

# **OCTOBER: OCT vs. Angiography for True Bifurcation Lesions**

Niels Ramsing Holm

Dr. Lene Nyhus Andreasen contributed in preparation of this talk

On behalf of the **OCTOBER** trial investigators

# Disclosures

- Institutional research grants from Abbott, Biosensors, Boston Scientific, Medis medical imaging, Reva medical
- Speaker fees from Abbott, Terumo and Cardirad

# Bifurcation lesions

- PCI of coronary bifurcations is associated with worse clinical outcome compared with PCI of simpler lesions
  - SYNTAXES trial
    - 10-year mortality: 30.1% vs 19.8%<sup>1</sup>
  - E-Ultimaster registry (35,839 patients)
    - MI, TLR and ST increased with bifurcation PCI<sup>2</sup>

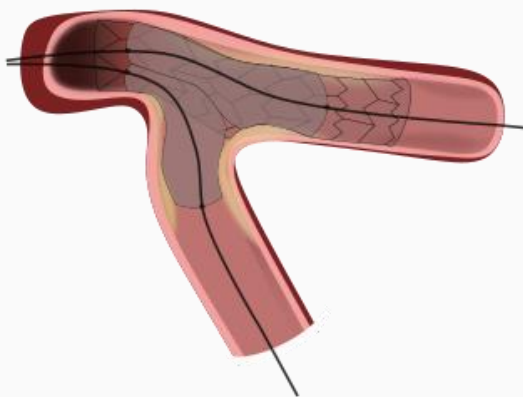


<sup>1</sup>Ninomiya K et al. 10-years SYNTAX Trial. JACC Cardiovasc Interv 2022

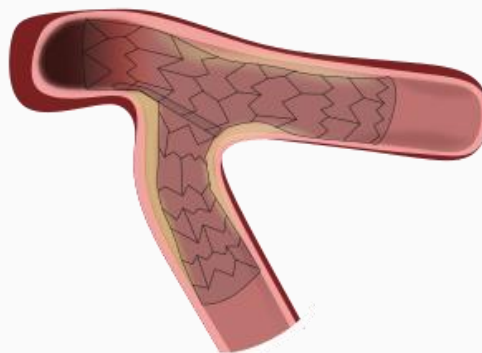
<sup>2</sup>Mohamed MO et al. One-year E-Ultimaster registry. EuroIntervention 2020

# Complex PCI for true bifurcation lesions

- True bifurcation lesions may require treatment by complex stenting techniques<sup>6,7</sup>



**One-stent strategy with  
kissing balloon inflation**

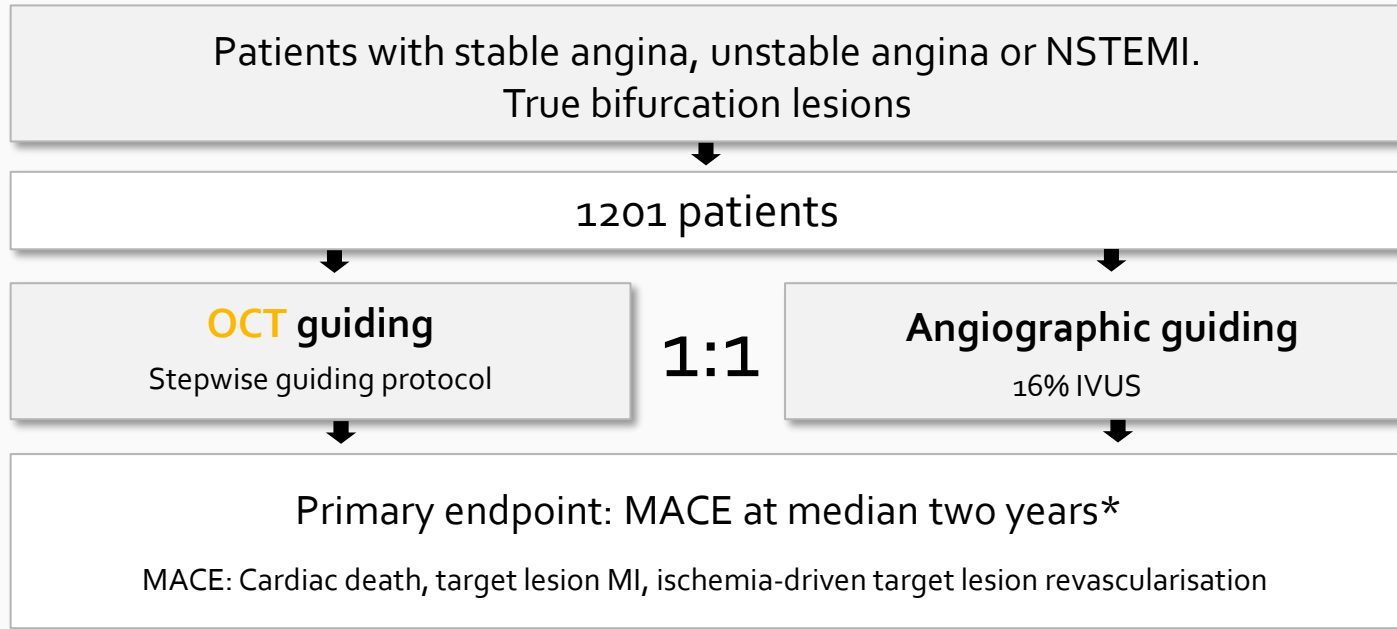


**Two-stent strategy**

<sup>6</sup>Cheol Woong Yu et al. COBIS II. JACC Cardiovasc Interv. 2015

<sup>7</sup>Chen SL et al. DK-CRUSH II. J Am Coll Cardiol. 2011

# OCTOBER trial overview



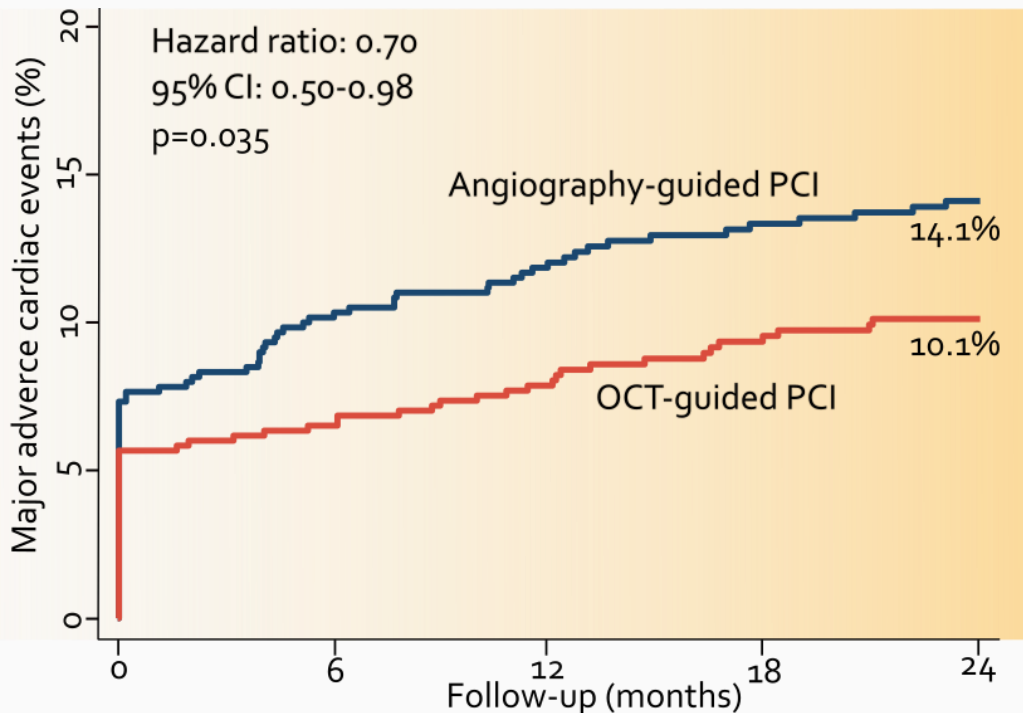
# Design

- Investigator-initiated study
- Open label design
- 38 heart centers in Europe
- On-site training in OCT-guided PCI
- Feedback on OCT-guided cases

Funding: Abbott and Aarhus University

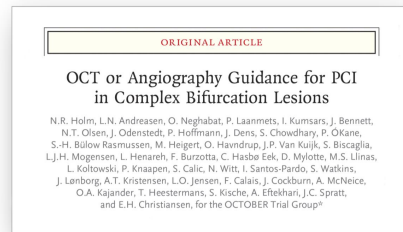


# Primary endpoint: 2-year MACE



30% RR reduction

The NEW ENGLAND JOURNAL of MEDICINE



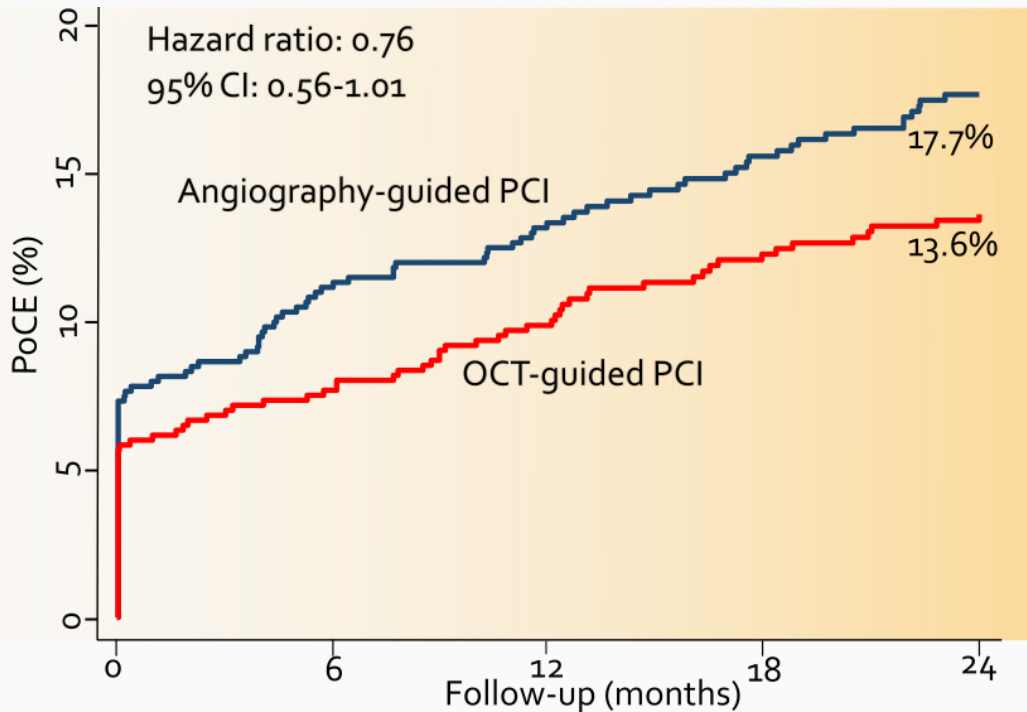
MACE: cardiac death, target lesion myocardial infarction, ischemia-driven target lesion revascularization

Kaplan Meier estimates  
Comparison by unadjusted Cox analysis  
Confirmed by adjusted Cox analysis

No. At Risk:

OCT-guided PCI	600	553	537	472	439
Angiography-guided PCI	601	534	509	452	408

# Patient-oriented Composite Endpoint (PoCE)



No. At Risk:

OCT-guided PCI	600	547	527	460	427
Angiography-guided PCI	601	530	504	445	397

PoCE : All-cause mortality, Any myocardial infarction, any repeat revascularization

Kaplan Meier estimates  
Secondary endpoint. Not powered

Holm et al NEJM 2023

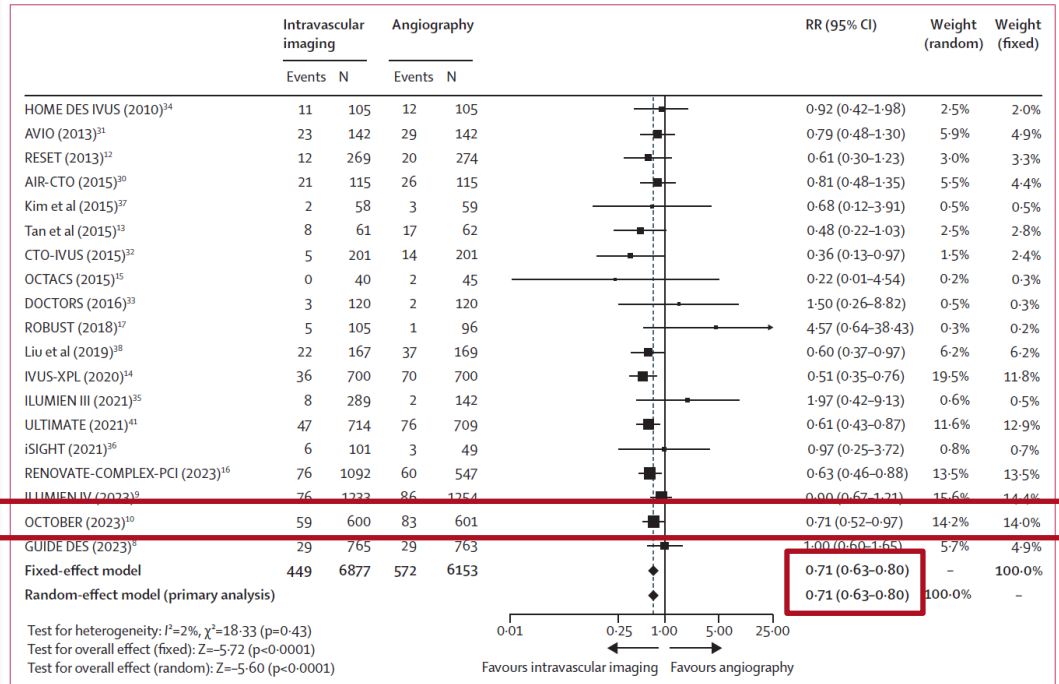


# The totality of data

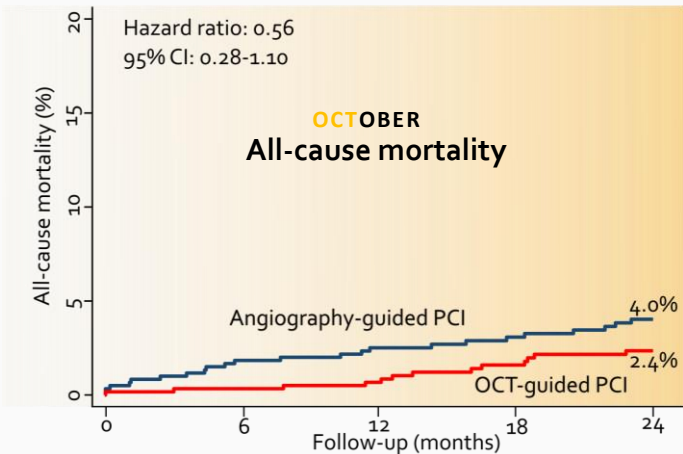
- 22 randomized trials
  - *IVUS vs angiography*
  - *OCT vs angiography*
  - *IVUS or OCT vs angiography*
  - *OCT vs IVUS*
  - All using DES
- 15.964 patients
- Mean FU: 24.7 months
- Primary endpoint: TLF

## Intravascular imaging-guided coronary drug-eluting stent implantation: an updated network meta-analysis

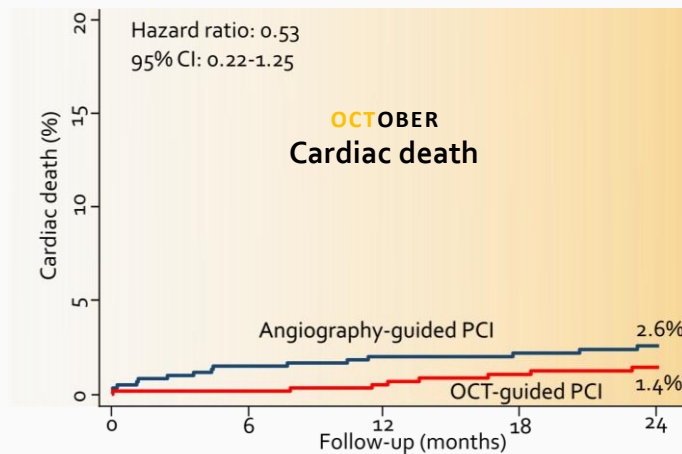
Gregg W Stone, Evald H Christiansen, Ziad A Ali, Lene N Andreasen, Akiko Maehara, Yousif Ahmad, Ulf Landmesser, Niels R Holm



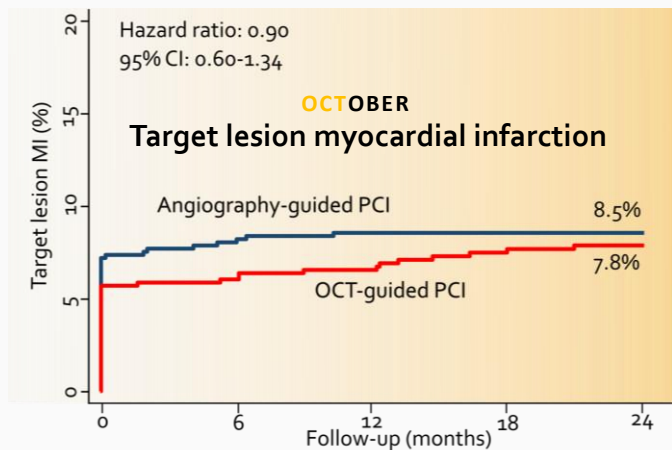
The Lancet 2024



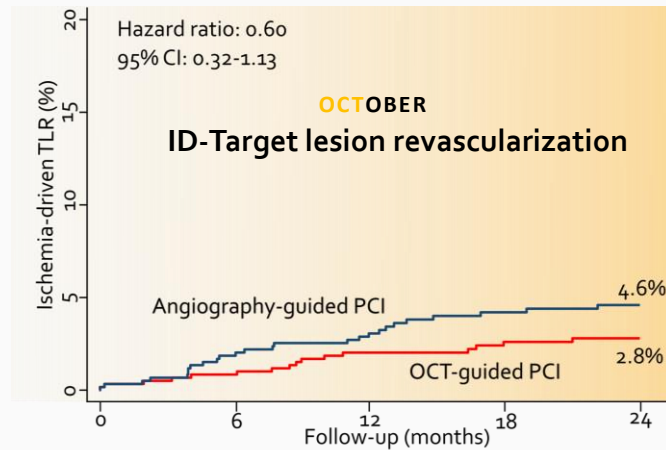
Metaanalysis  
**25%**



Metaanalysis  
**45%**



Metaanalysis  
**18%**

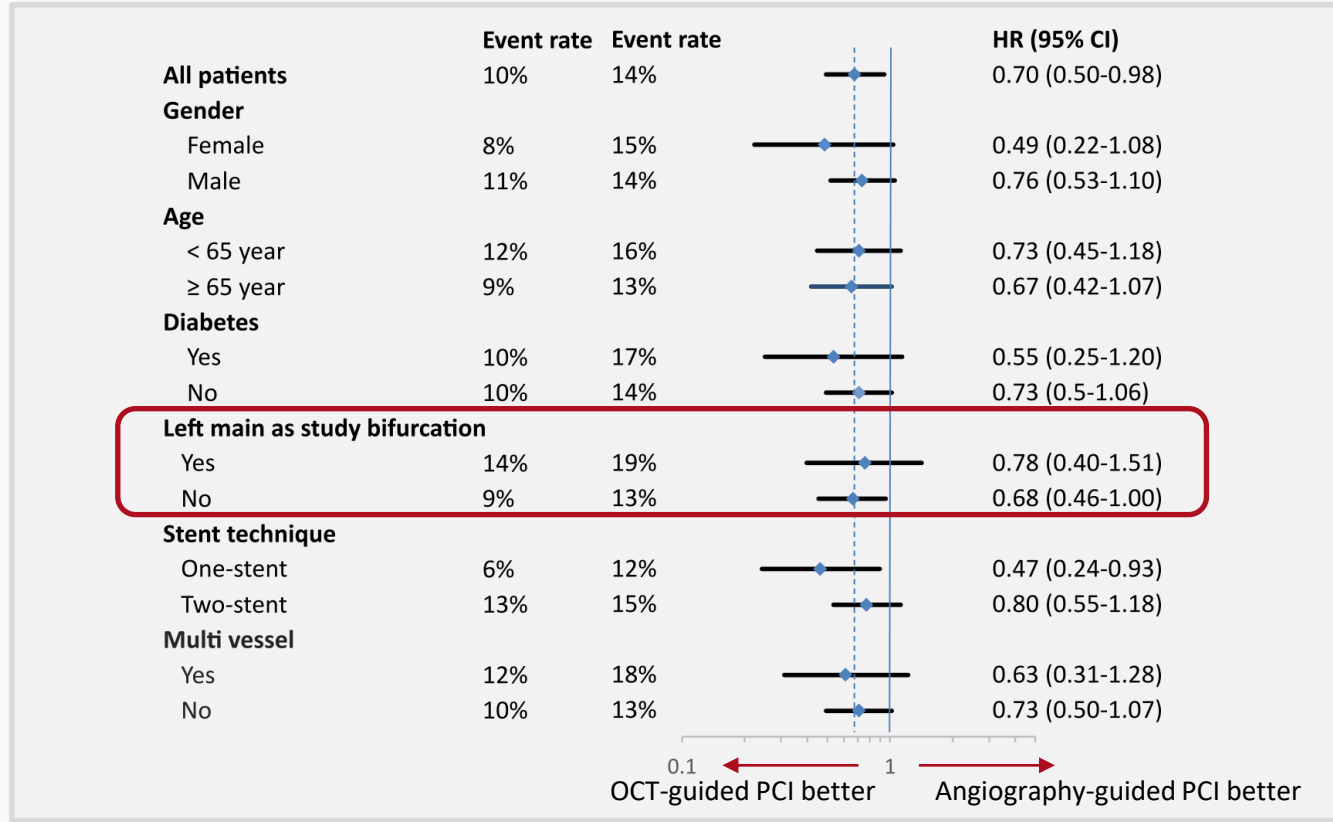


Metaanalysis  
**28%**

Holm et al NEJM 2023  
Stone et al. LANCET 2024

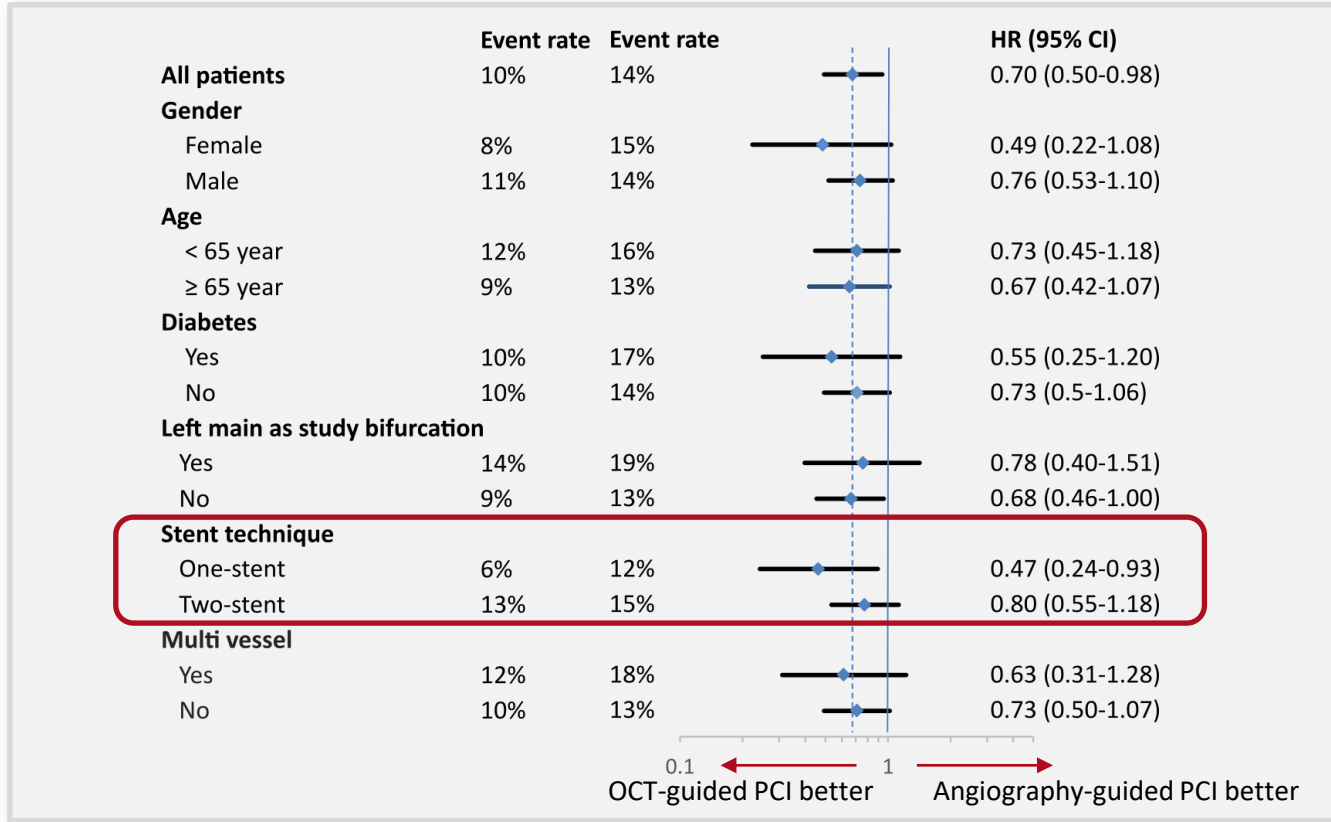
OCTOBER:  
Kaplan Meier estimates  
Secondary endpoint. Not powered

# OCTOBER subgroup analyses 1/2



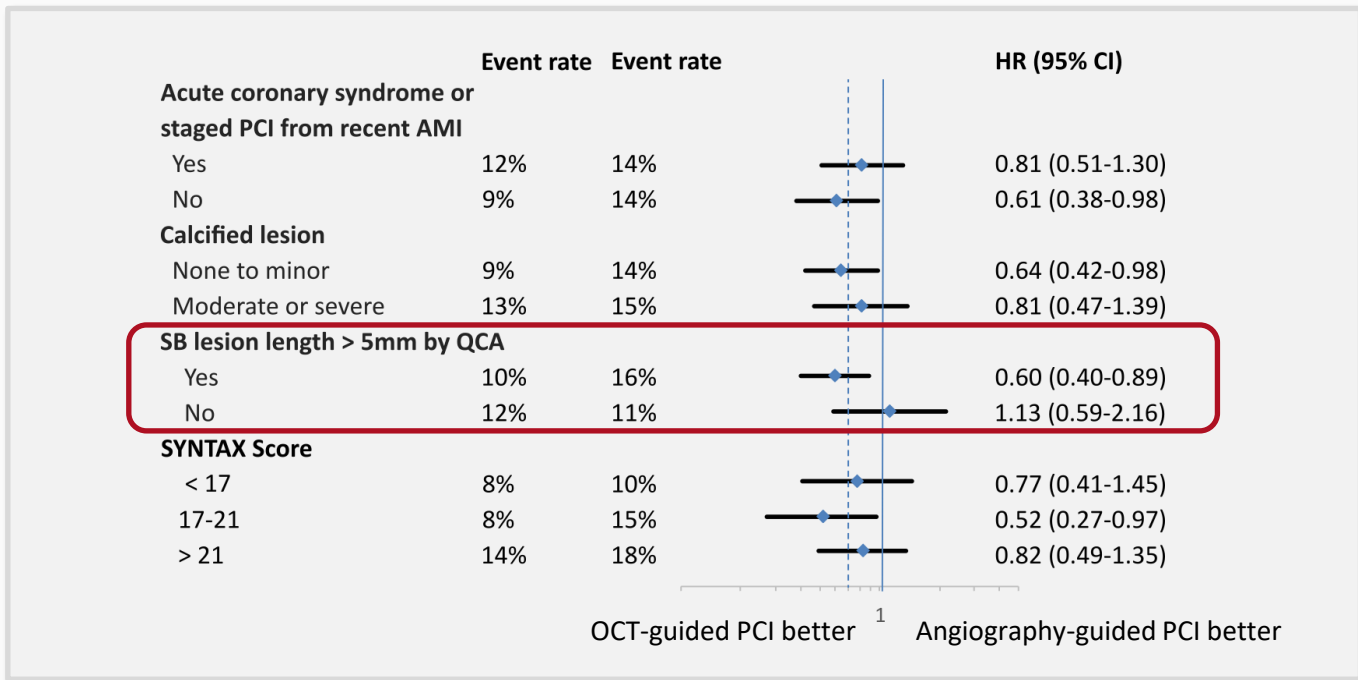
Holm et al NEJM 2023

# OCTOBER subgroup analyses 1/2



Holm et al NEJM 2023

# OCTOBER Subgroup analyses 2/2



Holm et al NEJM 2023



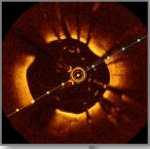
The NEW ENGLAND  
JOURNAL of MEDICINE

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. ÓKane,  
S.-H. Bülow Rasmussen, M. Heigert, O. Havndrup, J.P. Van Kuijk, S. Biscaglia,  
L.J.H. Mogensen, L. Henareh, F. Burzotta, C. Hasbø 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\*

# Conclusion



- OCT-guided PCI was associated with a lower incidence of the composite endpoint of two-year MACE than angiography-guided PCI in treatment of complex bifurcation lesions
- The totality of data show that routine use of IVI in PCI reduces mortality substantially
- The outcomes after OCT guided bifurcation PCI appears to be in line with or better than the overall metaanalysis results
- Implementing routine OCT guiding for PCI of complex bifurcation lesions may be justified - in particular as the effect was shown with 16% ad hoc IVUS in the control arm and despite the Covid-19 pandemic affecting invasive follow-up