

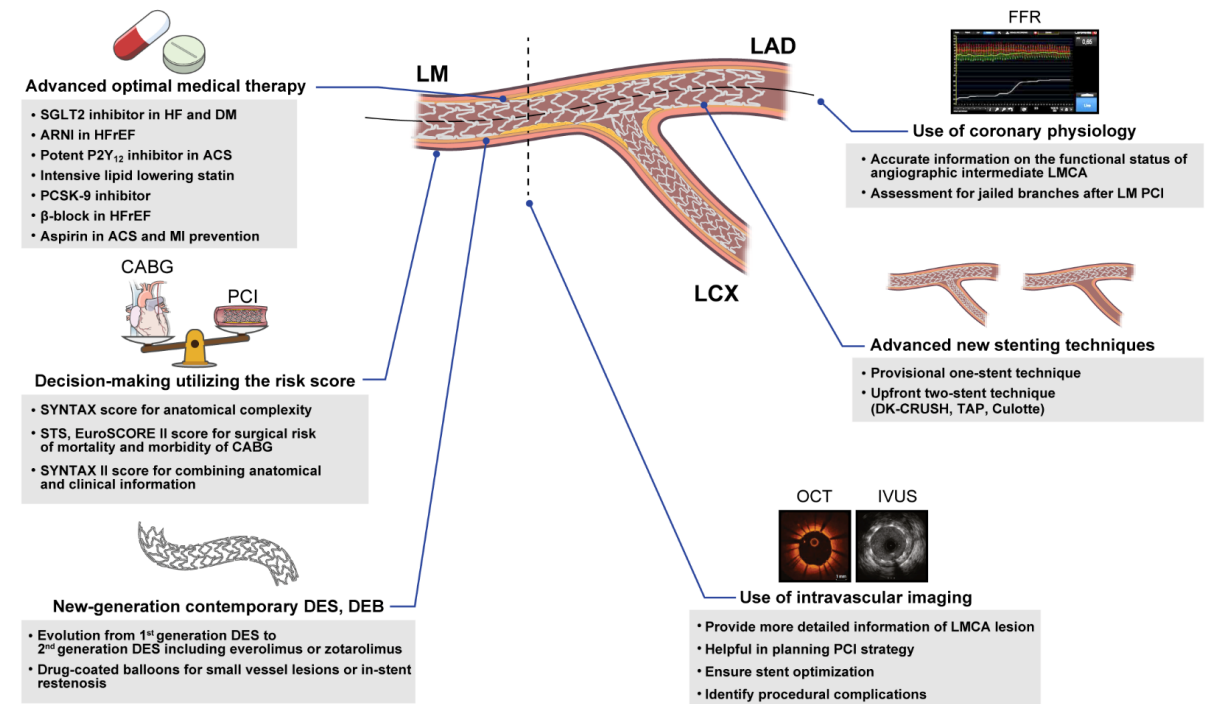
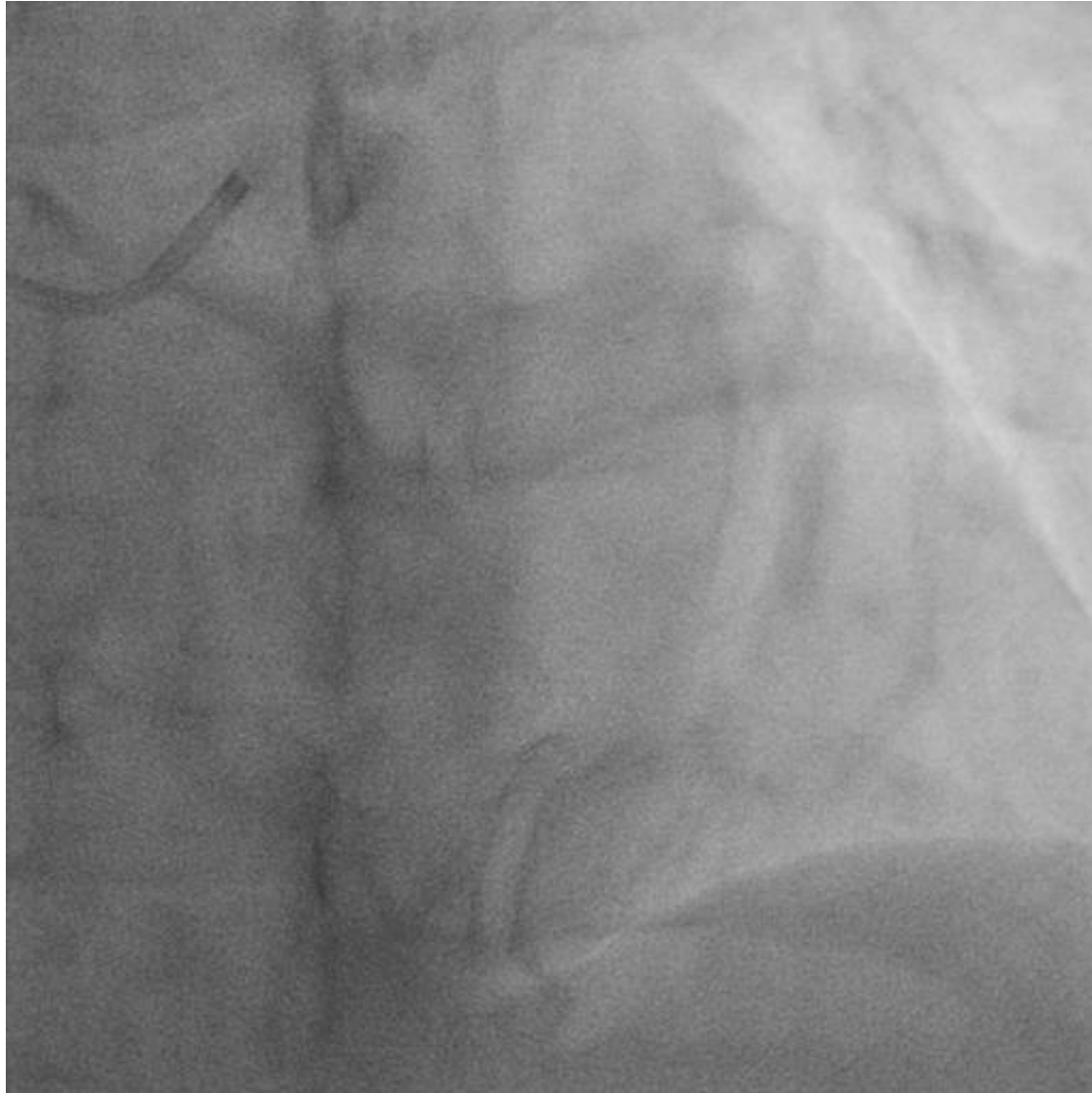
OCT vs. IVUS in True Bifurcation PCI: Analysis From the OCTIVUS Trial

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Disclosure

- I have nothing to disclose.

Complex True Bifurcation

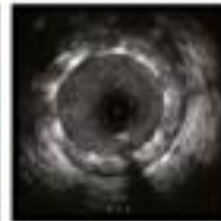


Complex True Bifurcation

OCT

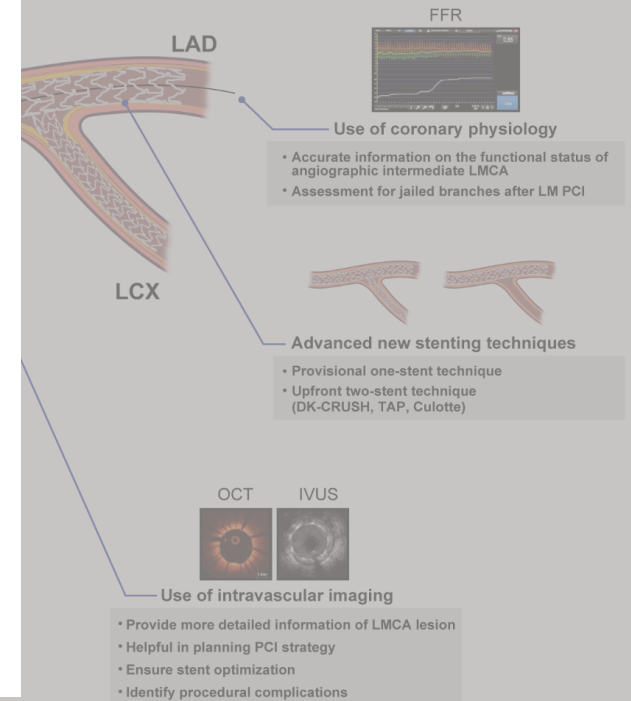


IVUS



Use of intravascular imaging

- Provide more detailed information of LMCA lesion
- Helpful in planning PCI strategy
- Ensure stent optimization
- Identify procedural complications



Current Guideline for PCI at True Bifurcation

Recommendations for Use of Intravascular Imaging
Referenced studies that support the recommendations are summarized in [Online Data Supplement 25](#).

2021 ACC/AHA/SCAI Guideline

COR	LOE	RECOMMENDATIONS
2a	B-R	1. In patients undergoing coronary stent implantation, IVUS can be useful for procedural guidance, particularly in cases of left main or complex coronary artery stenting, to reduce ischemic events (1-10).
2a	B-R	2. In patients undergoing coronary stent implantation, OCT is a reasonable alternative to IVUS for procedural guidance, except in ostial left main disease (11-13).
2a	C-LD	3. In patients with stent failure, IVUS or OCT is reasonable to determine the mechanism of stent failure (14-17).

2024 ESC/EACTS guideline

Recommendations for revascularization in patients with chronic coronary syndrome

Intracoronary imaging guidance by IVUS or OCT is recommended when performing PCI on anatomically complex lesions, in particular left main stem, true bifurcations, and long lesions.

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Vrints, Christiaan et al. "2024 ESC Guidelines for the management of chronic coronary syndromes." *European heart journal* vol. 45,36 (2024): 3415-3537.

Lawton JS et al. 2021 ACC/AHA/SCAI Guideline for Coronary Artery Revascularization. *Circulation*. 2022;145:e18-e114. doi: 10.1161/cir.0000000000001038

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2021 ACC/AHA/SCAI Guideline

2a	B-R
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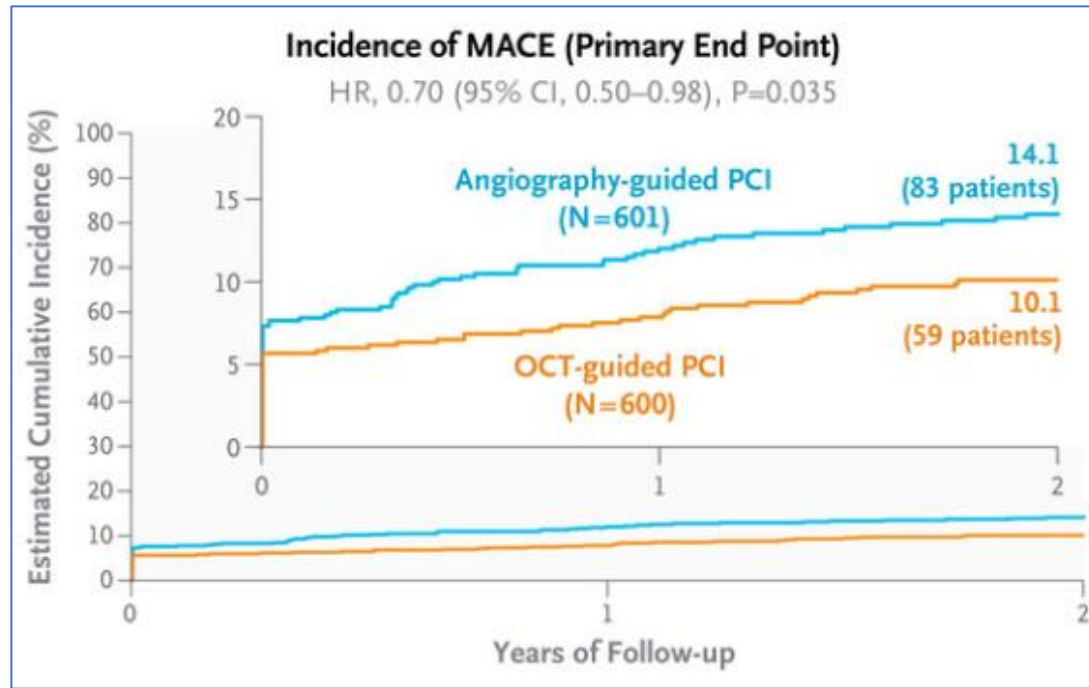
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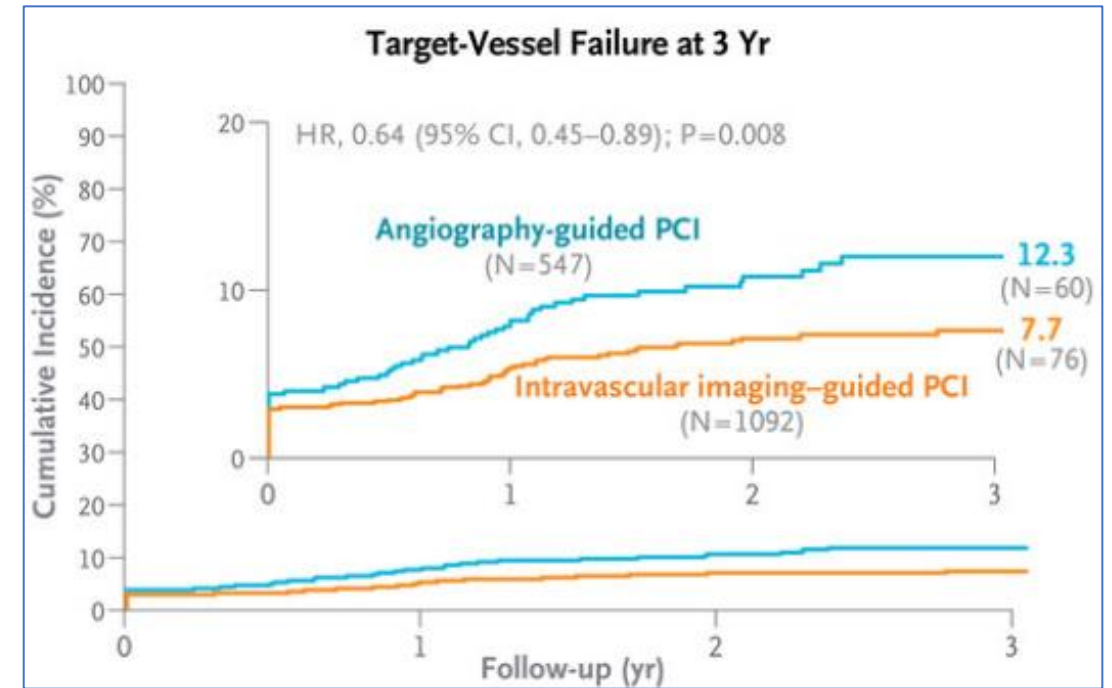
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Recent RCTs including True Bifurcation PCI

OCTOBER and RENOVATE-COMPLEX



OCTOBER



RENOVATE-COMPLEX

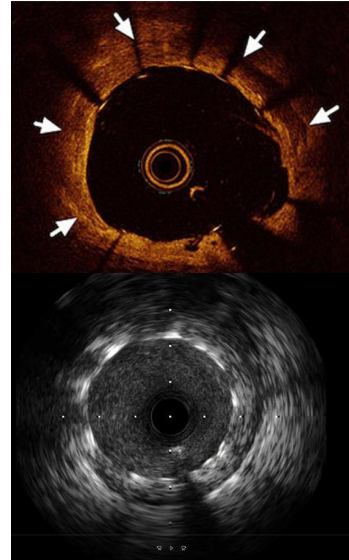
Lee JM et al. Intravascular Imaging-Guided or Angiography-Guided Complex PCI. *N Engl J Med.* 2023;388:1668-1679. doi: 10.1056/NEJMoa2216607

Holm NR et al. OCT or Angiography Guidance for PCI in Complex Bifurcation Lesions. *N Engl J Med.* 2023;389:1477-1487. doi: 10.1056/NEJMoa2307770

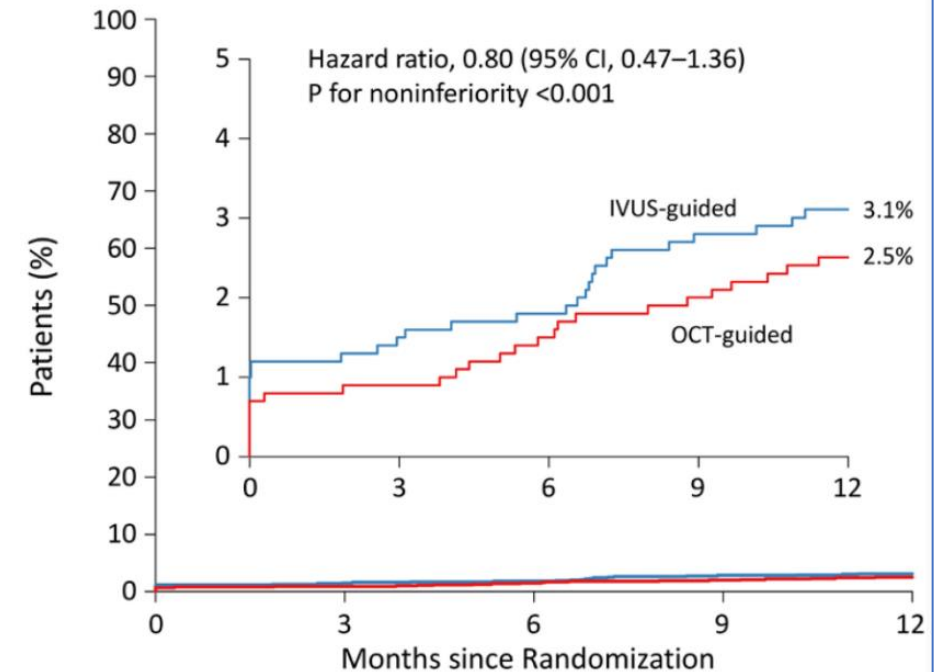
OCTIVUS trial

OCT vs IVUS

- **Design** : a multicenter, pragmatic, randomized controlled trial at 9 sites in South Korea
- **Objective** : comparing OCT and IVUS for PCI guidance in patients with **diverse coronary artery lesions**.
- **Method** : a total of 2008 patients were randomly assigned to OCT-guided PCI (n=1005) and IVUS-guided PCI (n=1003)
- **Primary end point** : a composite of death from cardiac causes, target-vessel myocardial infarction, or ischemia-driven target-vessel revascularization at 1 year.
- **Conclusion** : both OCT and IVUS can be used safely and effectively in the vast majority of procedures, demonstrating comparable acute and long-term outcomes.



Primary Endpoint



No. at Risk					
OCT-guided PCI	1005	990	984	979	912
IVUS-guided PCI	1003	985	981	969	893

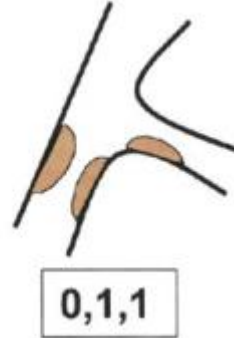
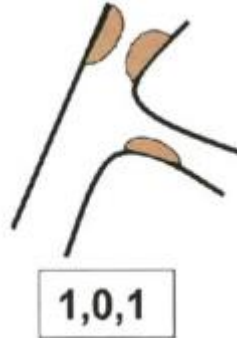
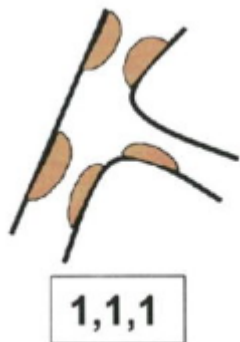
3.1% in IVUS vs. 2.5% OCT guided PCI at 1yr

METHOD

Inclusion criteria : True bifurcation

- True Bifurcation

- ✓ Main branch with a side branch of at least 2.5 mm
- ✓ Stenosis of at least 50% by visual estimation
- ✓ Medina classification (1,1,1) (1,0,1) (0,1,1)

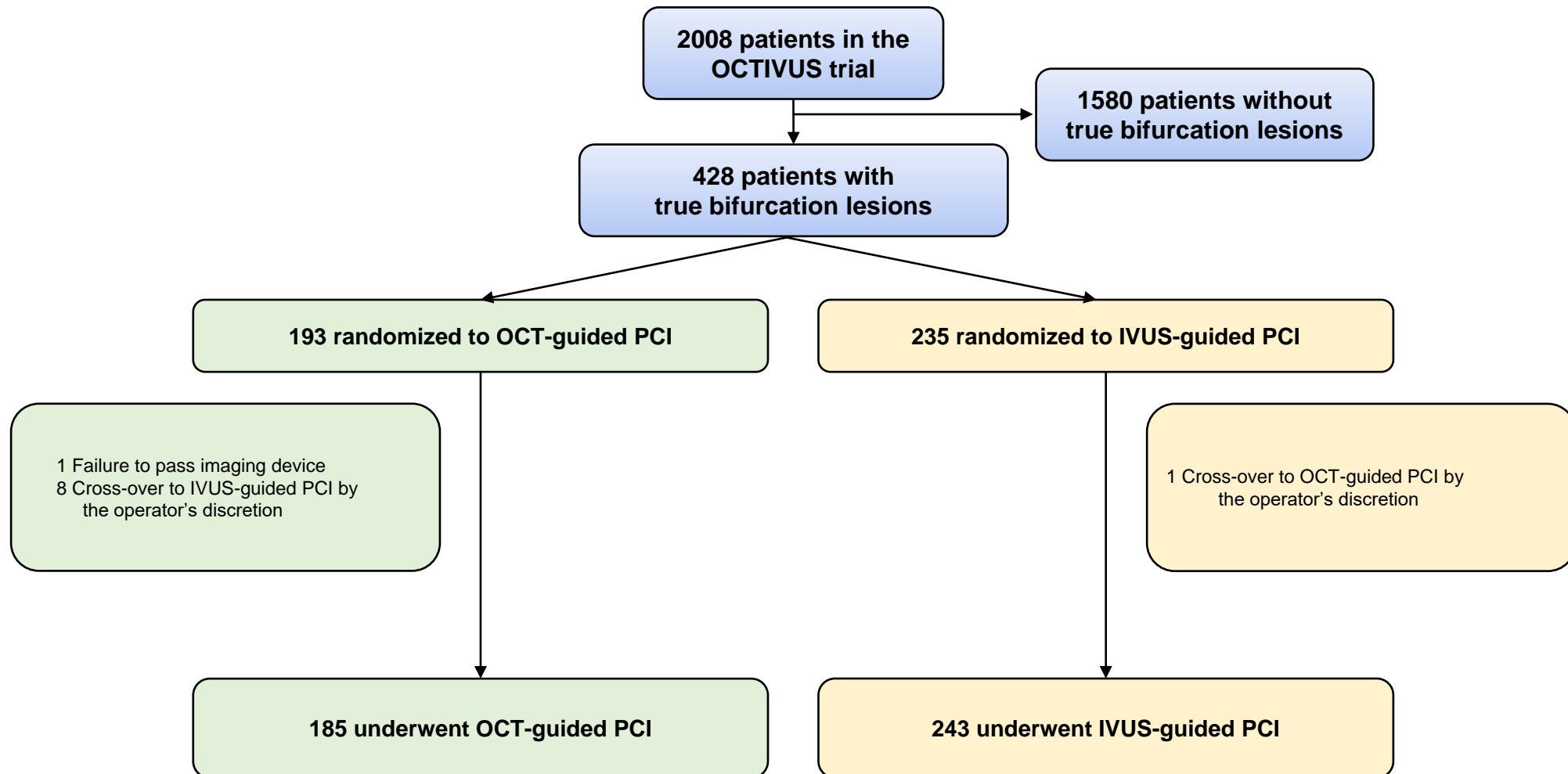


Study Outcomes

Primary outcome and Secondary outcomes

- The primary outcome : Target-vessel failure (a composite of death from cardiac causes, target-vessel-related MI, or ischemia-driven target-vessel revascularization)
- Key secondary outcomes
 - ✓ Individual components of the primary outcome
 - ✓ Target-lesion failure (a composite of death from cardiac causes, target-vessel MI, or ischemia-driven target-lesion revascularization)
 - ✓ Stent thrombosis
 - ✓ Stroke
 - ✓ Repeat revascularization
 - ✓ Re-hospitalization
 - ✓ Bleeding events

Study Flow Diagram



Baseline Characteristics

Clinical characteristics

	OCT (N = 185)	IVUS (N = 243)	P-value
Age [yrs], mean (SD)	65.5 ± 9.8	65.5 ± 9.7	0.98
Female sex	56 (30.3%)	46 (18.9%)	0.01
Body-mass index	24.6 ± 3.2	24.9 ± 2.9	0.33
Diabetes mellitus — no. (%)	72 (38.9%)	87 (35.8%)	0.58
Hypertension — no. (%)	125 (67.6%)	156 (64.2%)	0.53
Dyslipidemia — no. (%)	162 (87.6%)	205 (84.4%)	0.42
Current smoking — no. (%)	35 (18.9%)	53 (21.8%)	0.54
Previous PCI — no. (%)	44 (23.8%)	47 (19.3%)	0.32
Previous CABG — no. (%)	6 (3.2%)	6 (2.5%)	0.85
Previous stroke — no. (%)	11 (5.9%)	19 (7.8%)	0.58
Atrial fibrillation — no. (%)	6 (3.2%)	12 (4.9%)	0.53
End-stage renal disease on dialysis — no. (%)	3 (1.6%)	3 (1.2%)	1.00
Left ventricular ejection fraction [%], mean (SD)	60.5 ± 7.2	60.7 ± 6.7	0.78
Clinical indication for index PCI — no. (%)			0.54
Silent ischemia	20 (10.8%)	23 (9.5%)	
Stable angina	138 (74.6%)	175 (72.0%)	
Acute coronary syndrome	27 (14.6%)	45 (18.5%)	
Unstable angina	18 (9.7%)	22 (9.1%)	
NSTEMI	9 (4.9%)	23 (9.5%)	

Baseline Characteristics

Anatomical characteristics

	OCT (N = 185 patients with 188 lesions)	IVUS (N = 243 patients with 253 lesions)	P-value
Trial bifurcation vessels — no. (%)			0.32
LMCA-LAD-LCX— no. (%)	46 (24.5%)	63 (24.9%)	
LAD-D— no. (%)	112 (59.6%)	149 (58.9%)	
LCX-OM— no. (%)	19 (10.1%)	34 (13.4%)	
RCA-PDA-PLA— no. (%)	11 (5.9%)	7 (2.8%)	
Medina classification(site report) — no. (%)			0.74
(1,1,1)	150 (79.8%)	194 (76.7%)	
(1,0,1)	21 (11.2%)	32 (12.6%)	
(0,1,1)	17 (9.0%)	27 (10.7%)	
SYNTAX score			
Mean	20.6 ± 10.0	21.2 ± 9.4	0.57
Category — no./total no. (%)			0.67
Low, 0 to 22	117 (63.2%)	144 (59.3%)	
Intermediate, 23 to 32	45 (24.3%)	68 (28.0%)	
High, >32	23 (12.4%)	31 (12.8%)	

Baseline Characteristics

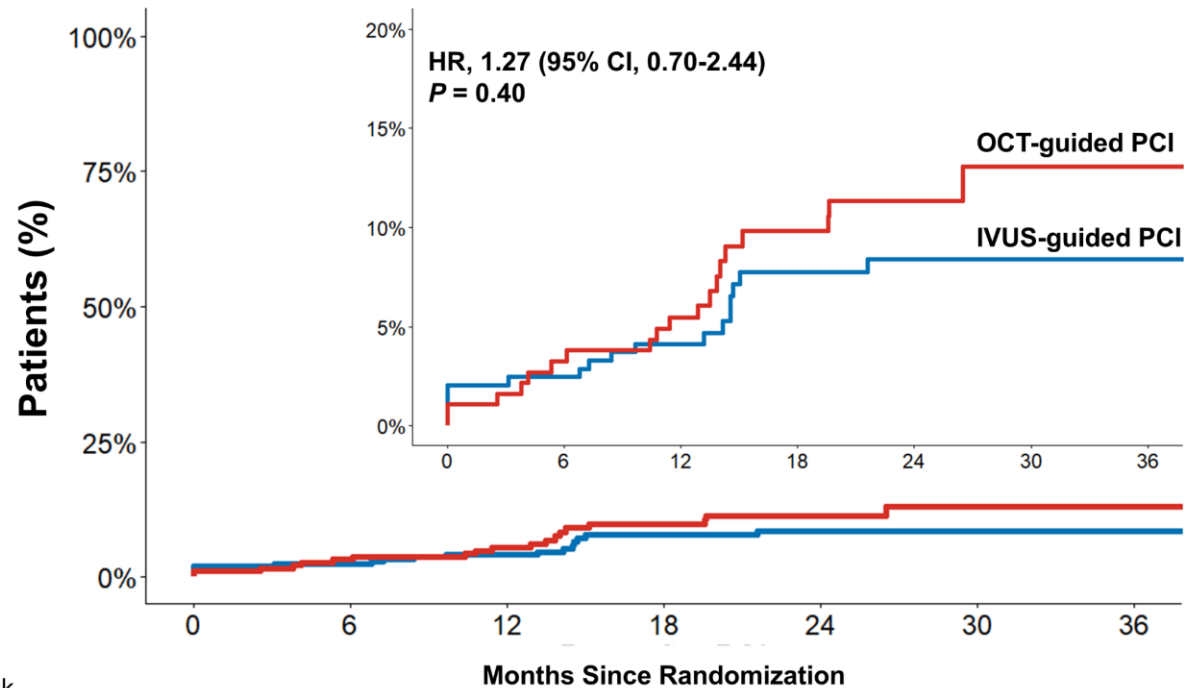
Procedural characteristics

	OCT (N = 185 patients)	IVUS (N = 243 patients)	P-value
PCI approach			0.90
Radial access	85 (45.9%)	109 (44.9%)	
Femoral access	100 (54.1%)	134 (55.1%)	
PCI modality			0.47
Use of drug-eluting stents	180 (97.3%)	237 (97.5%)	
Used of drug-coated balloons (only for ISR lesion)	5 (2.7%)	6 (2.5%)	
Mean number of stents per patient	2.2 ± 1.3	2.3 ± 1.2	0.57
Total stent length per patient — mm	65.0 ± 40.0	66.7 ± 37.5	0.67
Stent technique			0.29
1-Stent technique	109 (60.6%)	130 (54.9%)	
2-Stent technique	71 (39.4%)	107 (45.1%)	
Post-dilatation with larger or high-pressure balloon — no. (%)	176 (95.1%)	235 (96.7%)	0.57
Total amount of contrast media used — mL	283.3 ± 136.1	257.5 ± 129.5	0.047
Total PCI time — min	56.4 ± 25.3	64.1 ± 26.4	0.003

Primary Outcome

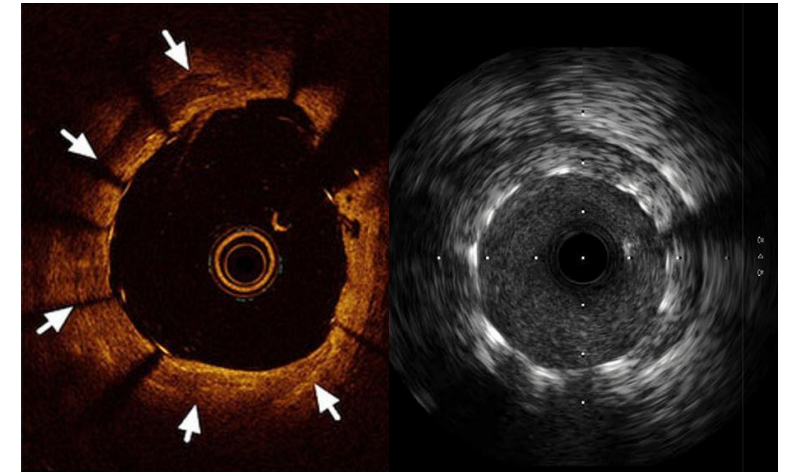
A composite of death from cardiac causes, target-vessel-related MI, or ischemia-driven target-vessel revascularization

HR, 1.27 (95% CI, 0.70-2.44)
P = 0.40



No. at Risk

IVUS-guided PCI	243	236	219	148	124	58	42
OCT-guided PCI	185	178	168	119	101	48	36



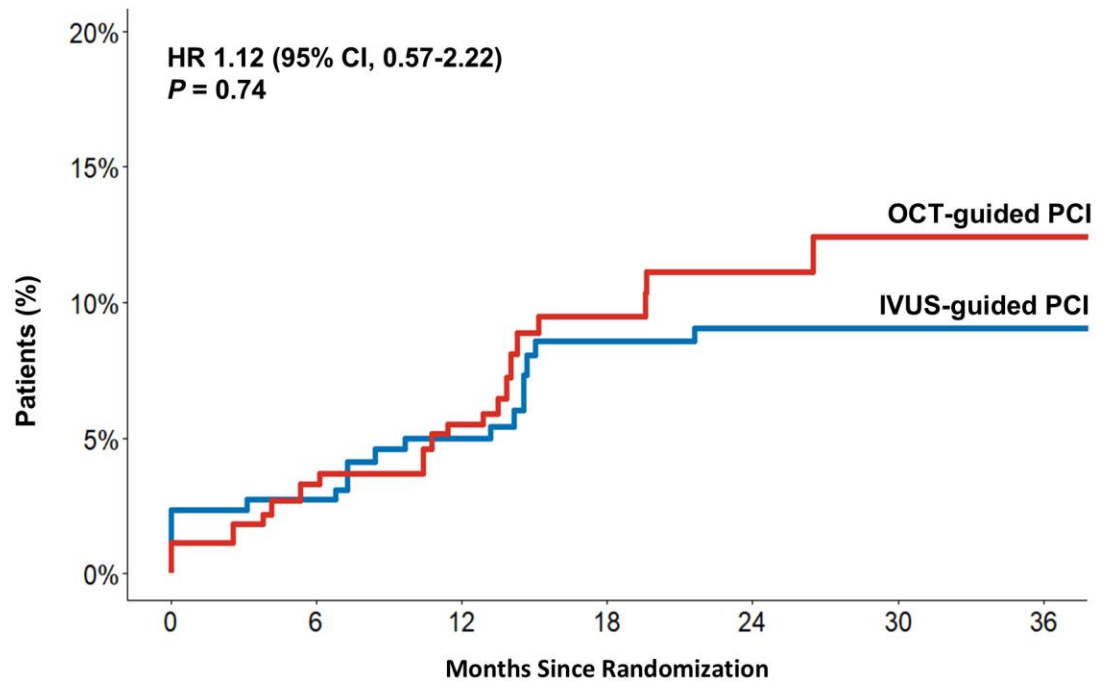
10.8%

7.4%

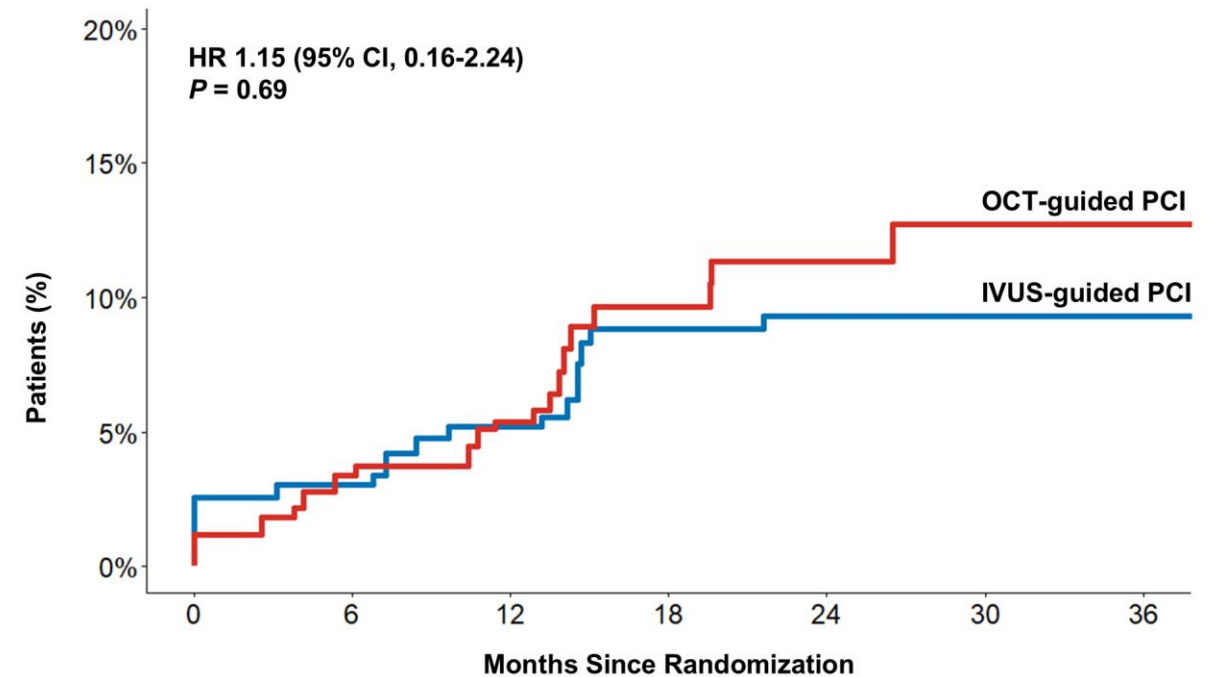
Primary Outcome

A composite of Death from cardiac causes, target-vessel-related MI, or ischemia-driven target-vessel revascularization

A Inverse probability of treatment weighting method



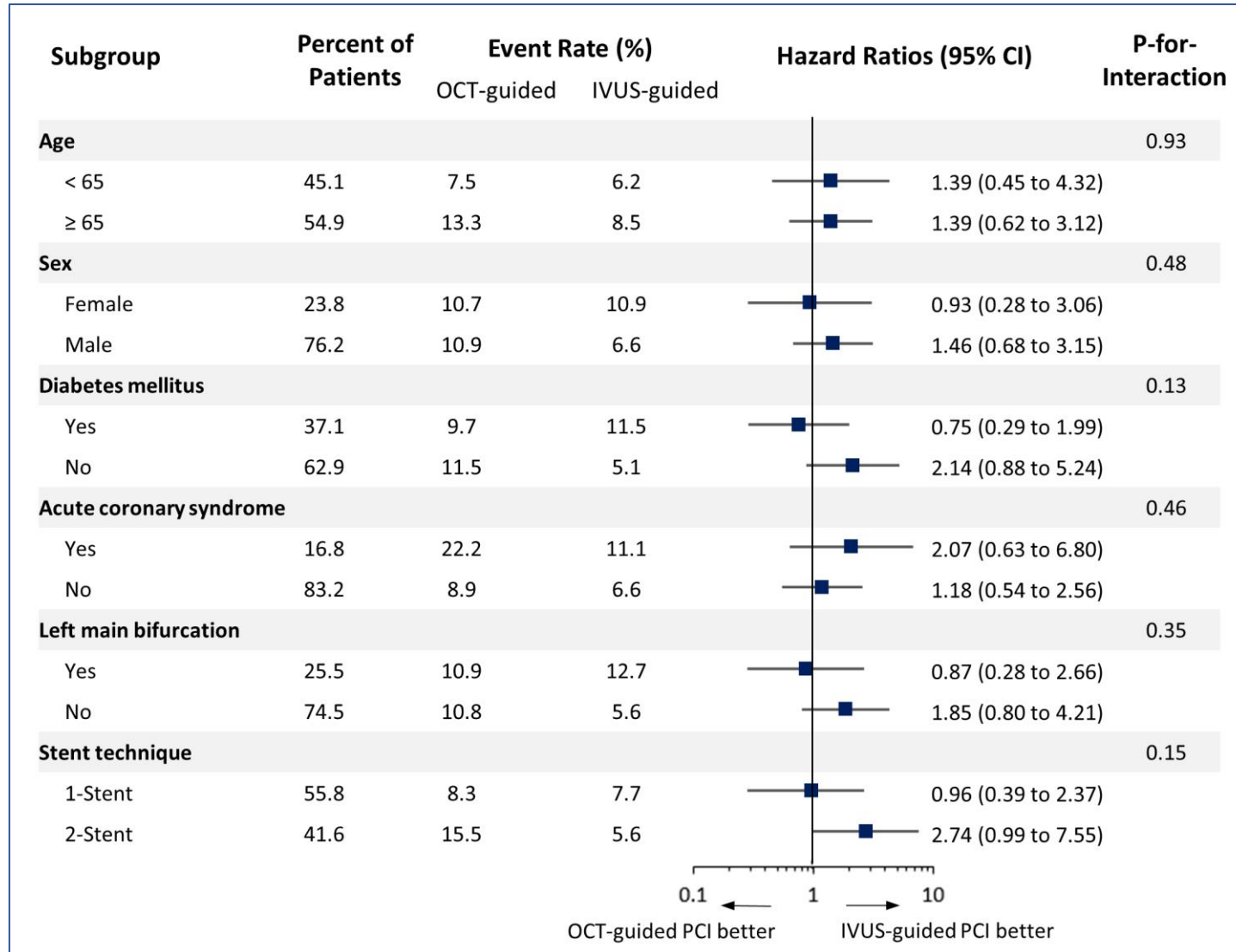
B Overlap propensity score weighting method



Key Secondary End Points

	OCT (N = 185)	IVUS (N = 243)	HR (95% CI)	P-value
Primary end point (TVF)	20 (10.8)	18 (7.4)	1.32 (0.69-2.52)	0.40
Secondary end points				
Target-lesion failure	18 (9.7)	17 (7.0)	1.24 (0.63-2.44)	0.53
All cause death	3 (1.6)	6 (2.5)	0.42 (0.09-2.10)	0.29
Cardiac death	2 (1.1)	2 (0.8)	0.64 (0.06-7.07)	0.72
Target-vessel MI	3 (1.6)	6 (2.5)	0.65 (0.16-2.60)	0.54
Periprocedural	2 (1.1)	4 (1.6)	0.66 (0.12-3.58)	0.63
Spontaneous	1 (0.5)	2 (0.8)	0.64 (0.06-7.09)	0.72
Stent thrombosis	0 (0.0)	2 (0.8)	NC	
Stroke	1 (0.5)	1 (0.4)	1.48 (0.09-23.74)	0.78
Repeat revascularization	19 (10.3)	16 (6.6)	1.46 (0.75-2.85)	0.27
Re-hospitalization	16 (8.6)	21 (8.6)	0.84 (0.43-1.64)	0.61
Bleeding	2 (1.1)	5 (2.1)	0.53 (0.10-2.72)	0.44
Contrast induced nephropathy	3 (1.6)	3 (1.2)	1.00 (0.98-1.03)	0.74

Subgroup Analysis



Conclusion

- In this substudy of the OCTIVUS trial involving patients with **true bifurcation lesions**, OCT-guided PCI showed **a similar risk** of a composite of death from cardiac causes, target-vessel-related MI, or ischemia-driven TVR as compared with IVUS-guided PCI.
- Our trial supports that **both OCT and IVUS can be utilized safely and effectively** in patients with true bifurcation lesions who are undergone PCI.