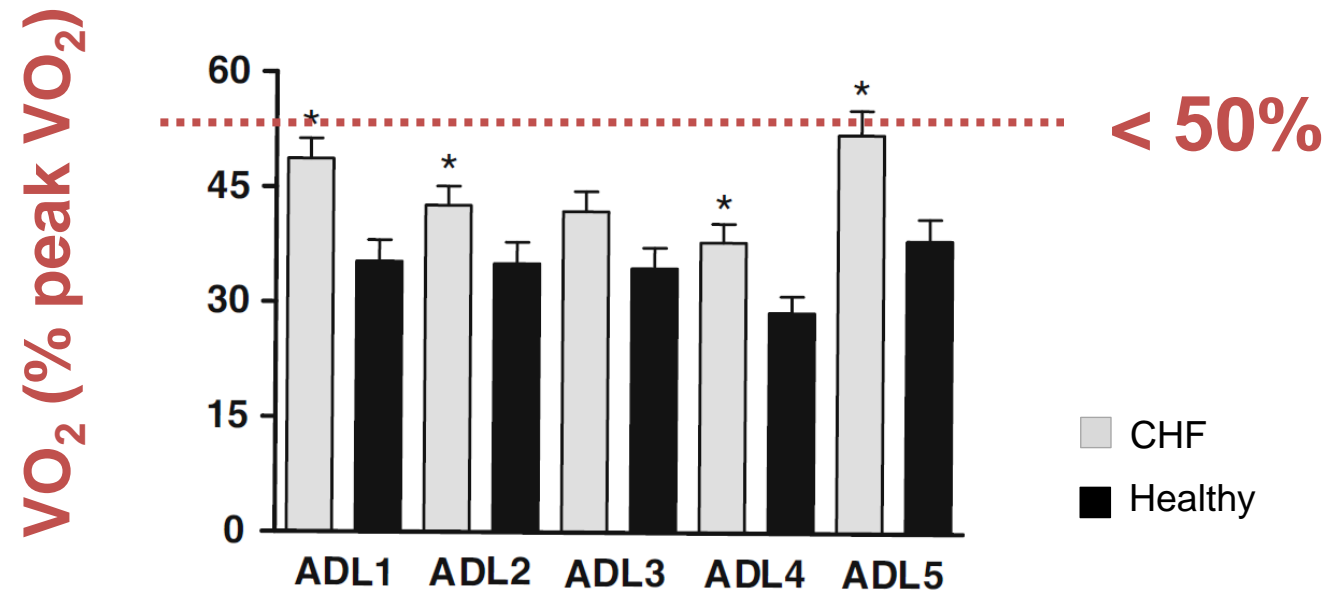
ADL1: putting on two socks, two shoes, and a vest

ADL2: folding eight towels

ADL3: putting away groceries in the cupboard

ADL4: washing up 4 dishes, 4 cups and 4 saucers

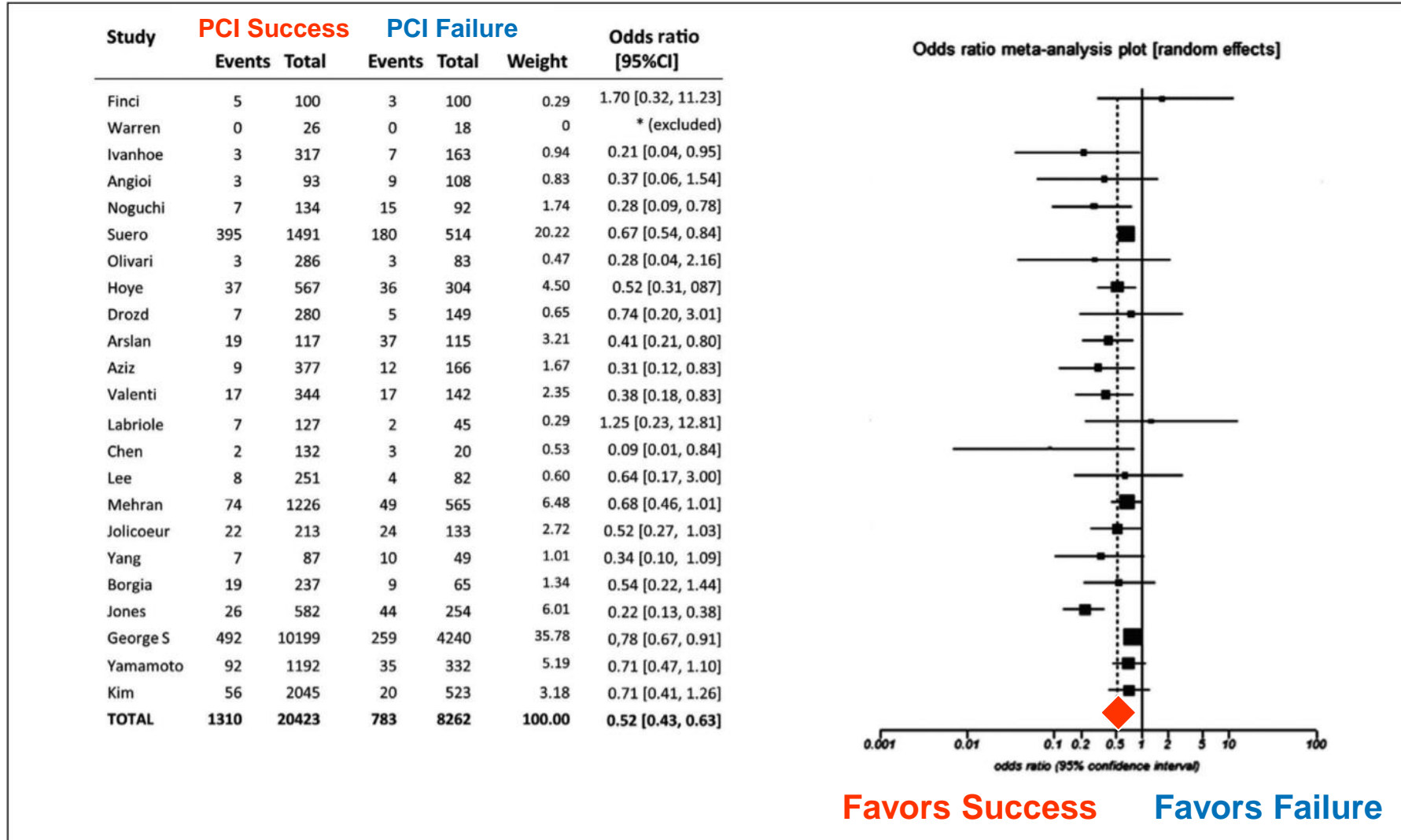
ADL5: sweeping the floor for 4 min



Survival Benefit ?

All-cause Mortality

Meta-analysis of CTO PCI (n=28,685)

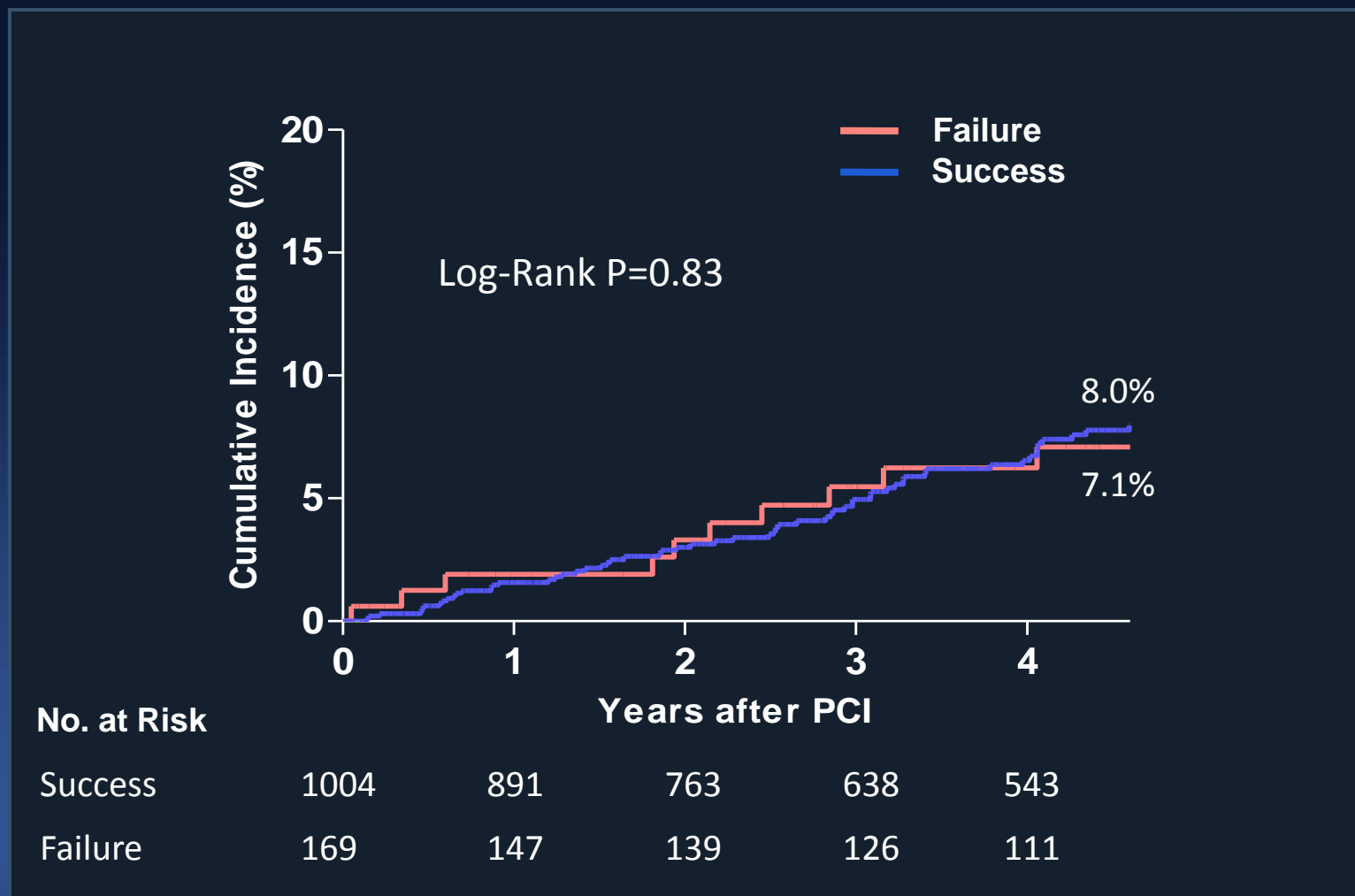


Survival Benefit ?

***Successful CTO PCI
vs. Failed PCI
All Biased Registry Data***

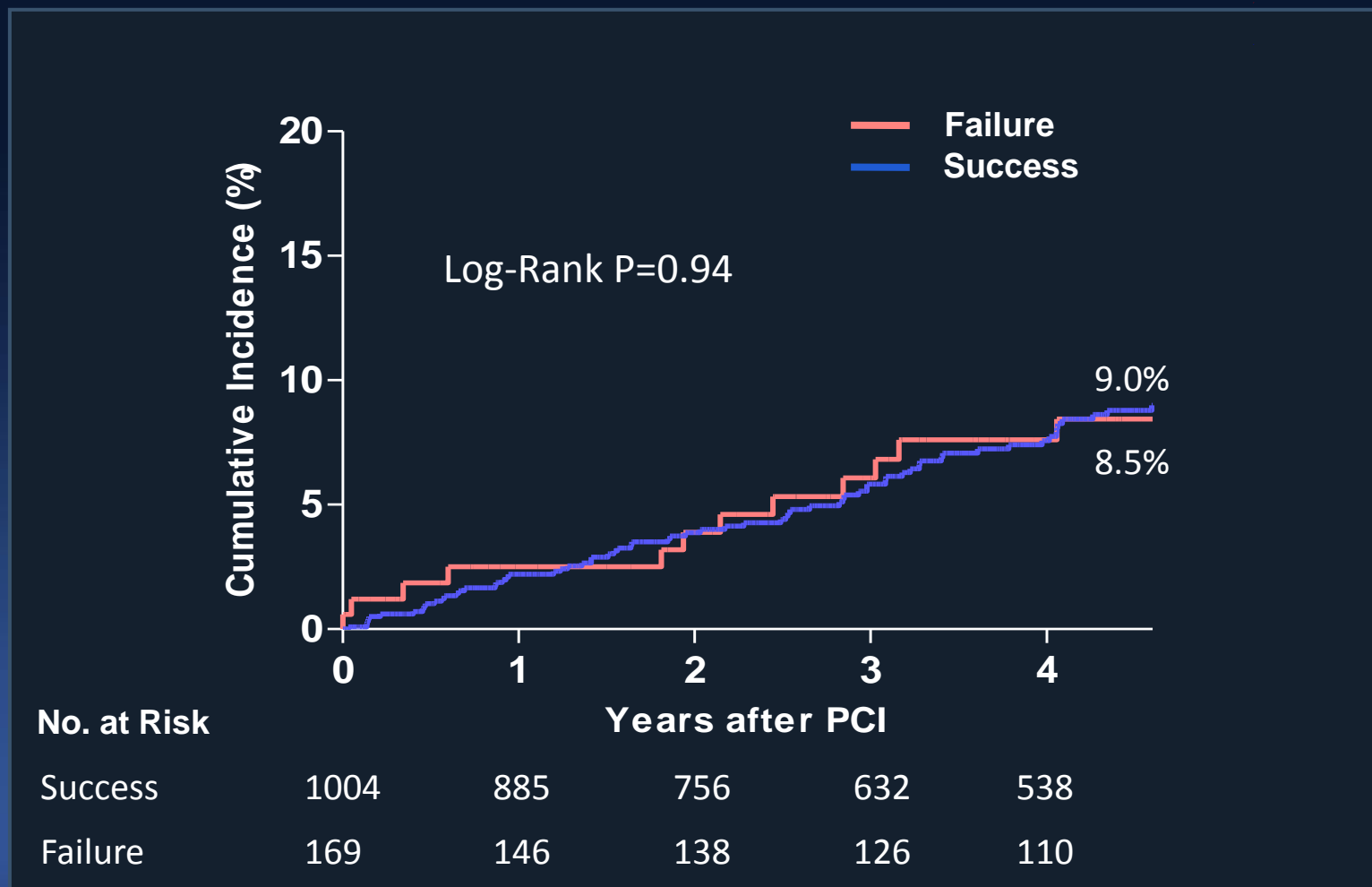
Unadjusted Kaplan-Meier Curve

Death

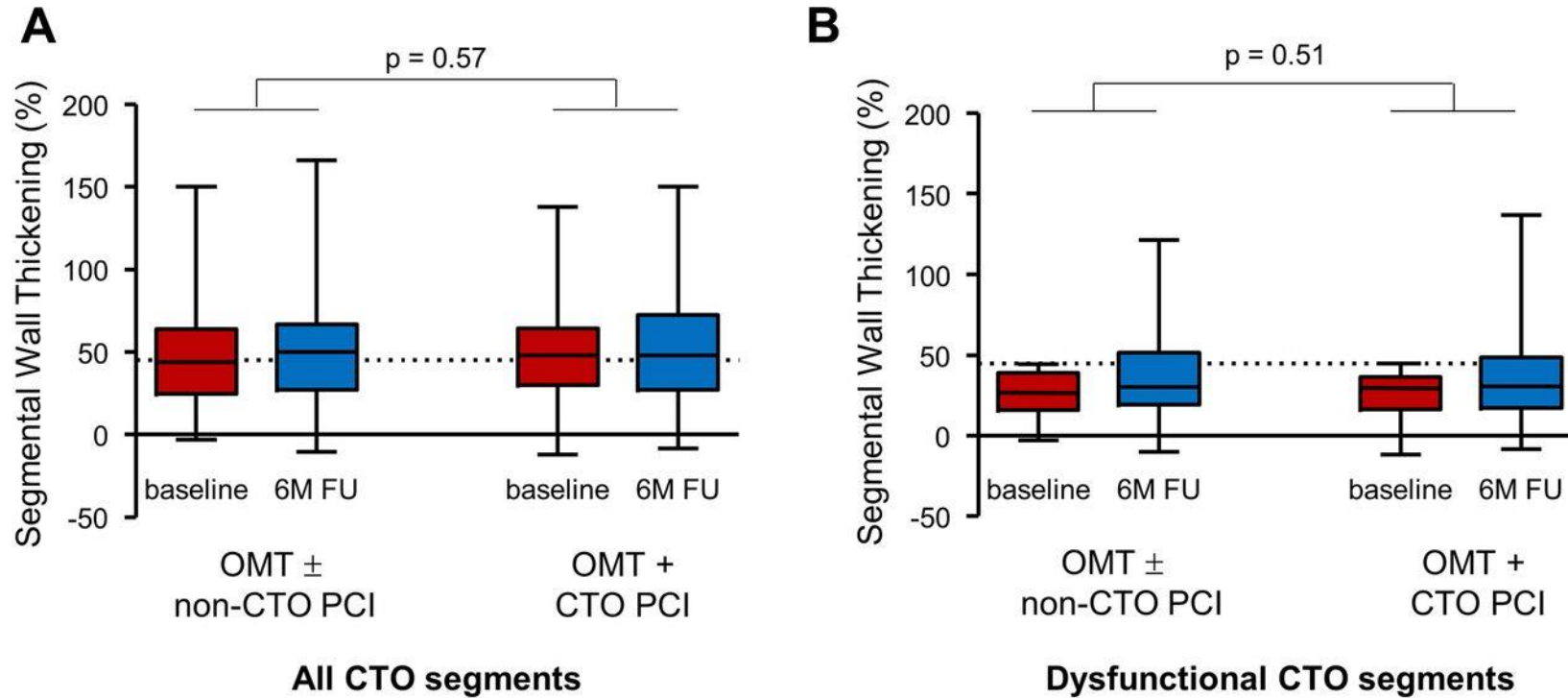


Unadjusted Kaplan-Meier Curve

Death or Q-wave MI



No Difference in Segmental Wall Thickness, Regional and Global LV function after CTO PCI

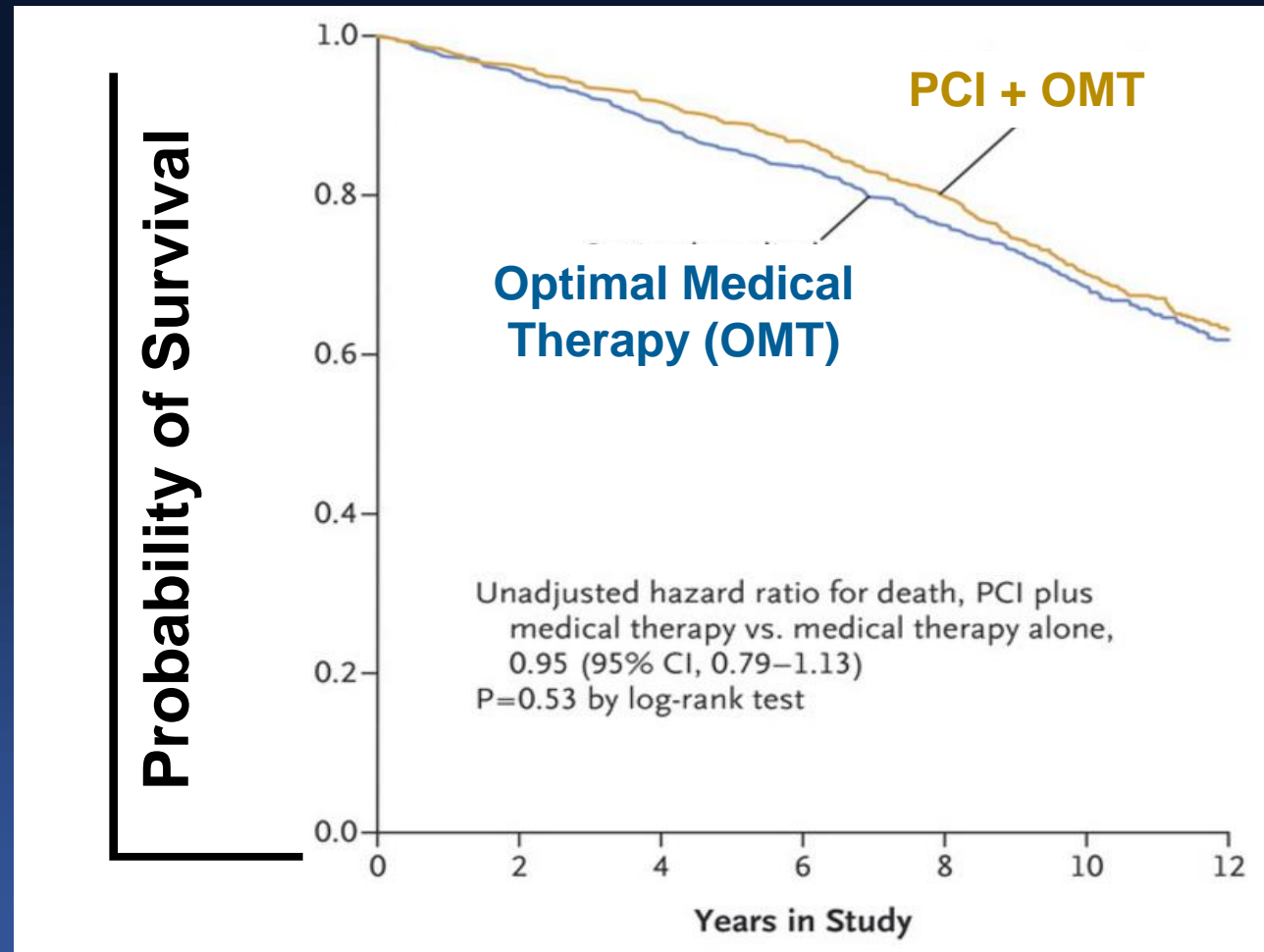


Kambis Mashayekhi et al. JGIN 2018;j.jcin.2018.05.041, A Randomized Trial to Assess Regional Left Ventricular Function After Stent Implantation in Chronic Total Occlusion. The REVASC Trial (n=205, MRI study)

Survival Benefit ?

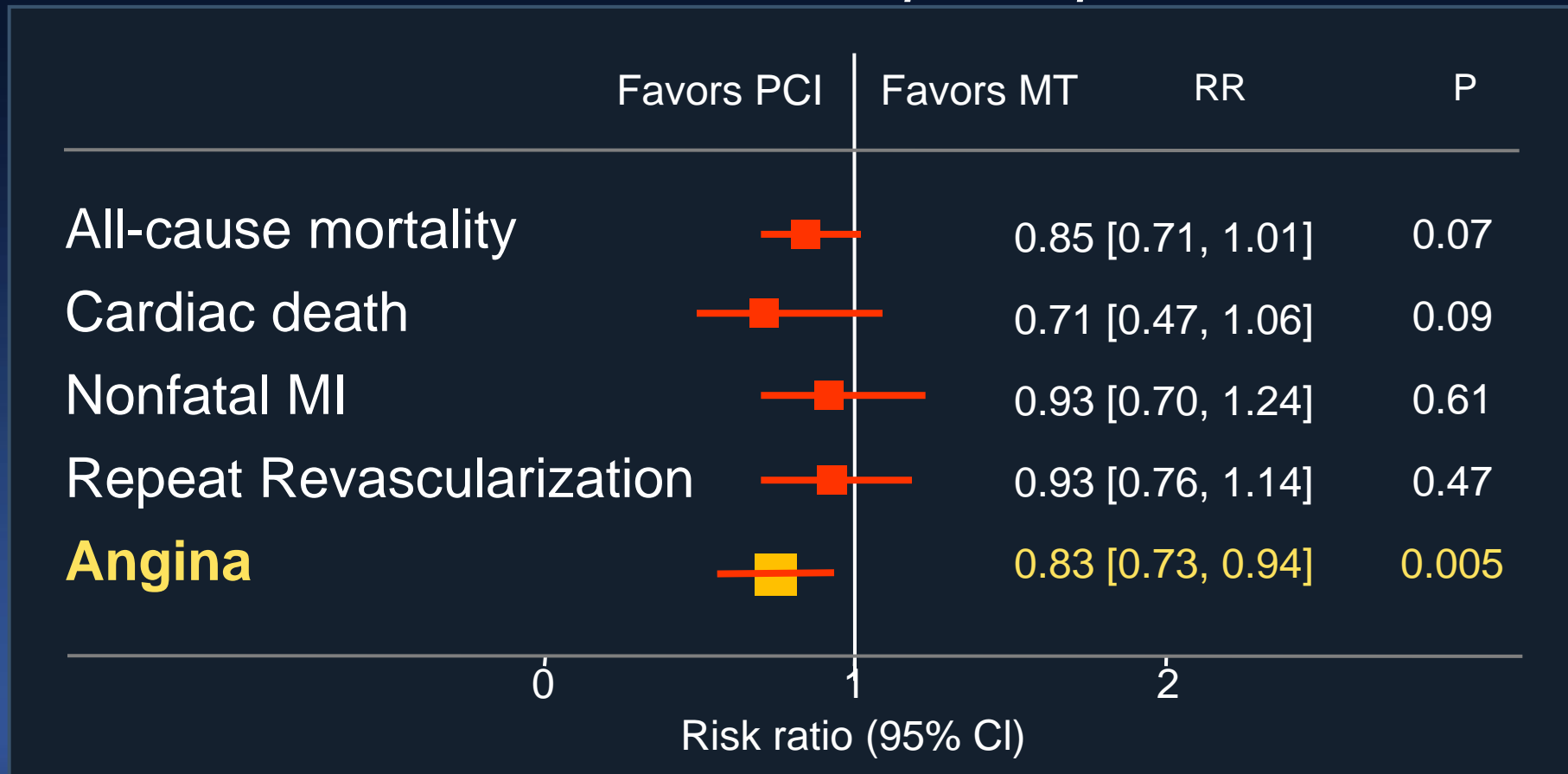
***Do You Believe
The Survival Benefit of CTO PCI
Is Different from Other PCIs ?***

COURAGE at 15 Years: No Survival Benefit for PCI



No Survival Benefit of PCI Over Medications in Stable Disease

12 RCTs, 7182 participants



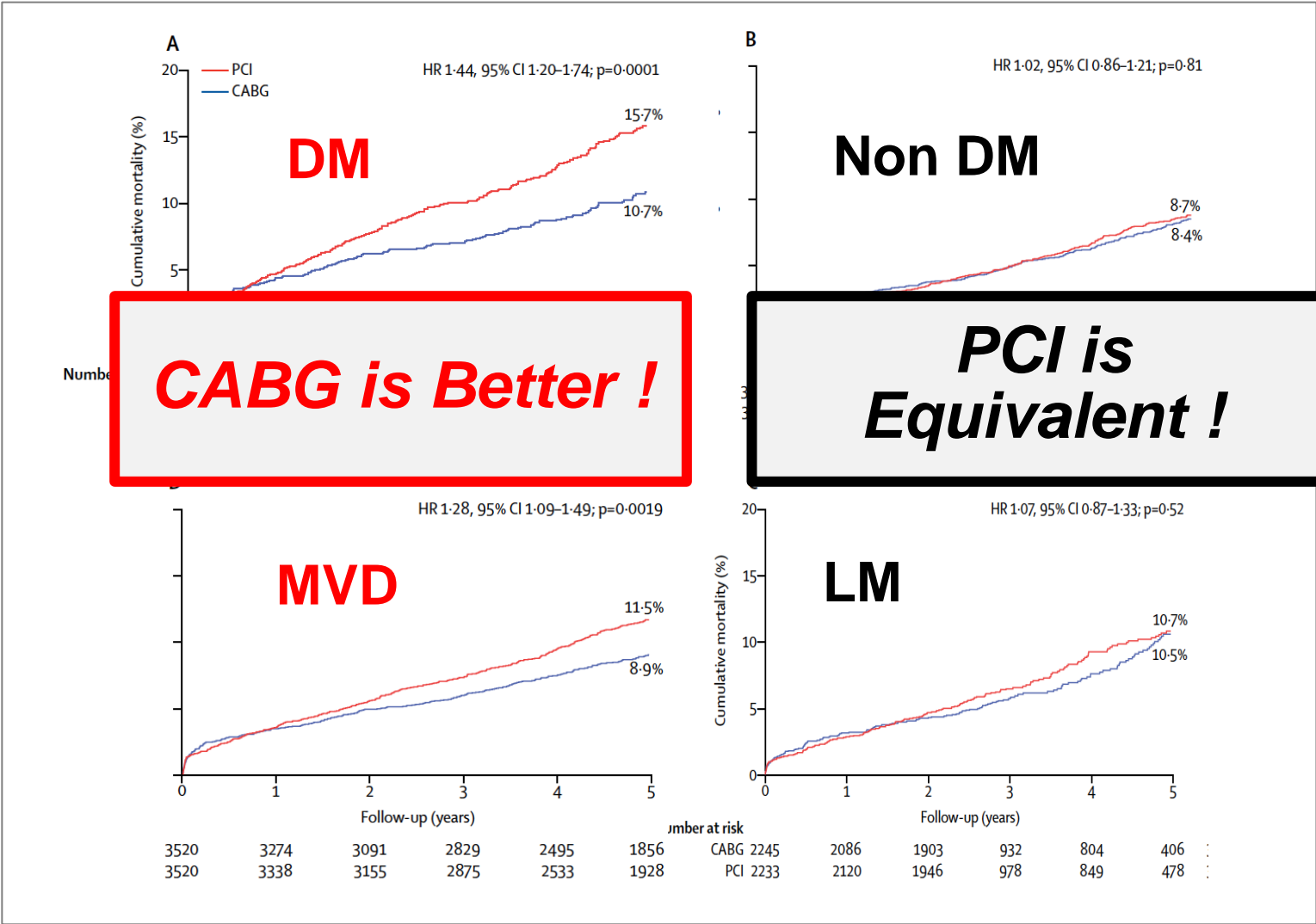
Survival Benefit ?
Of Any Single Vessel CTO PCI;

No Survival Benefit !

Survival Benefit ?
Of Multi-Vessel Disease
Revascularization

Survival Benefit !
CABG is Better !

Cumulative Mortality

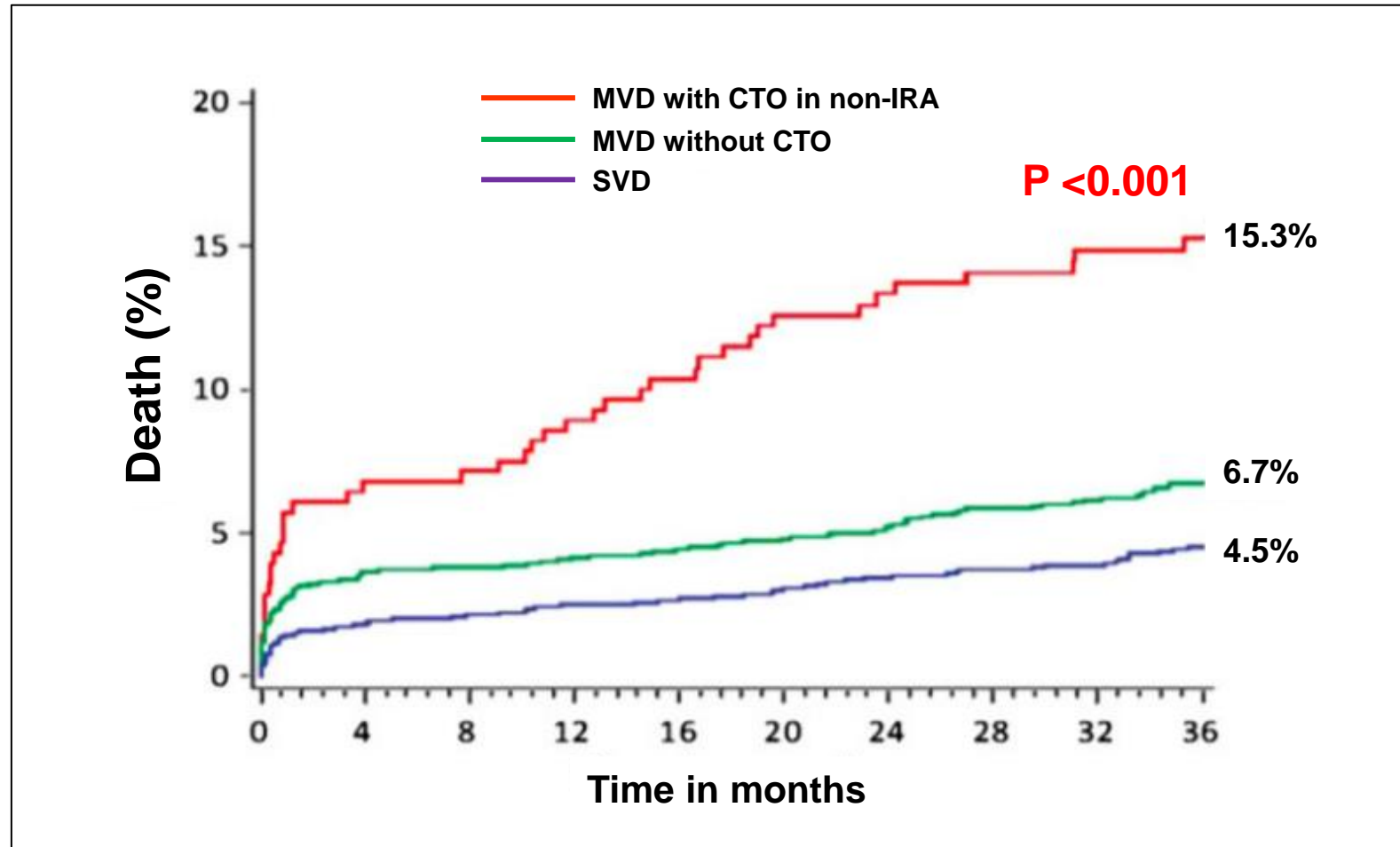


Head SJ et al. Lancet February 22, 2018 ; *Patient-level Meta-Analysis of 11,518 Patients with 11 RCTs (ERACI II, ARTS, MASS-II, SoS, SYNTAX, PRECOMBAT, FREEDOM, VA CARDS, BEST, NOBLE, and EXCEL)*

MVD with CTO lesion

Is It More Dangerous ?
Diseased Non-CTO vessel Should Supply Larger Ischemic Burden
including CTO Territory, and MVD with CTO lesion is More At Risk.

Higher Mortality in MVD with CTO



Multi-vessel Disease with CTO lesion

Case 1

**73/F, 3 VD with RCA CTO lesion
(SS 32, JCTO score 3)**

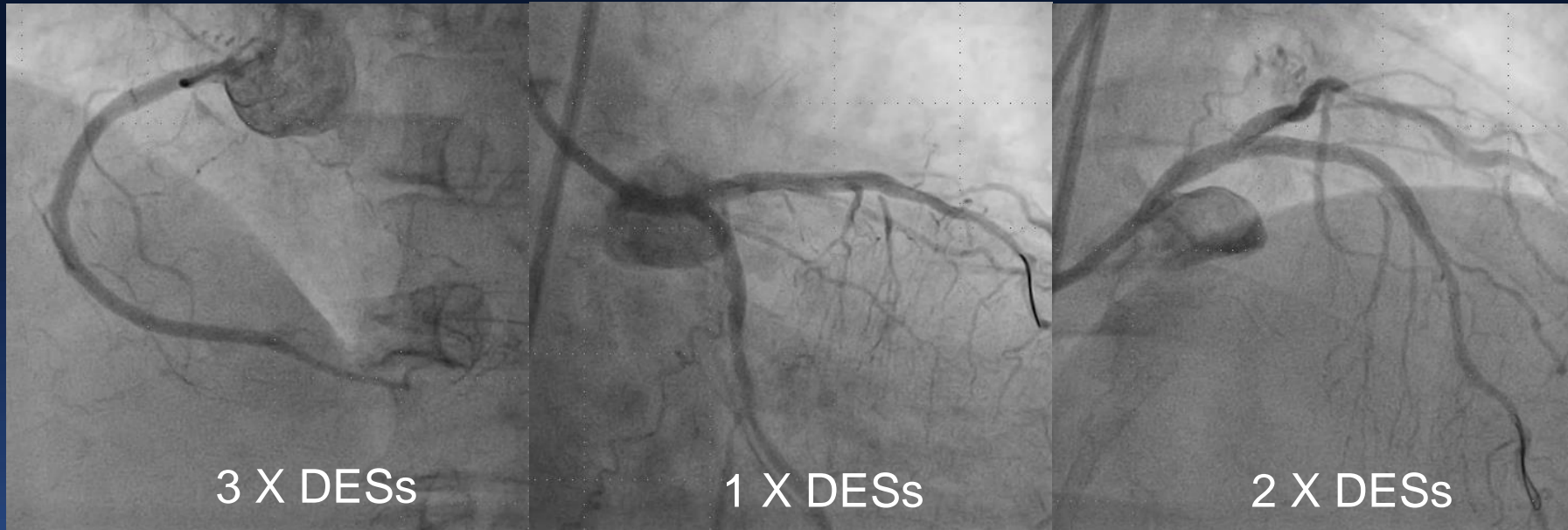


RCA CTO

*LCX disease,
RCA Collateral
from LAD and LCX*

LAD disease

What I Did



***Complete Revascularization
with Multiple DESs***

Case 2

**76/M, 3 VD with LAD CTO lesion
(High SS 33, JCTO score 3)**

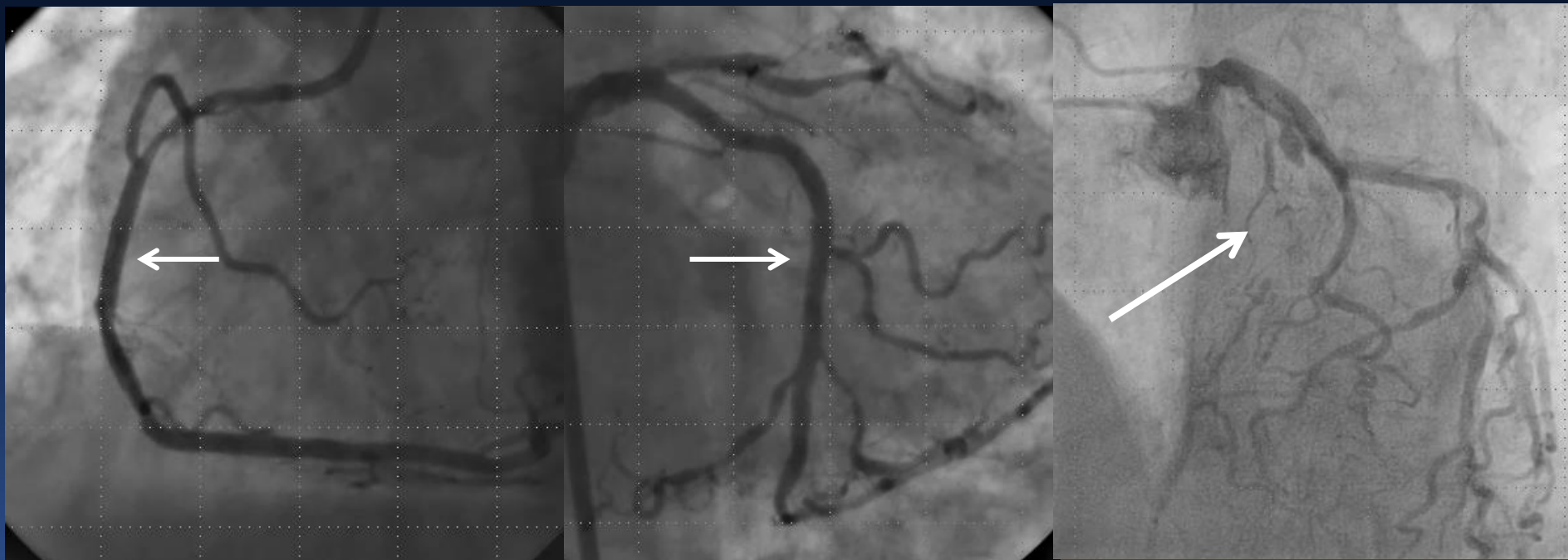


RCA 85%

LCX 90%

LAD CTO

What I Did



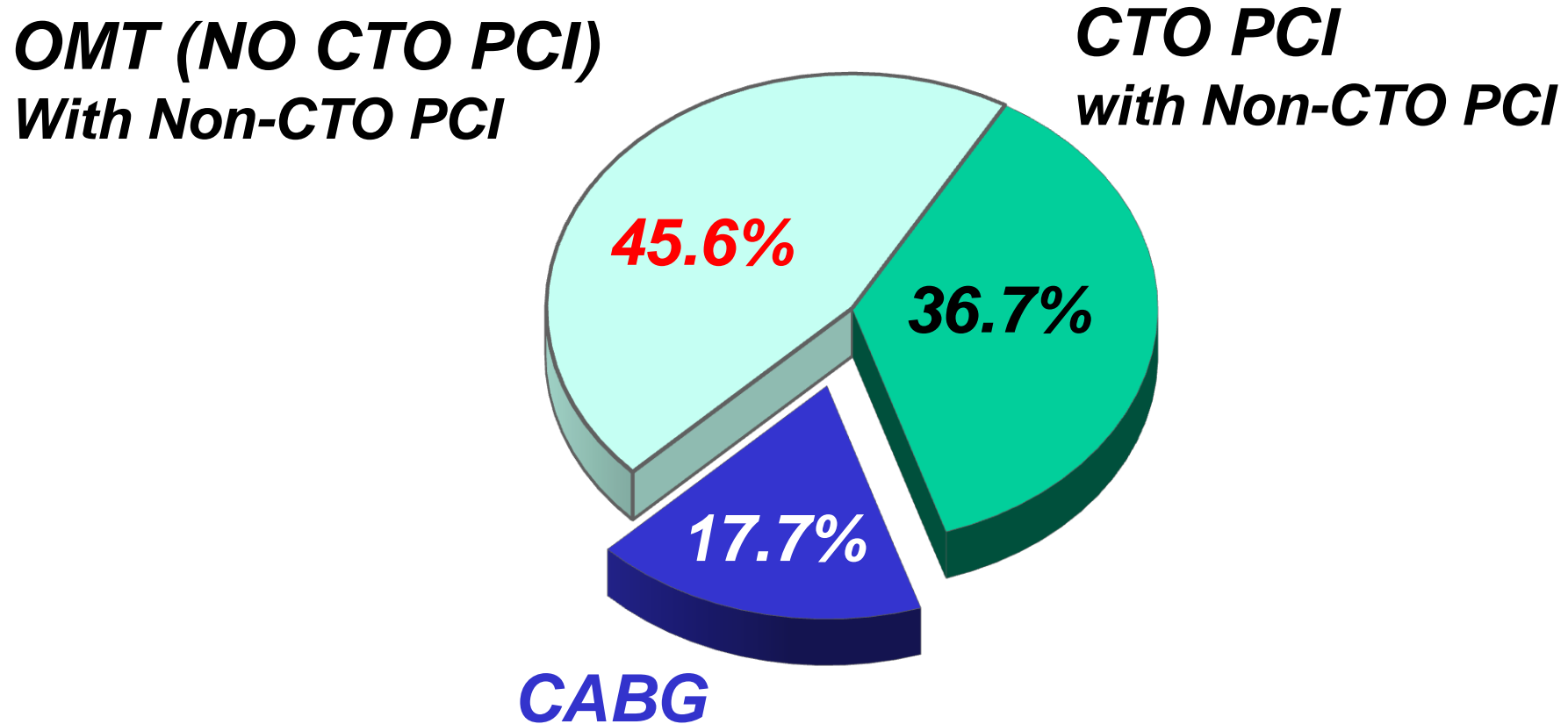
PCI for Non-CTO lesions

***OMT
for LAD CTO***

Treatment for MVD with CTO lesion

- 1. CABG**
- 2. CTO PCI with Non-CTO PCI*
- 3. OMT (No CTO PCI) with Non-CTO PCI*

Treatment for MVD with CTO lesion

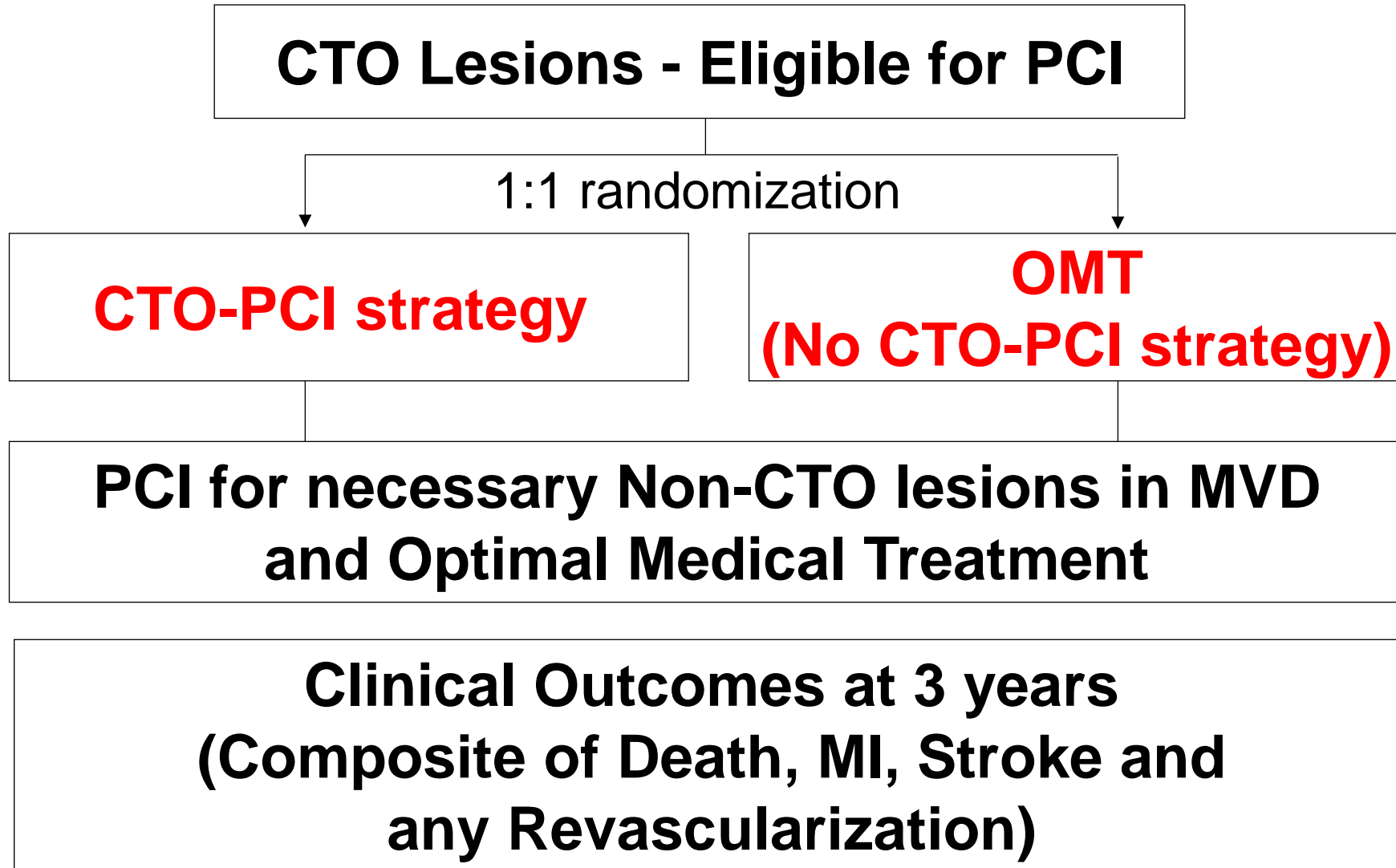


Preliminary Data from DECISION-CTO Registry (n=2,267)

DECISION CTO Study,

**COURAGE Like Randomized
Study for CTO Lesions.**

DECISION-CTO



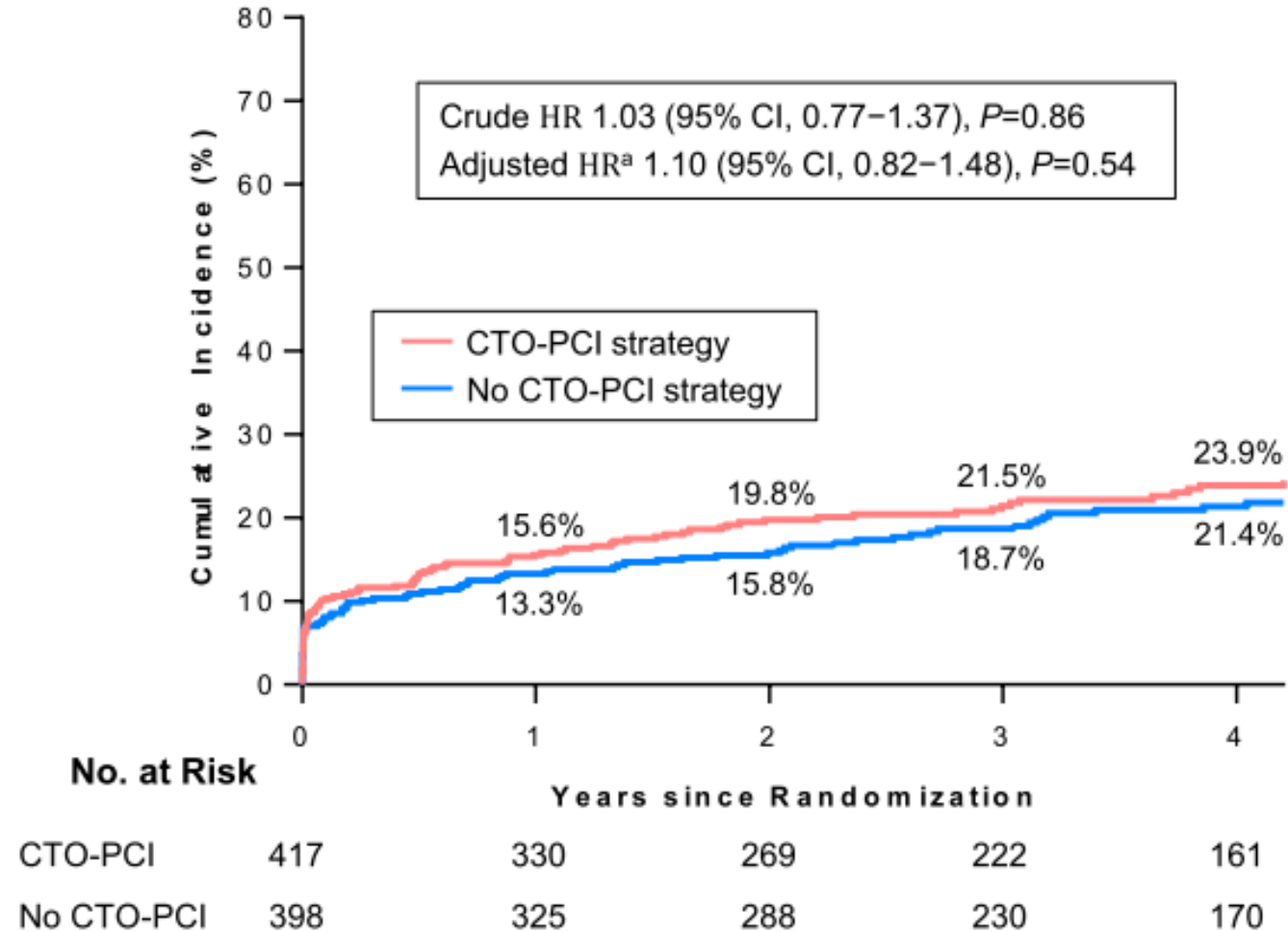
Baseline Characteristics

	OMT (N=398)	PCI (N=417)	P value
Age (years)	62.9±9.9	62.2±10.2	0.35
Male sex	315 (81.4%)	342 (83.2%)	0.50
BMI, kg/m²	25.4±3.3	25.6±3.6	0.66
Hypertension	235 (60.7%)	261 (63.5%)	0.50
Diabetes mellitus	133 (34.4%)	132 (32.1%)	
Hypercholesterolemia	215 (55.6%)	248 (60.3%)	0.17
Current smoker	102 (26.4%)	125 (30.4%)	0.20
Previous PCI	74 (19.1%)	62 (15.1%)	0.13
Previous MI	34 (8.8%)	45 (10.9%)	0.31
Previous CABG	5 (1.3%)	4 (1.0%)	0.75
Chronic renal failure	5 (1.3%)	6 (1.5%)	0.84
LVEF, %	57.2±9.4%	57.2±9.8%	0.95

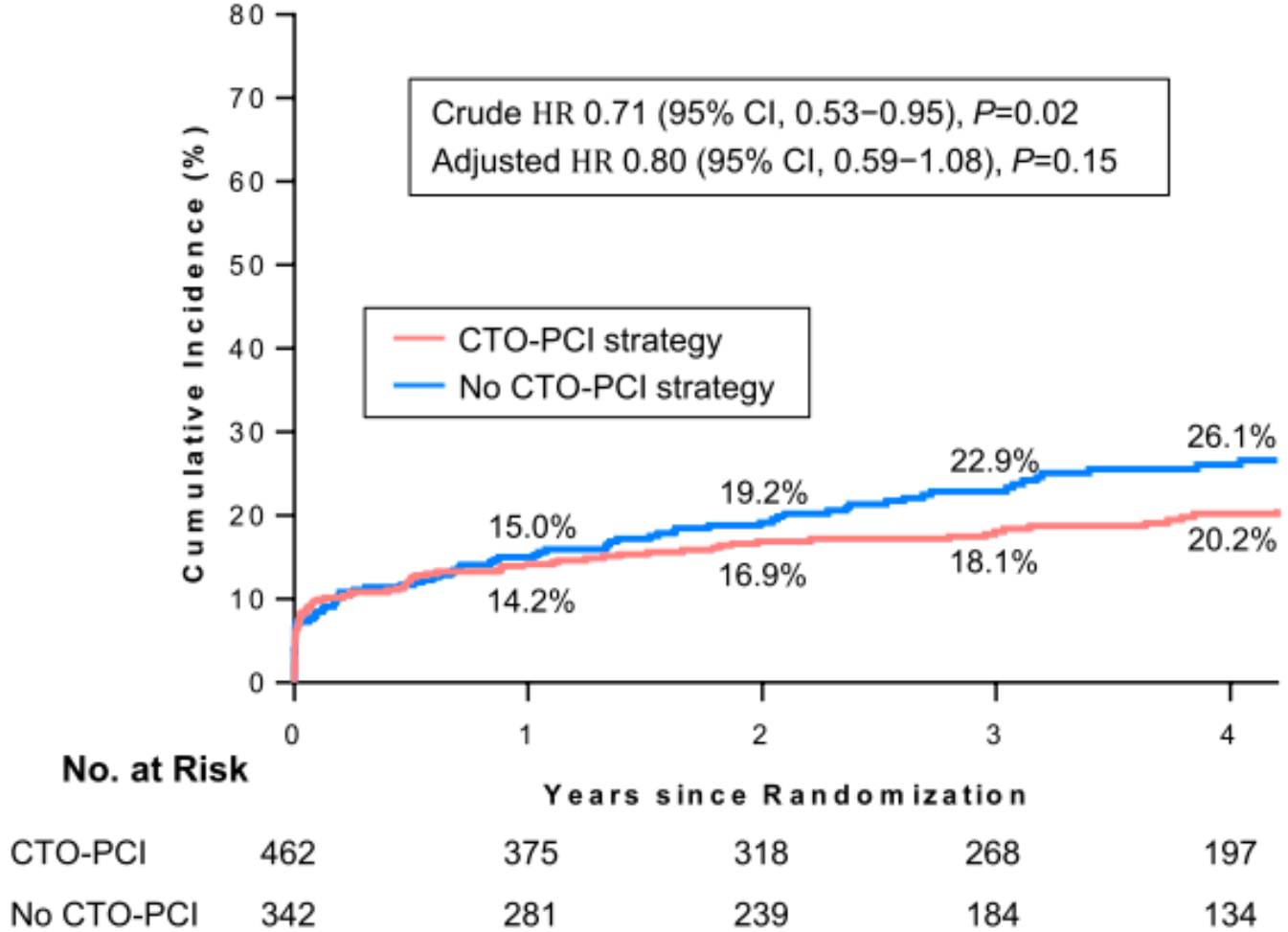
Baseline Characteristics

	OMT (N=398)	PCI (N=417)	P value
Clinical presentation			0.58
Stable angina	290 (74.9%)	297 (72.3%)	
Unstable angina	75 (19.4%)	84 (20.4%)	
AMI	22 (5.7%)	30 (7.3%)	
Location of CTO			0.71
LAD	161 (41.6%)	183 (44.5%)	
LCX	42 (10.9%)	40 (10.2%)	
RCA	184 (47.5%)	186 (45.3%)	
Multi-vessel disease	286 (73.9%)	301 (73.3%)	0.76
SYNTAX score	21.0±9.5	21.2±9.1	0.79
J-CTO score	2.3±1.2	2.2±1.2	0.23
Number of total stents	2.0±1.4	2.4±1.3	<0.001
Total stent length, mm	53.6±39.4	71.2±40.5	<0.001

Primary End Point (Death, MI, Stroke, Any Revascularization)

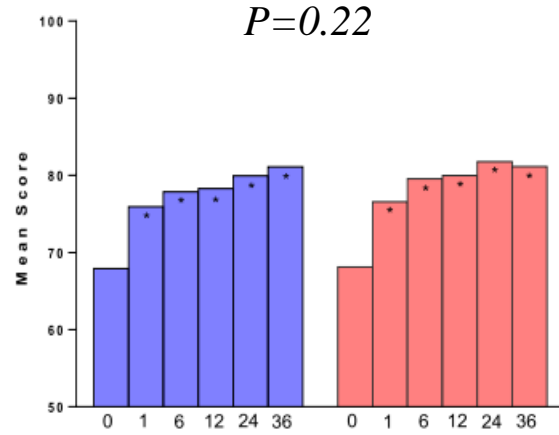


Primary End Point (Death, MI, Stroke, Any Revascularization)

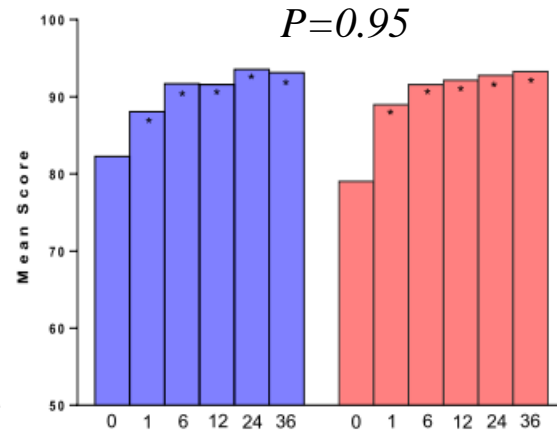


Quality of Life Measures Over Time

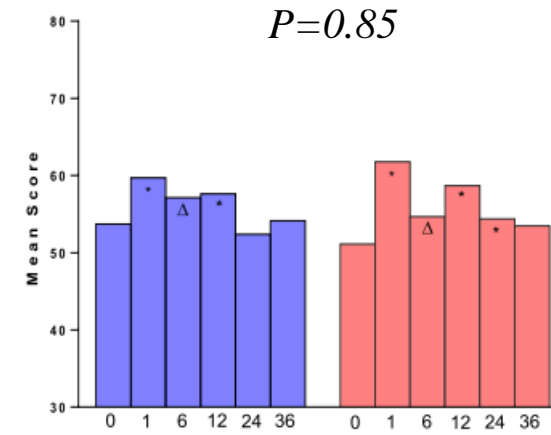
EQ-5D Visual Analogue Scale



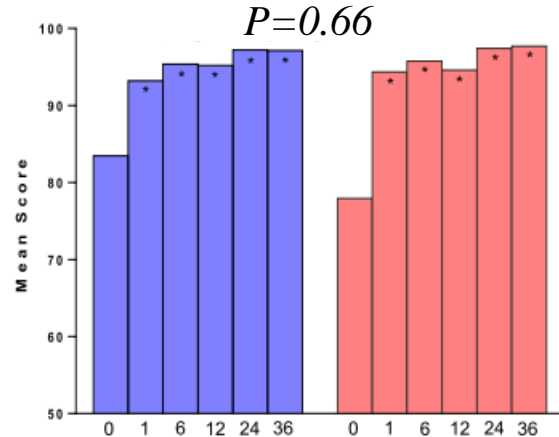
SAQ, Physical Limitation



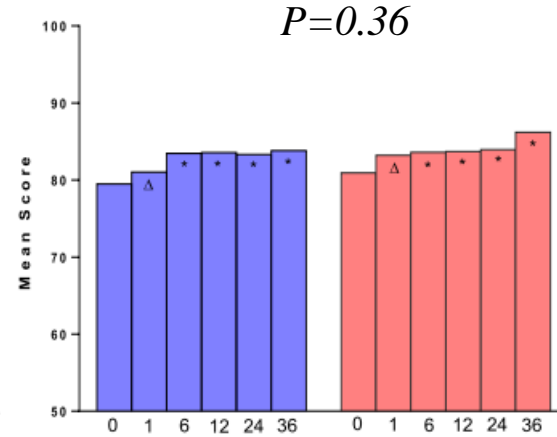
SAQ, Angina Stability



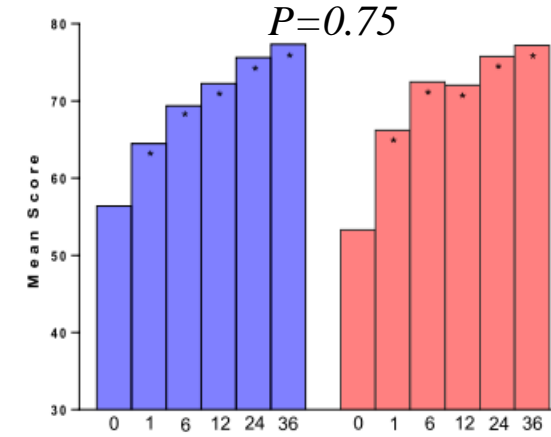
SAQ, Angina Frequency



SAQ, Treatment Satisfaction



SAQ, Quality of Life

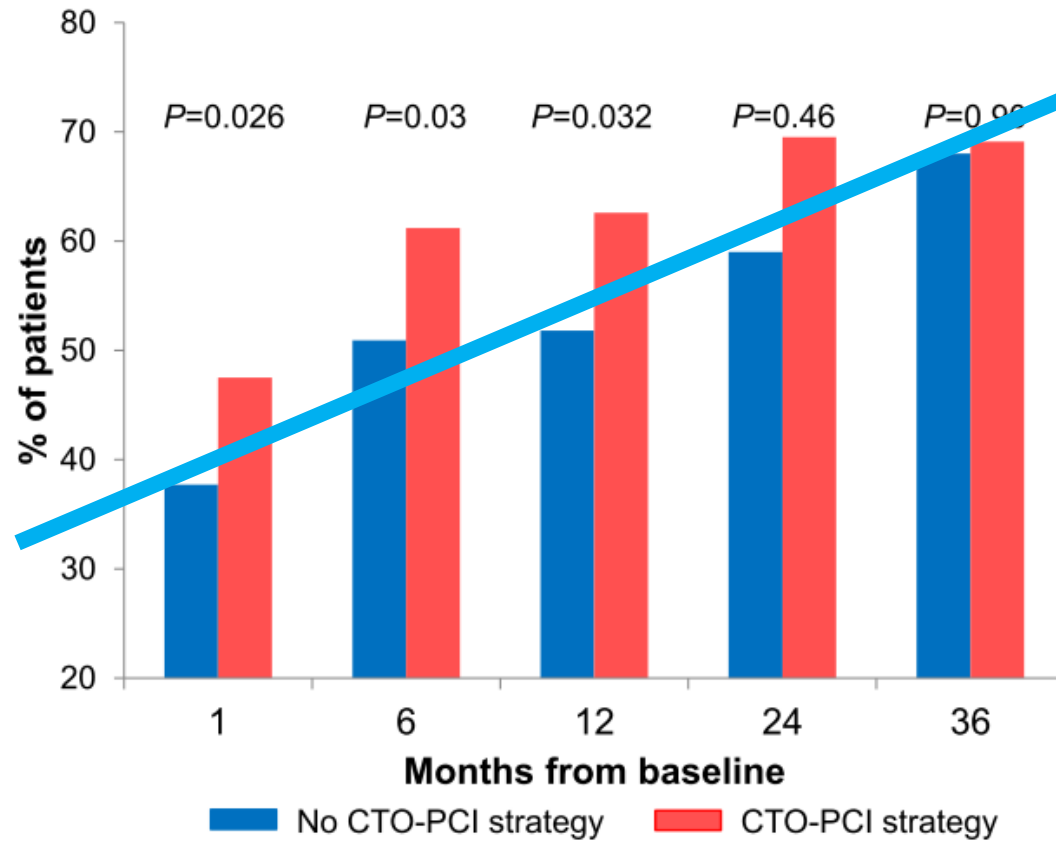


■ No CTO-PCI strategy
 ■ CTO-PCI strategy

P values are for Treatment*Time

Clinically Meaningful Improvements

SAQ-Quality of Life



Late Catch-up ?
Placebo effect ?

Practical Message from DECISION CTO Study

- 1. Single Vessel CTO ;**
Optimal Medical Treatment (OMT) Is
Mostly Safe and Effective.
- 2. MVD with CTO lesion :**
Non-CTO lesion PCI with OMT Would be
An Effective Alternative for those Patients.

***Where Is the Benefit
CTO PCI ?***

Symptomatic

The background of the image is a monochromatic blue landscape. It features several layers of rolling hills and mountains, each covered in dense evergreen forests. The hills in the foreground are darker blue, while the ones in the distance become progressively lighter and more hazy, creating a sense of depth. The sky is a pale, clear blue. Centered in the upper half of the image is the text "Thank You !!".

Thank You !!

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