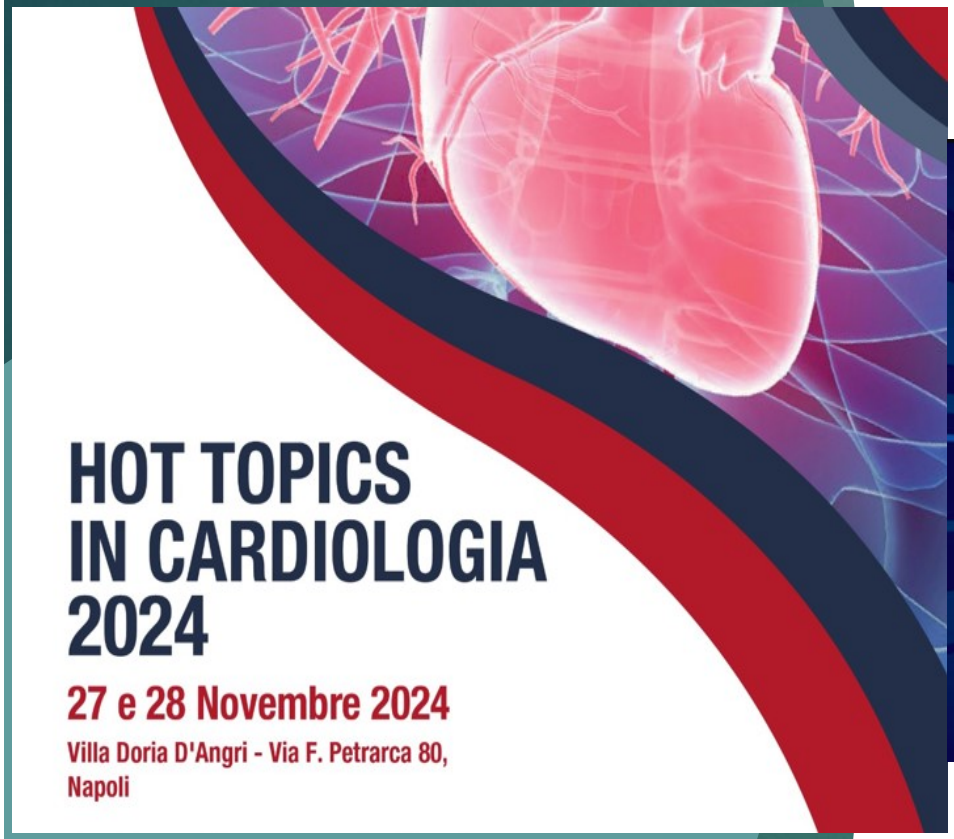
LESIONI COMPLESSE
Press Review



Dott. Dario Formigli

UOC Cardiologia UTIC ed Emodinamica

AORN San Pio Benevento

New Indication Guide Lines CCS ESC 2024

2024

ESC
European Society of Cardiology

Intracoronary Imaging guidance by IVUS or OCT is recommended when performing PCI on anatomically complex lesions, in particular LM, Bifurcations, Long Lesions	I	A

Intravascular Imaging PCI IVI-PCI

Eur Heart J. 2024 Sep 29;45(36):3415-3537. doi: 10.1093/eurheartj/ehae177.

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

OCT or Angiography Guidance for PCI in Complex Bifurcation Lesions

N.R. Holm, L.N. Andreasen, O. Neghabat, P. Laanmets, I. Kumsars, J. Bennett, N.T. Olsen, J. Odenstedt, P. Hoffmann, J. Dens, S. Chowdhary, P. O'Kane, S.-H. Bülow Rasmussen, M. Heigert, O. Havndrup, J.P. Van Kuijk, S. Biscaglia, L.J.H. Mogensen, L. Henareh, F. Burzotta, C. H. Eek, D. Mylotte, M.S. Llinas, L. Koltowski, P. Knaapen, S. Calic, N. Witt, I. Santos-Pardo, S. Watkins, J. Lønborg, A.T. Kristensen, L.O. Jensen, F. Calais, J. Cockburn, A. McNeice, O.A. Kajander, T. Heestermans, S. Kische, A. Eftekhari, J.C. Spratt, and E.H. Christiansen, for the OCTOBER Trial Group*

ABSTRACT

N Engl J Med. 2023 Oct 19;389(16):1477-1487.

OCTOBER Trial

OCT or Angiography Guidance for PCI in Complex Bifurcation Lesions

Holm NR et al. DOI: 10.1056/NEJMoa2307770

CLINICAL PROBLEM

In up to 20% of patients in whom coronary-artery revascularization is indicated, the lesion involves a branch point or bifurcation of the coronary artery. Percutaneous coronary intervention (PCI) of lesions at coronary-artery bifurcations is typically guided by angiography, but visualization of such lesions can be challenging. Whether PCI guided by optical coherence tomography (OCT) imaging could improve outcomes is unknown.

CLINICAL TRIAL

Design: A multicenter, open-label, randomized, controlled trial in Europe evaluated whether OCT-guided PCI would be superior to standard angiography-guided PCI in the revascularization of coronary-artery bifurcation lesions.

Intervention: 1201 adults with stable angina, unstable angina, or non–ST-segment elevation myocardial infarction; a clinical indication for PCI; and a complex coronary-artery bifurcation lesion identified on angiography were assigned to undergo either OCT-guided PCI or angiography-guided PCI. The primary end point was a composite of major adverse cardiac events (MACE), defined as death from a cardiac cause, target-lesion myocardial infarction, or ischemia-driven target-lesion revascularization at a median follow-up of 2 years.

RESULTS

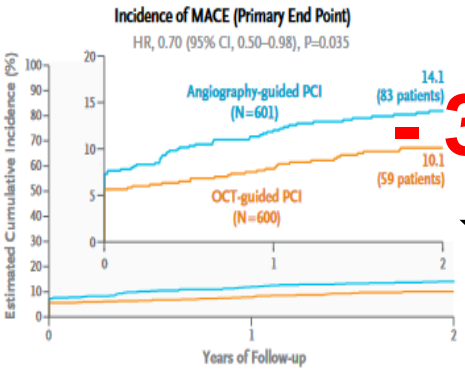
Efficacy: The incidence of MACE was significantly lower among patients assigned to OCT-guided PCI than among those assigned to angiography-guided PCI.

Safety: The incidence of procedure-related complications appeared similar in the two groups.

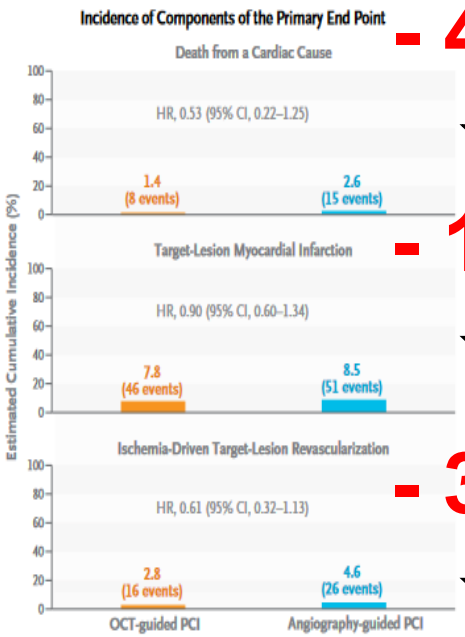
LIMITATIONS AND REMAINING QUESTIONS

- Information on race and ethnic group was not collected.
- The subgroup of patients with lesions located at left main coronary-artery bifurcations was smaller than planned, which may have reduced the trial population's overall risk.
- The group assignments were not masked to treating physicians or patients.

Links: Full Article | NEJM Quick Take | Editorial



- 30 %



- 47 %

- 10 %

- 39 %

CONCLUSIONS

In patients with complex lesions located at a coronary-artery bifurcation, OCT-guided PCI was superior to angiography-guided PCI with respect to the incidence of MACE at a median follow-up of 2 years.

1201pts Bifurcation Randomized 1 : 1 OCT vs Angio

MALAPPOSITION
(Axial distance < 0.4mm or < 1 mm lenght)

STENT EXPANSION 1
(MSA > 5.5 mm² IVUS or 4.5 mm² OCT)

STENT EXPANSION 2
(MSA / Average Reference Lumen > 90 %)

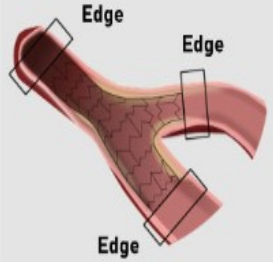
DISSECTION
(< 60°, flap limited to intima, < 2 mm leght OCT < 200 µm distal or prox edge)

N Engl J Med. 2023 Oct 19;389(16):1477-1487.

OCTOBER Trial

Criteria for optimization by OCT-guided PCI

Edge segments (5 mm)



Residual stenosis
Less than 30% diameter stenosis

Edge dissections
No edge dissections
1) visible by angiography, or
2) located in residual edge stenosis of more than 30% DS or a lumen smaller than 4.5 mm^2

Lipid plaque
No presence of a major lipid plaque spanning more than 180° of the edge segment circumference

Ruptured plaque
No presence of one of more plaque ruptures in the edge segment

Stented segments

Rewiring
Wire passing through a strut cell in front of the mid or distal part of the ostium.
No unintended abluminal rewiring

Stent malapposion
No malapposition

Accidental crushed stent segments
No unintend major distortion or crush of implanted stents

Stent expansion
Stent diameter ≥ 90% of the corresponding segment's reference diameter

Side branch ostium in one-stent technique
Minimal lumen diameter ≥ 50% of the reference diameter

N Engl J Med. 2023 Oct 19;389(16):1477-1487.

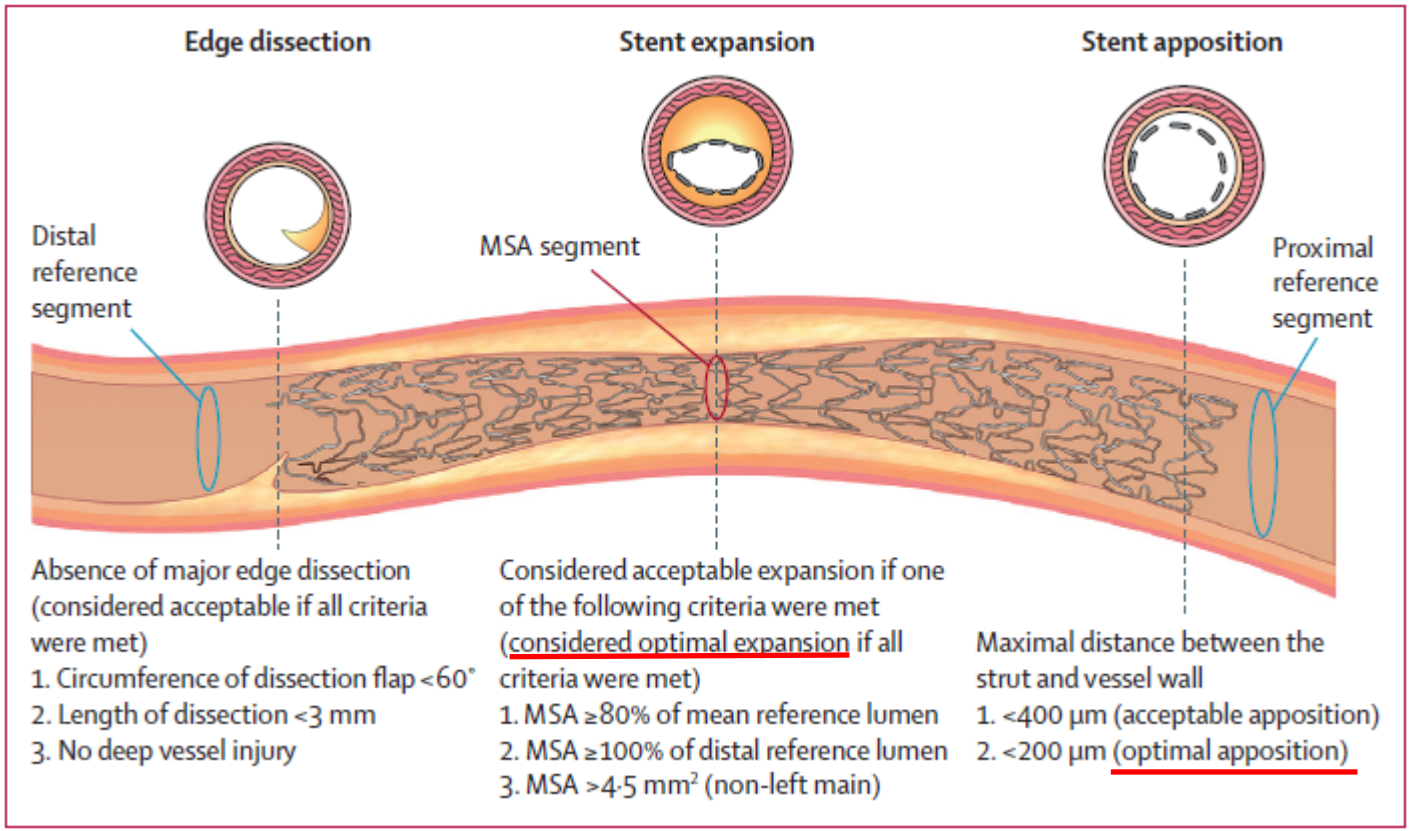
OCCUPI Trial

Optical coherence tomography-guided versus angiography-guided percutaneous coronary intervention for patients with complex lesions (OCCUPI): an investigator-initiated, multicentre, randomised, open-label, superiority trial in South Korea

Sung-Jin Hong*, Seung-Jun Lee*, Sang-Hyup Lee, Jong-Young Lee, Deok-Kyu Cho, Jin Won Kim, Sang Min Kim, Seung-Ho Hur, Jung Ho Heo, Ji-Yong Jang, Jin Sin Koh, Hoyoun Won, Jun-Won Lee, Soon Jun Hong, Dong-Kie Kim, Jeong Cheon Choe, Jin Bae Lee, Soo-Joong Kim, Tae-Hyun Yang, Jung-Hee Lee, Young Joon Hong, Jong-Hwa Ahn, Yong-Joon Lee, Chul-Min Ahn, Jung-Sun Kim, Young-Guk Ko, Donghoon Choi, Myeong-Ki Hong, Yangsoo Jang, Byeong-Keuk Kim, for the OCCUPI investigators†

Lancet. 2024 Sep 14;404(10457):1029-1039. doi: 10.1016/S0140-6736(24)01454-5. Epub 2024 Sep 2. PMID: 39236729.

OCT Optimisation criteria for the OCCUPI trial



1604 pts

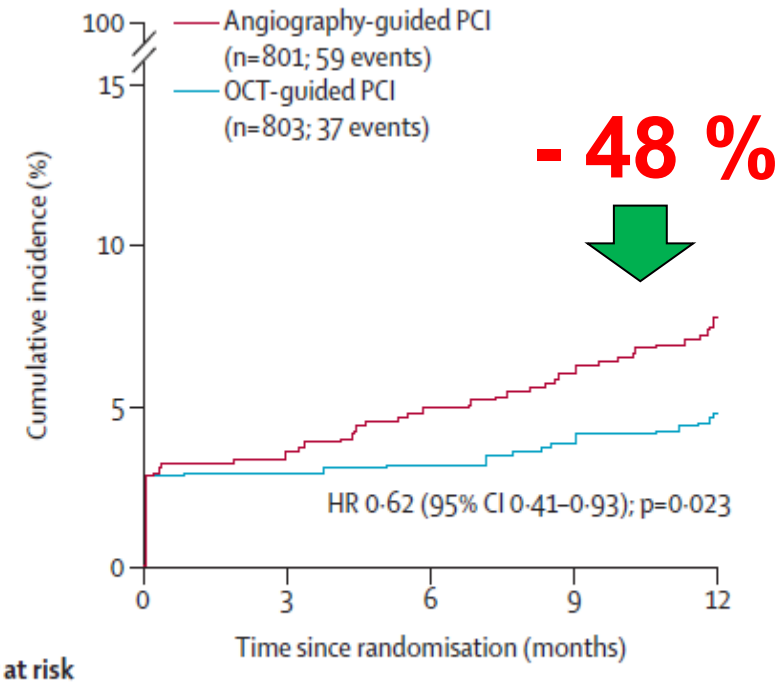
AMI 20%, CTO 7%, Long 72%, Calcified 9%, Bifurcation 23%, ULMA 14%, Small 16%, Thrombus 9%, Restenosys 11%

Randomized 1 : 1

OCT vs Angio

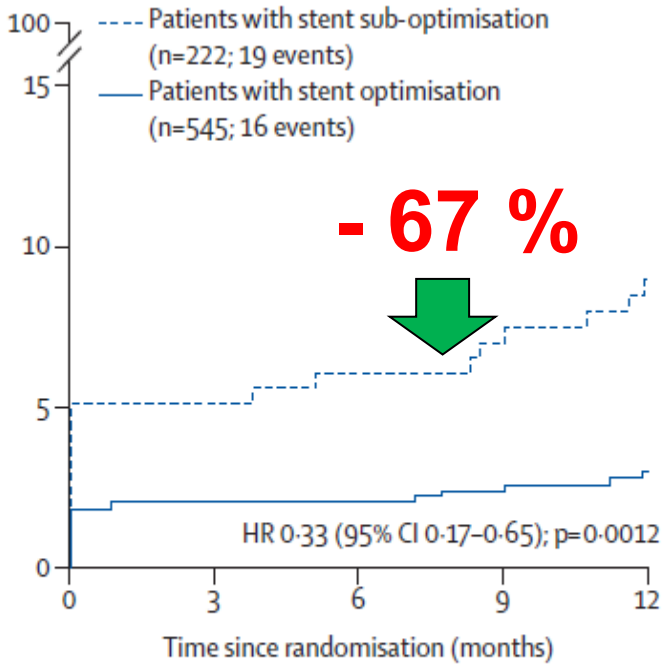
Lancet. 2024 Sep 14;404(10457):1029-1039. doi: 10.1016/S0140-6736(24)01454-5. Epub 2024 Sep 2. PMID: 39236729.

Primary Endpoint
(cardiac death, MI, ST, or ischaemia-driven TVR)



Number at risk (number censored)					
Angiography-guided PCI	801 (0)	775 (0)	763 (0)	754 (1)	740 (2)
OCT-guided PCI	803 (0)	780 (0)	778 (0)	772 (1)	763 (3)

Post-hoc non-randomised comparison exclusively within the OCT-guided PCI group



Sub-optimisation	222 (0)	211 (0)	209 (0)	207 (0)	202 (1)
Optimisation	545 (0)	534 (0)	534 (0)	532 (1)	527 (1)

Lancet. 2024 Sep 14;404(10457):1029-1039. doi: 10.1016/S0140-6736(24)01454-5. Epub 2024 Sep 2. PMID: 39236729.

EuroIntervention
2024;20:e656-e668
published online e-edition May 2024
DOI: 10.4244/EIJ-D-23-00605

ORIGINAL RESEARCH

Impact of coronary calcium morphology on intravascular lithotripsy

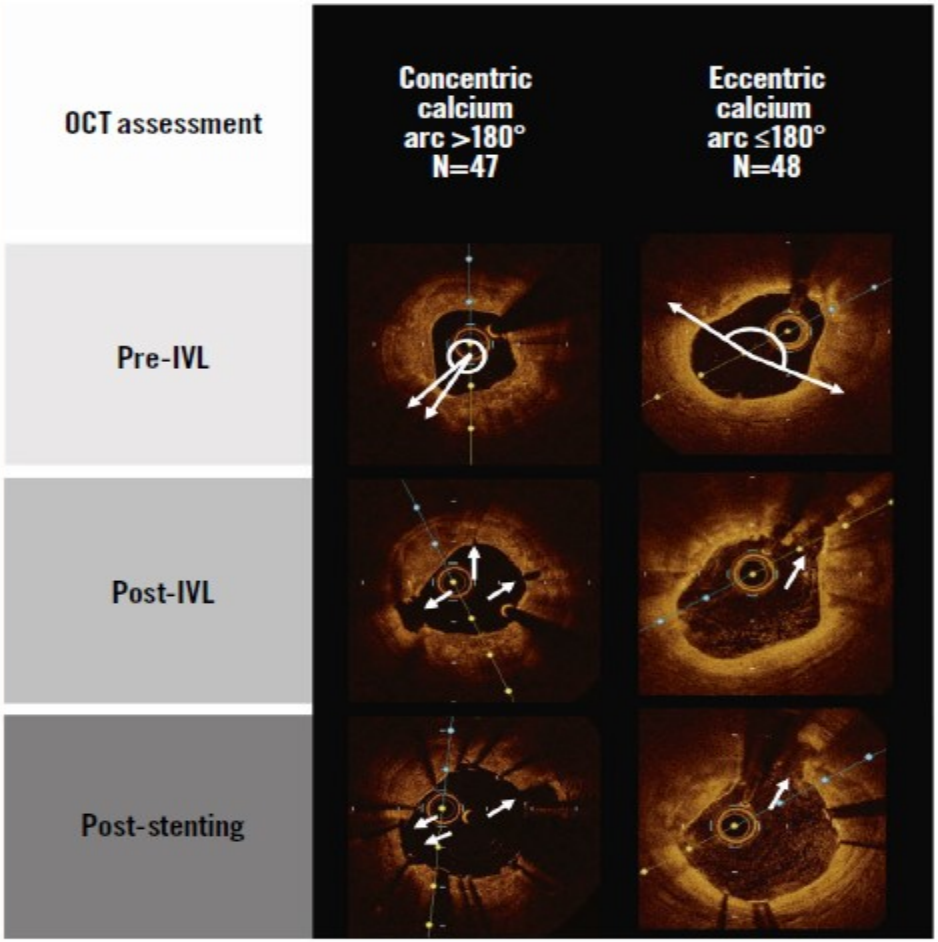
Angela McInerney[1], MD; Alejandro Travieso[1], MD; Adrián Jerónimo Baza[1], MD; Fernando Alfonso[2], MD, PhD; David Del Val[2], MD, PhD; Enrico Cerrato[3,4], MD, PhD; Juan Garcia de Lara[5], MD, PhD; Eduardo Pinar[5], MD, PhD; Armando Perez de Prado[6], MD, PhD; Pilar Jimenez Quevedo[1], MD, PhD; Gabriela Tirado-Conte[1], MD; Luis Nombela-Franco[1], MD, PhD; Salvatore Brugaletta[7], MD, PhD; Pedro Cepas-Guillén[7], MD, PhD; Manel Sabaté[7], MD, PhD; Héctor Cubero Gallego[8], MD, PhD; Beatriz Vaquerizo[8], MD, PhD; Alfonso Jurado[9], MD, PhD; Ferdinando Varbella[3,4], MD; Marcelo Jimenez[10], MD, PhD; Artemio Garcia Escobar[9], MD; José María de la Torre[11], MD, PhD; Ignacio Amat Santos[12], MD, PhD; Victor Alfonso Jimenez Diaz[13], MD, PhD; Javier Escaned[1], MD, PhD; Nieves Gonzalo[1]*, MD, PhD

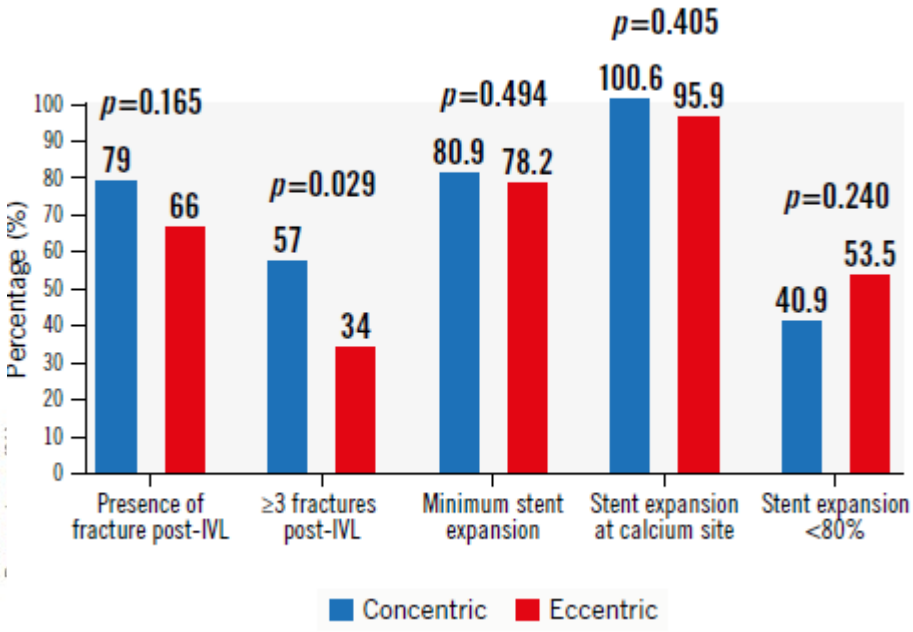
GUEST EDITOR: Franz-Josef Neumann, MD, PhD, FESC; *Department of Cardiology and Angiology II, University Heart Center Freiburg - Bad Krozingen, Bad Krozingen, Germany*

97 pts
OCT → IVL → OCT → Post Stenting

EuroIntervention — Central Illustration

Overview of the important study findings.





NODULAR CALCIFICATION (29%)

After IVL → dissection was common, while calcium fracture was less frequently seen. Following stenting, only 40.7% of nodules were fully deformed and no longer protruding into the lumen. Malapposition was frequent.

EuroIntervention. 2024 May 20;20(10):e656-e668. doi: 10.4244/EIJ-D-23-00605.

Circulation: Cardiovascular Interventions

ORIGINAL ARTICLE

Optimal Minimal Stent Area and Impact of Stent Underexpansion in Left Main Up-Front 2-Stent Strategy

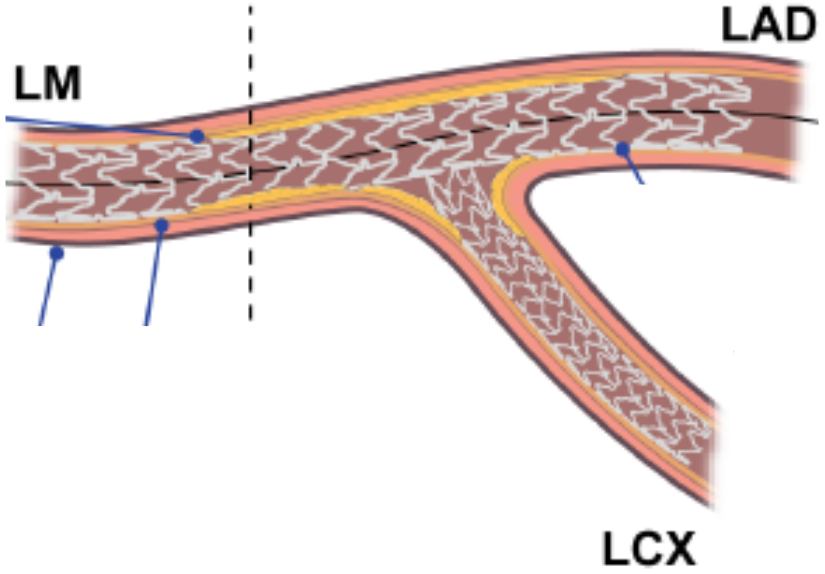
Ju Hyeon Kim, MD; Do-Yoon Kang, MD, PhD; Jung-Min Ahn, MD, PhD; Jihoon Kweon, PhD; Yeonwoo Choi, MD; Hoyun Kim, MD; Jinho Lee, MD; Jihye Chae, BS; Soo-Jin Kang, MD, PhD; Duk-Woo Park, MD, PhD; Seung-Jung Park, MD, PhD

Circ Cardiovasc Interv. 2024 Jan;17(1):e013006. doi: 10.1161/CIRCINTERVENTIONS.123.013006

IVUS

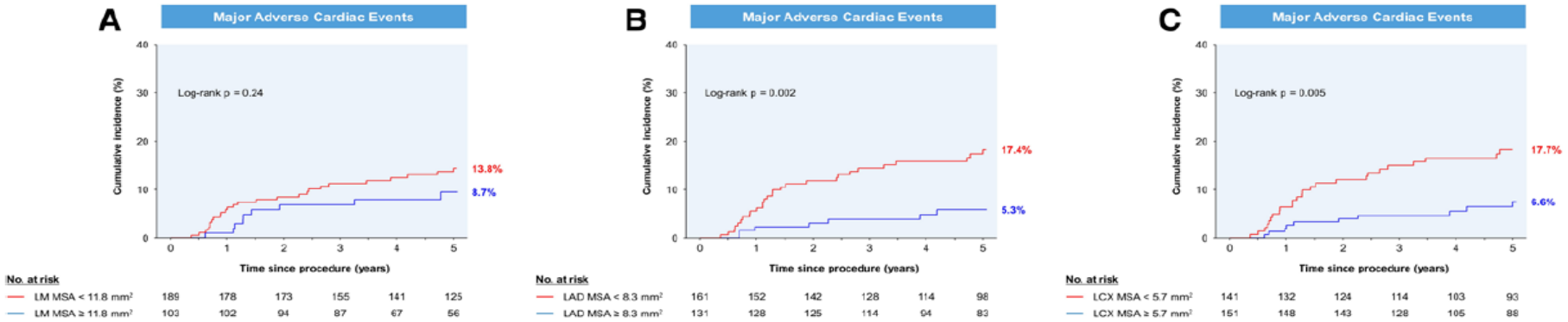
MSA cutoff values that best predicted the 5-year MACE

A
DISTAL LM
11.8 mm²



B
LAD OSTIUM
8.3 mm²

C
CX OSTIUM
5.7 mm²



Circ Cardiovasc Interv. 2024 Jan;17(1):e013006. doi: 10.1161/CIRCINTERVENTIONS.123.013006

Present

Future