

Accidentally crushed stents in the **OCTOBER** trial

Niels Ramsing Holm

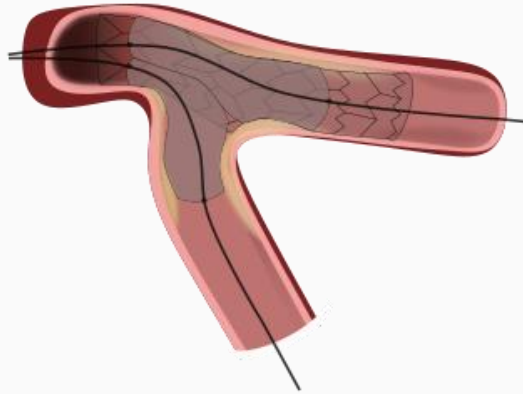
Dr. Lene Nyhus Andreasen contributed in preparation of this talk

On behalf of the **OCTOBER** trial investigators

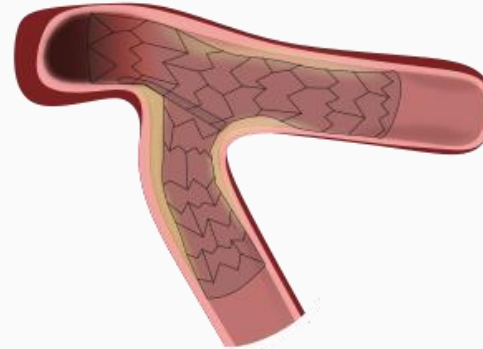
Disclosures

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

OCTOBER: techniques requiring rewiring

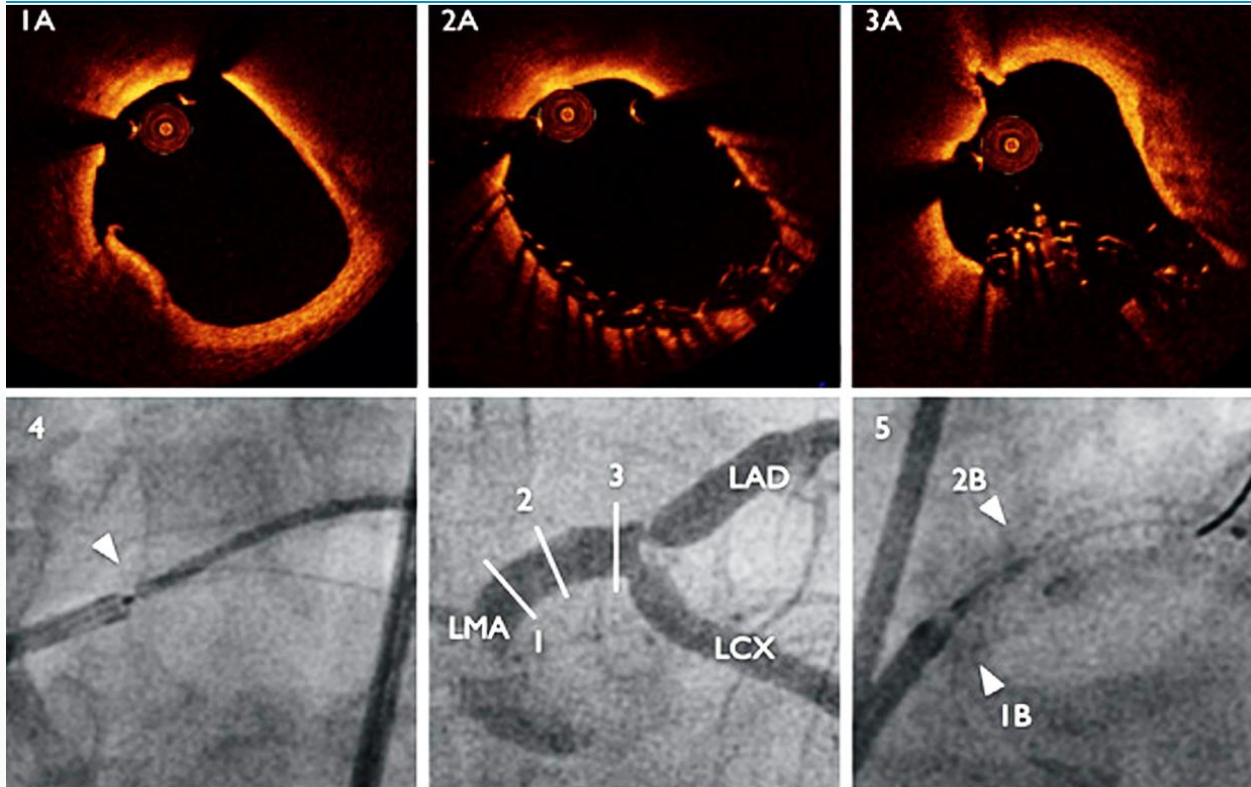


**One-stent strategy with
kissing balloon inflation**



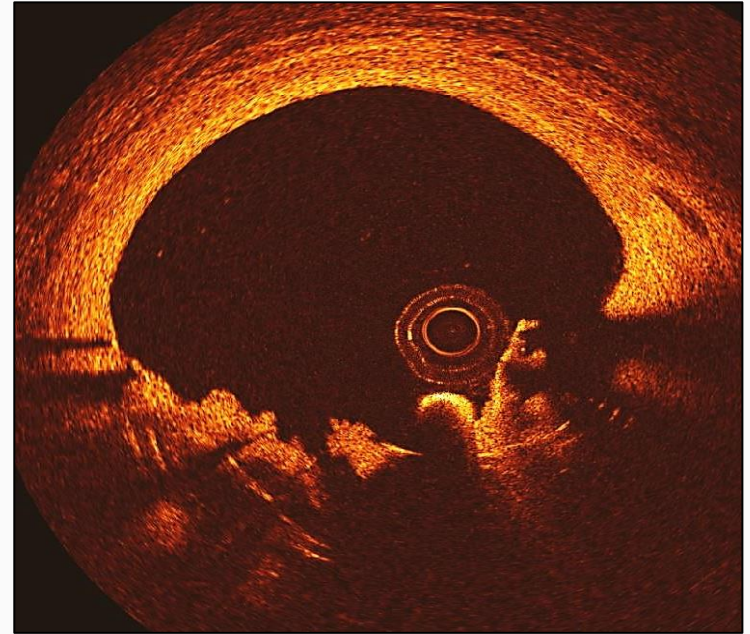
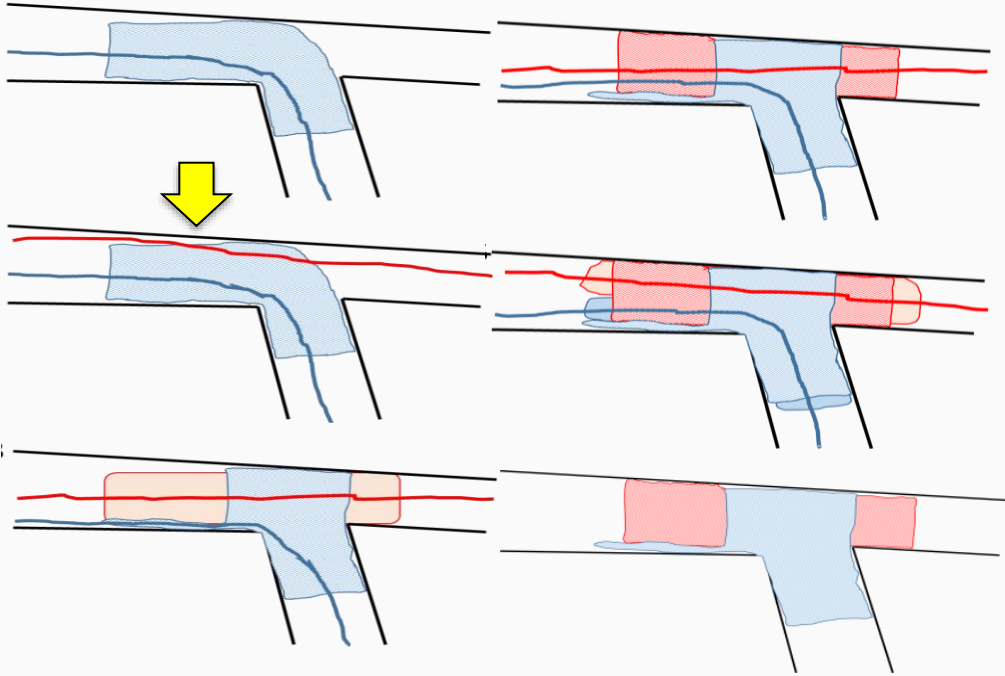
Two-stent strategy

Accidents



Leibundigut et al
EuroIntervention 2012

Stent thrombosis in a crushed segment

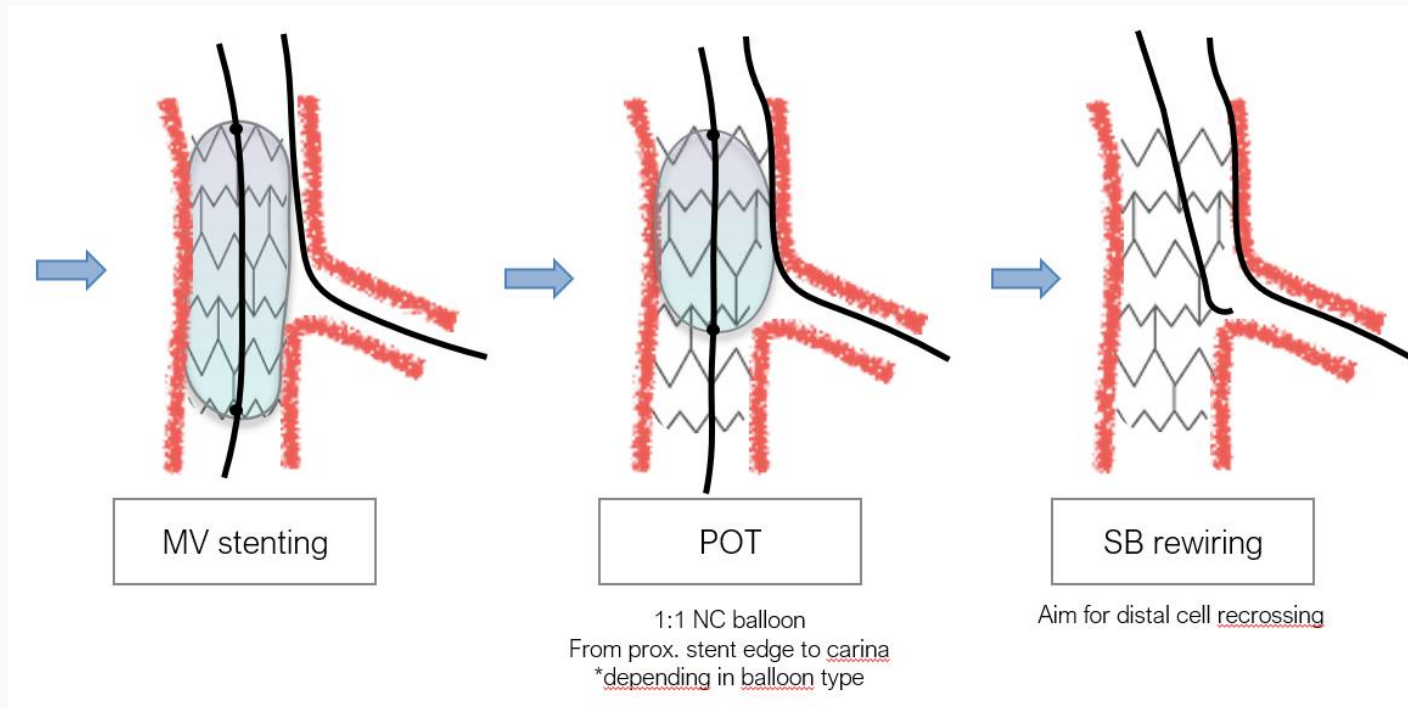


Wurtz, M., et al. *Int J Cardiol*, 2015. **197**: p. 113-5.

Abdou et al. *CCI* 2011

Zhang et al *Chin Med J* 2009

Mandatory POT as first step after stent impl.



Holm NR et al. Rational and design of the European randomized Optical Coherence Tomography Optimized Bifurcation Event Reduction Trial (OCTOBER), Am Heart J 2018

OCT guiding: Five treatment goals



Optimal lesion coverage



No unintended stent deformation



Optimal stent expansion



No luminal masses



No stent malapposition?

Adapted from Holm NR et al., Am Heart J 2018

OCT protocol – Timing

1

Before stent implantation

Evaluation of plaque preparation
Landing zone
Stent sizing

2

After rewiring

Wire position
Accidental abluminal rewiring

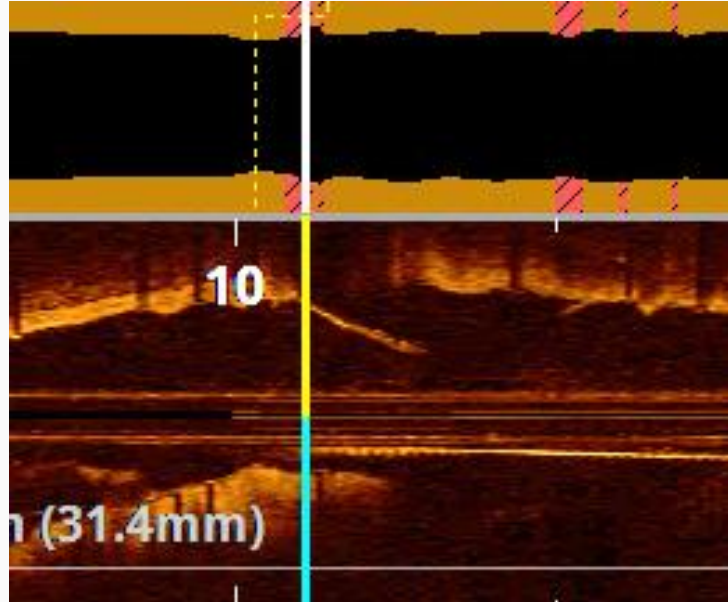
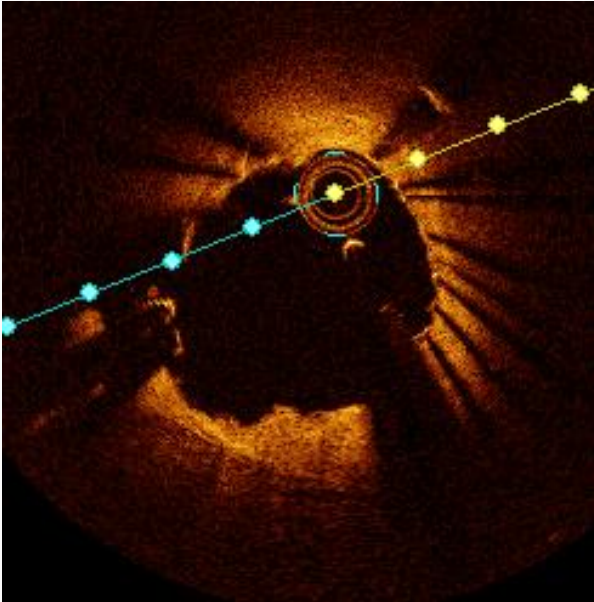
3

Final result

Lesion coverage
Expansion
Apposition
Stent deformation
Luminal masses

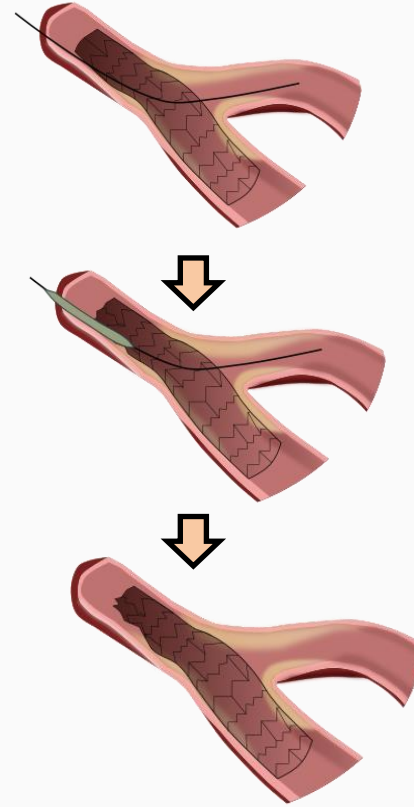
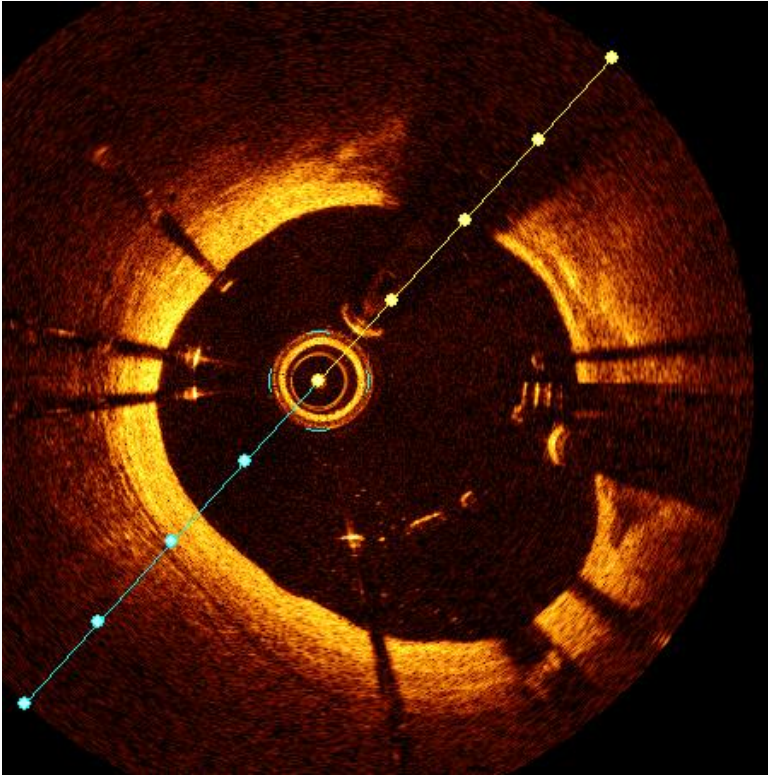
Holm NR et al. Rational and design of the European randomized Optical Coherence Tomography Optimized Bifurcation Event Reduction Trial (OCTOBER), Am Heart J 2018

Optimal rewiring



Foin et al. Int J Card 2013
Alegria-Barrero et al. EuroIntv 2012
Foin et al. Circ J 2012
Viceconte N et al. CCI 2012
Holm et al EuroIntv 2011
Okamura et al EuroIntv 2014

Accidental abluminal rewiring



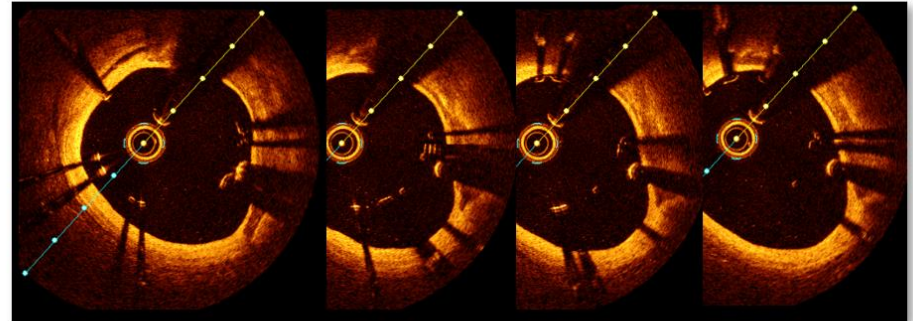
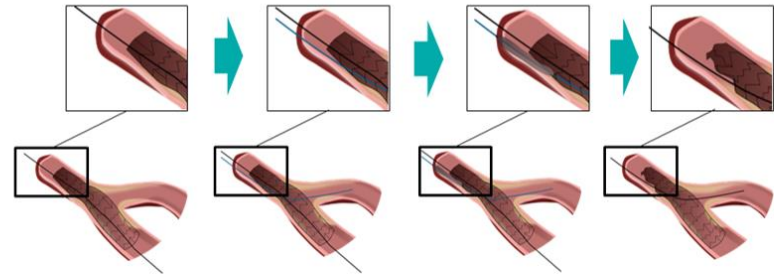
Unintended Stent Deformation (USD)

Andreasen et al. 2023. In review

Abluminal rewiring occurs in >5% of cases

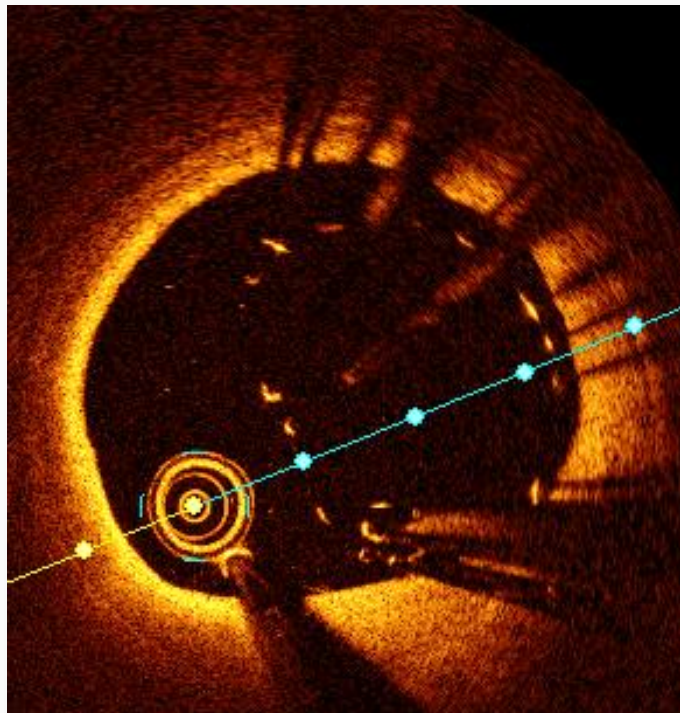
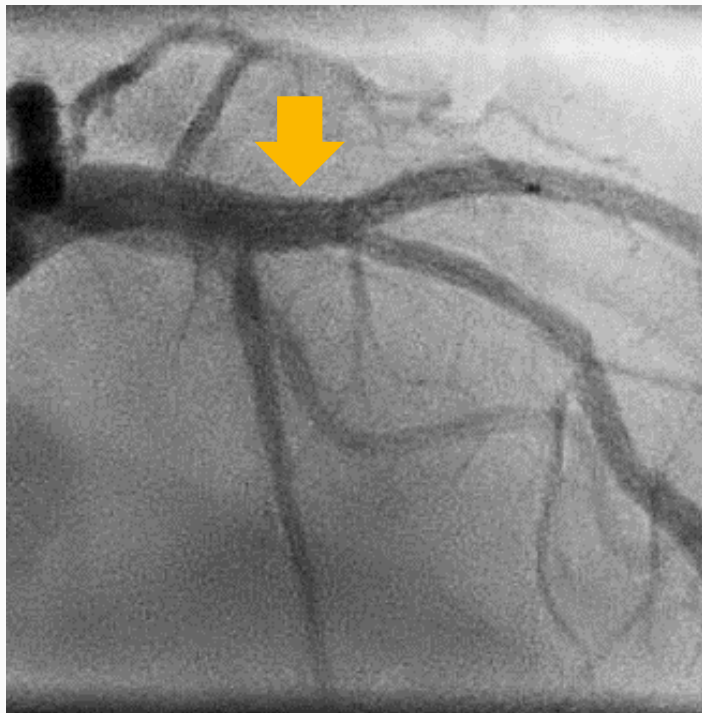
	No. total cases (%)
Abluminal rewiring	32/589 (5.4%)
- After 1st stent	19/521*
- After 2nd stent	14/268*
Cases with ≥ 1 incidence	1/589 (0.2%)
Seen and corrected during procedure	18/33 (54.5%)
Unnoticed during procedure	15/33 (45.5%)

*Total number of cases available for wire evaluation



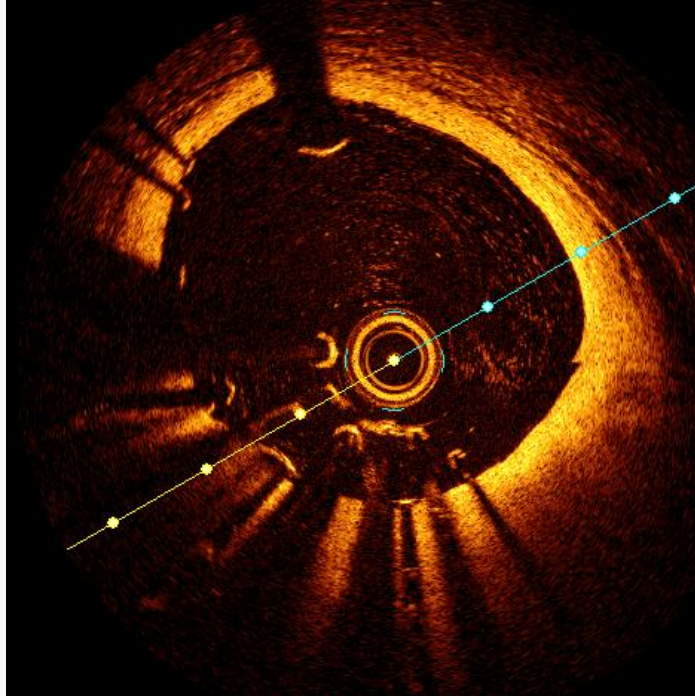
Andreasen et al. 2023. In review

Accidental abluminal rewiring



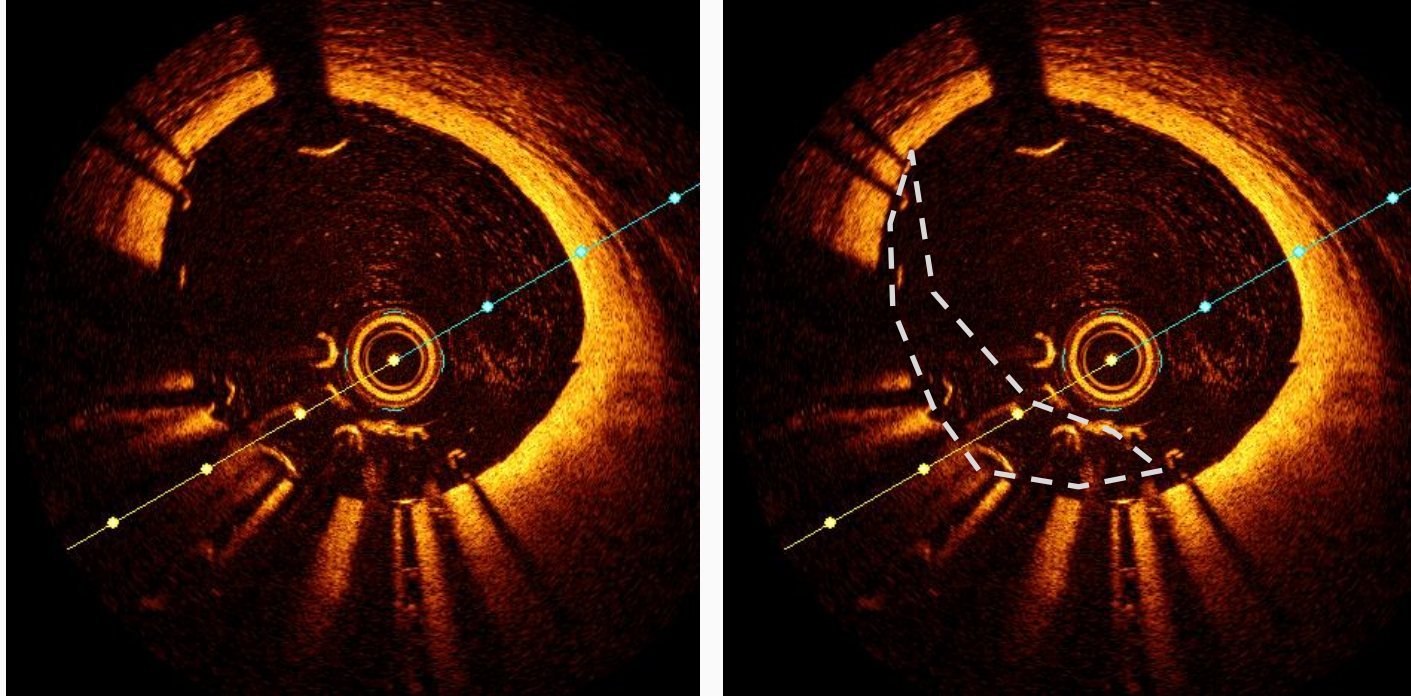
OCTOBER case

Unintended stent deformation



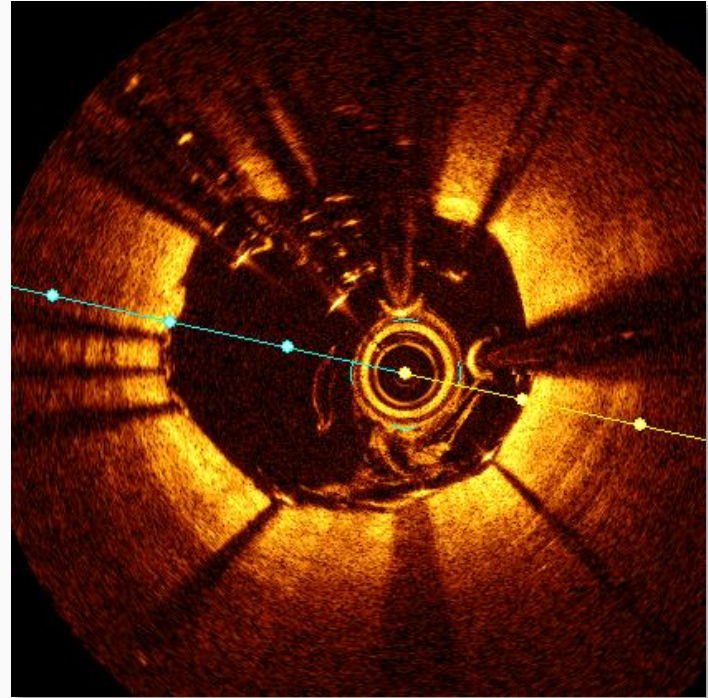
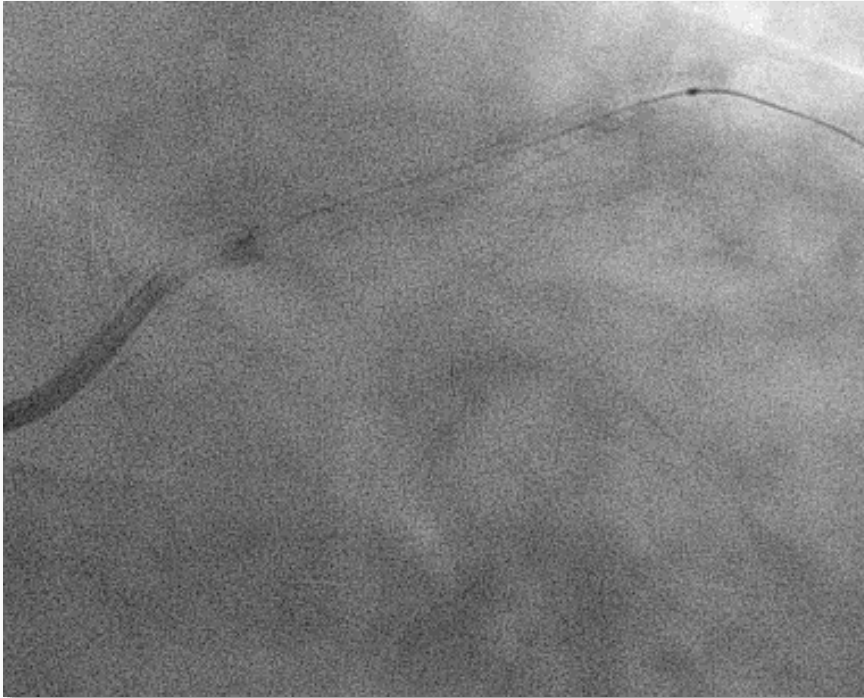
Andreasen et al. Accepted. JACC Intv 2024

Unintended stent deformation



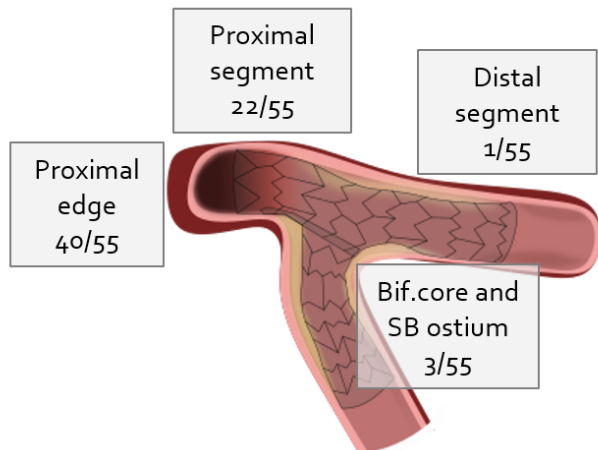
Andreasen et al. Accepted. JACC Intv 2024

Unintended stent deformation



Andreasen et al. 2023. In review

Unintended stent deformation - Location



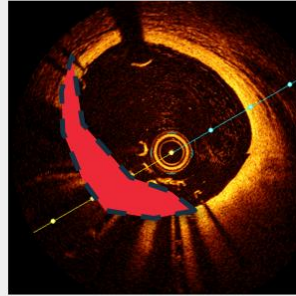
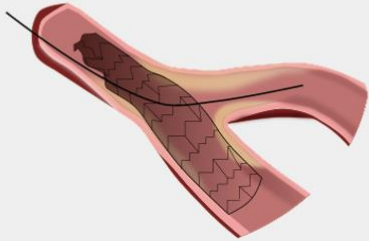
	OCT-guided procedure	USD
Left-main*	147/589 (25%)	27/147 (18%)
LAD/D bifurcation	390/589 (66%)	26/389 (6.7%)
Cx/OM bifurcation	54/589 (9.2%)	2/54 (3.7%)

*Including Left-main bifurcations and other bifurcation treatments with stent implanted in the Left-main

Andreasen et al. 2023. In review

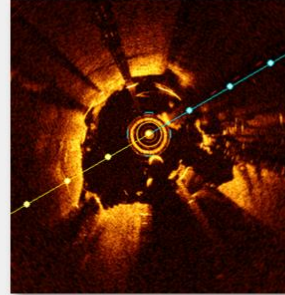
Mechanisms of USD in OCTOBER

Abluminal rewiring



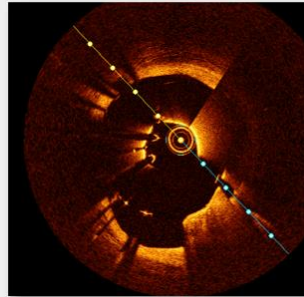
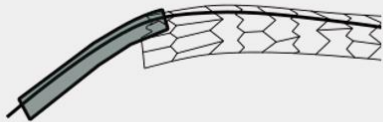
24/55 (44%)

Fractured wire



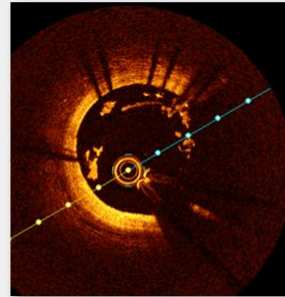
2/55 (3.6%)

Guide catheter collision



20/55 (40%)

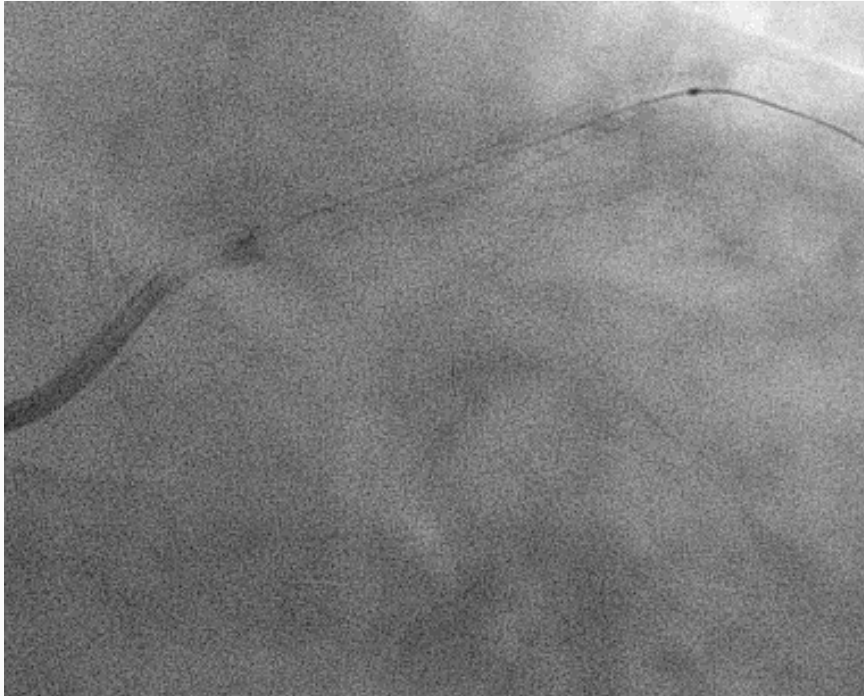
Uncertain mechanism



9/55 (16.4%)

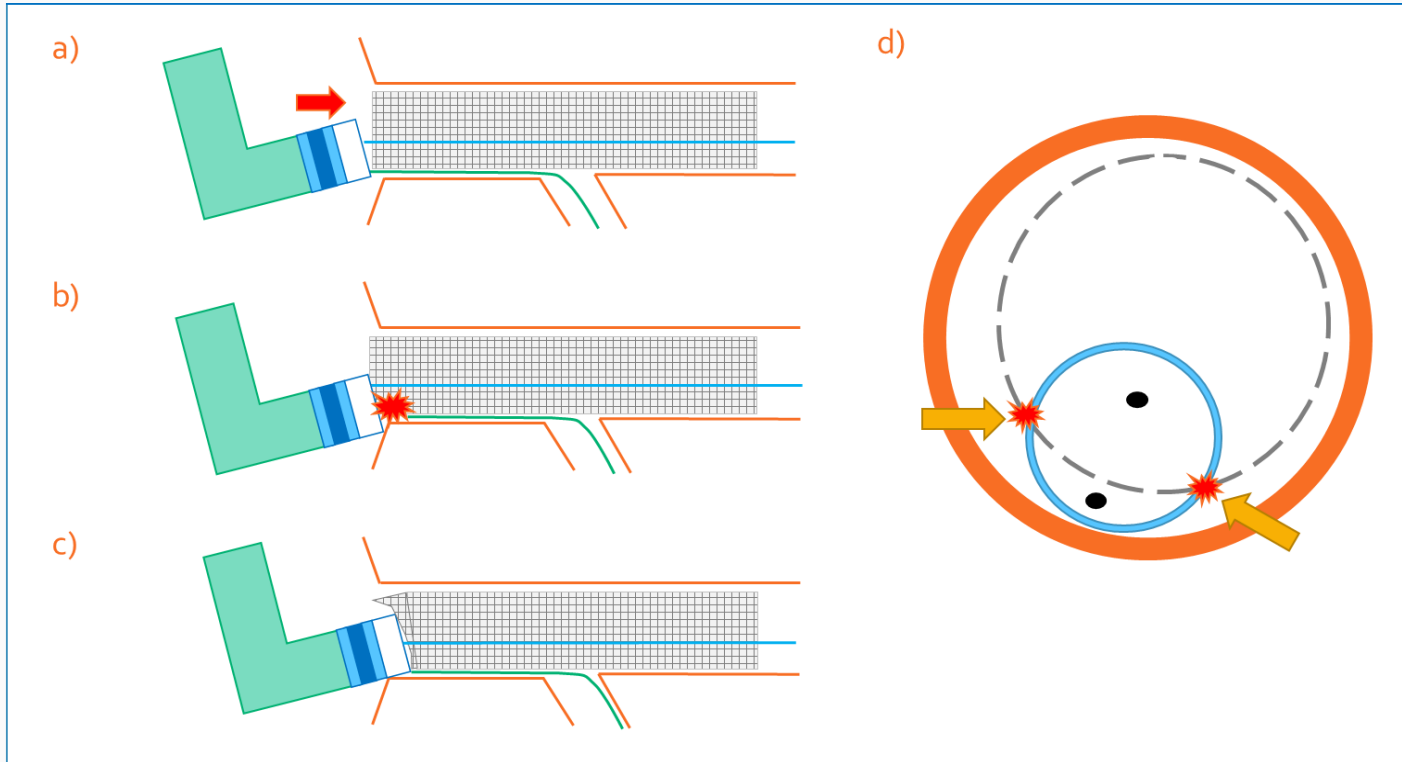
Andreasen et al. 2024. Accepted JACC Interv.

Accidents

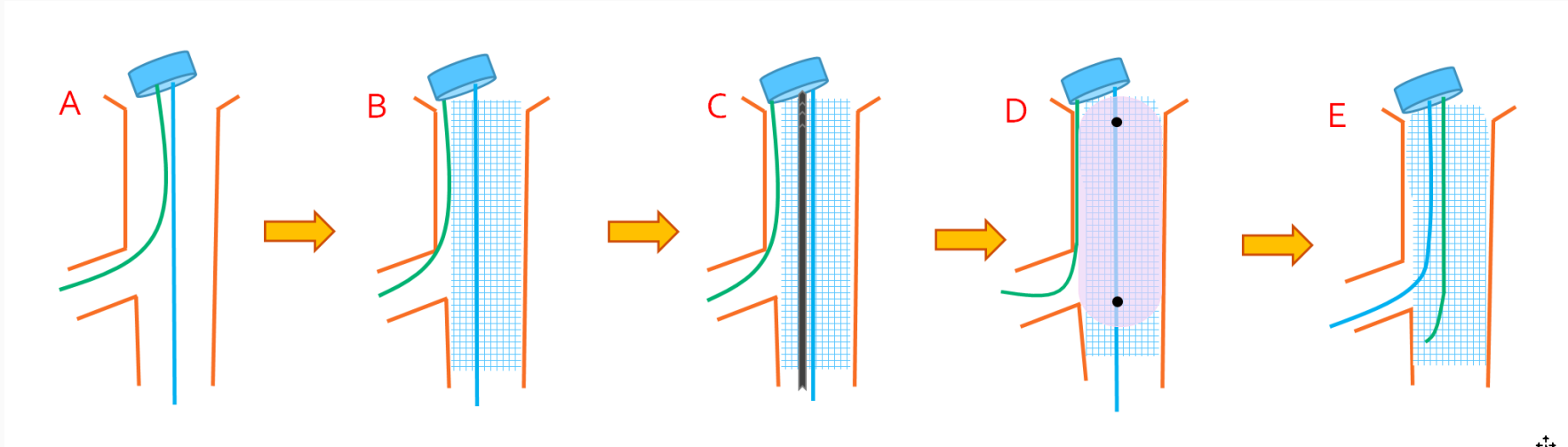


Andreasen et al in submission

The guiding catheter is constrained by the jailed wire

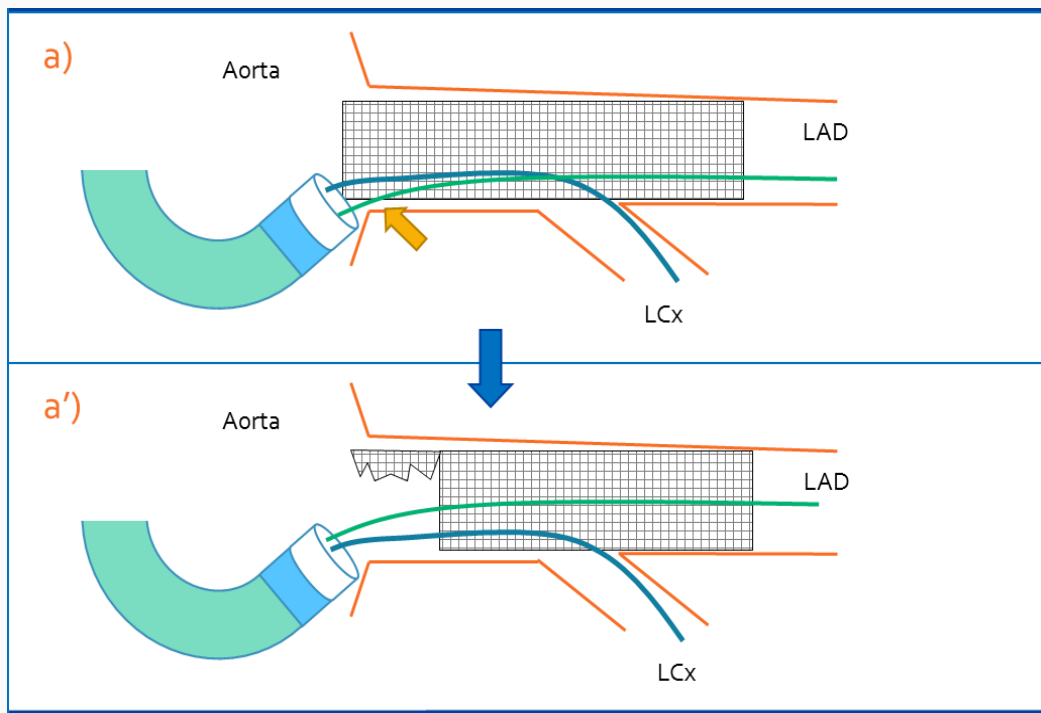


Get rid of the jailed wire - *after* early POT



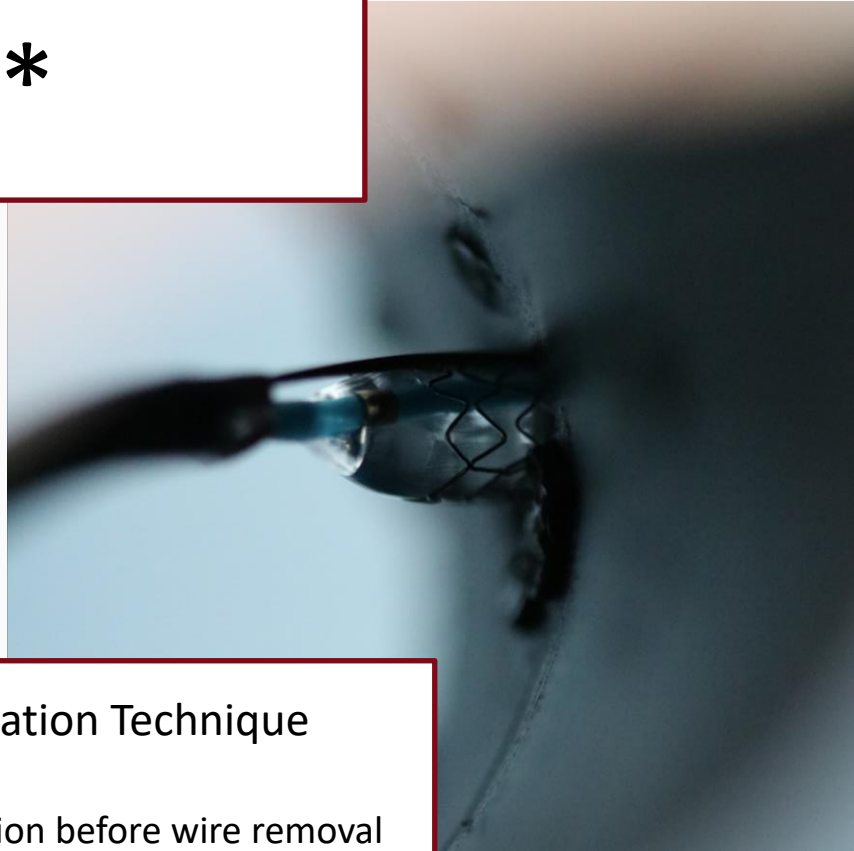
Fox Maule et al. In final preparation

Accidental abluminal rewiring



Fox Maule et al. In final preparation

FOOT*



*Final Ostial Optimisation Technique

Final ostial balloon inflation before wire removal

Fox Maule et al. In final preparation

Important to correct USD

- Two-year MACE occurred in 7 of 30 untreated USD cases

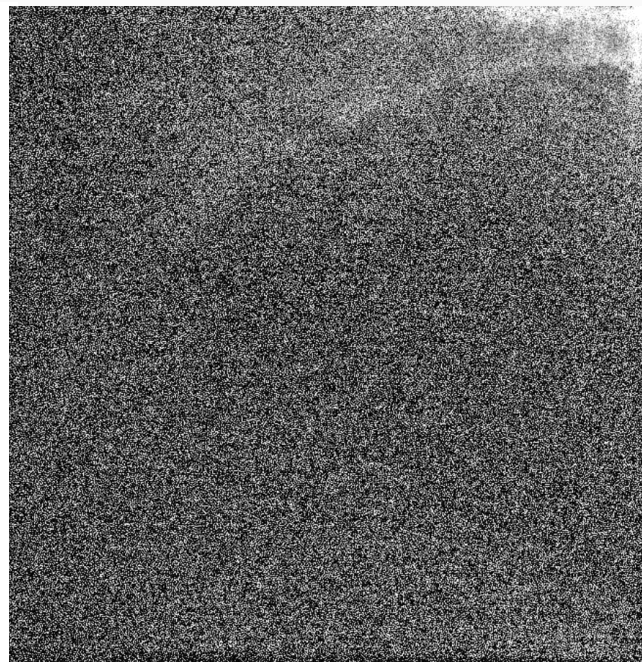
n=589

USD left untreated (n=30)	No USD or unknown (n=559)	Log Rank
23.3%	9.4%	0.007

n=55

USD left untreated (n=30)	Treated or unknown final USD (n=25)	Log Rank
23.3%	0.0%	0.014

Andreasen et al. 2023. In review



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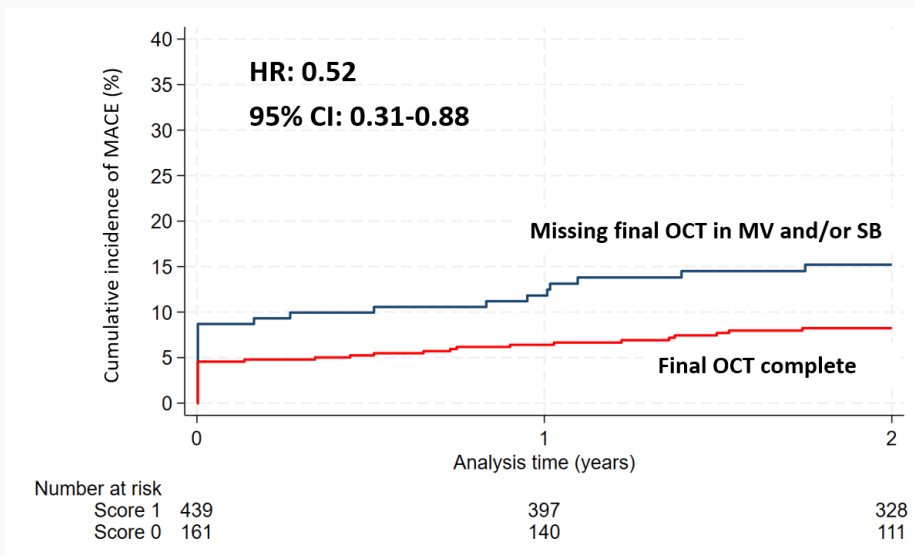
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Final result

Lesion coverage
Expansion
Apposition
Stent deformation
Luminal masses

Holm NR et al. Rational and design of the European randomized Optical Coherence Tomography Optimized Bifurcation Event Reduction Trial (OCTOBER), Am Heart J 2018

Importance of the final OCT pullback

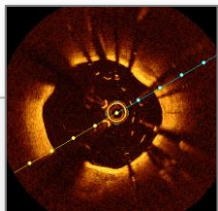


- The patient leaves the cathlab with the "Final result"
- Image all treated segments + edges
- If you cannot pass the OCT catheter: Postdilute

Neghabat et al TCT2023

Final OCT was mandatory in MV for provisional one-stent technique, and in both MV and SB for all two-stent techniques

Conclusion



- Accidental abluminal rewiring occurs in >5% of cases in contemporary bifurcation PCI
- Unintended stent deformation (USD) was seen in 9% of cases
- Accidental abluminal rewiring and guide catheter collision are the two main mechanisms
- USD was associated with higher MACE
- Corrected USD -> offsets increased risk