20TH CARDIOVASCULAR SUMMIT
TCTAP 2015

How to Optimize Outcomes Technical Consideration

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BRS use in real world registries

	patients	type B2/C (%)	Follow up (months)	MACE (%)	TLR (%)	Scaffold thrombosis (%)
Costopoulos et al. 2014	92	83.9	6	3.3	3.3	0 (d)
ABSORB EXTEND Registry	512	41.0	12	4.3	1.8 (ID)	0.8 (d/p)
Liang et al. Registry	35	75.0	2	0	0	0
GHOST EU Multicentre registry	1189	51.2	6	10.1 (TLF)	2.5	2.1 (d/p)
AMC registry et al. Registry	135	67.0	6	8.5	6.3	3 (d)
Elabbassi et al. Registry	140	62.0	12	7.2	2.9 (ID)	
L'Allier P et al. Registry	339	41.0	In-hospital	2	0	1.2 (d)
ASSURE Registry	183	64.6	12	5	2.8	0
ABSORB FIRST[24] Registry	1200	46.7	1	0.8	N/A	0.42 (d/p)

IVUS use in GHOST-EU

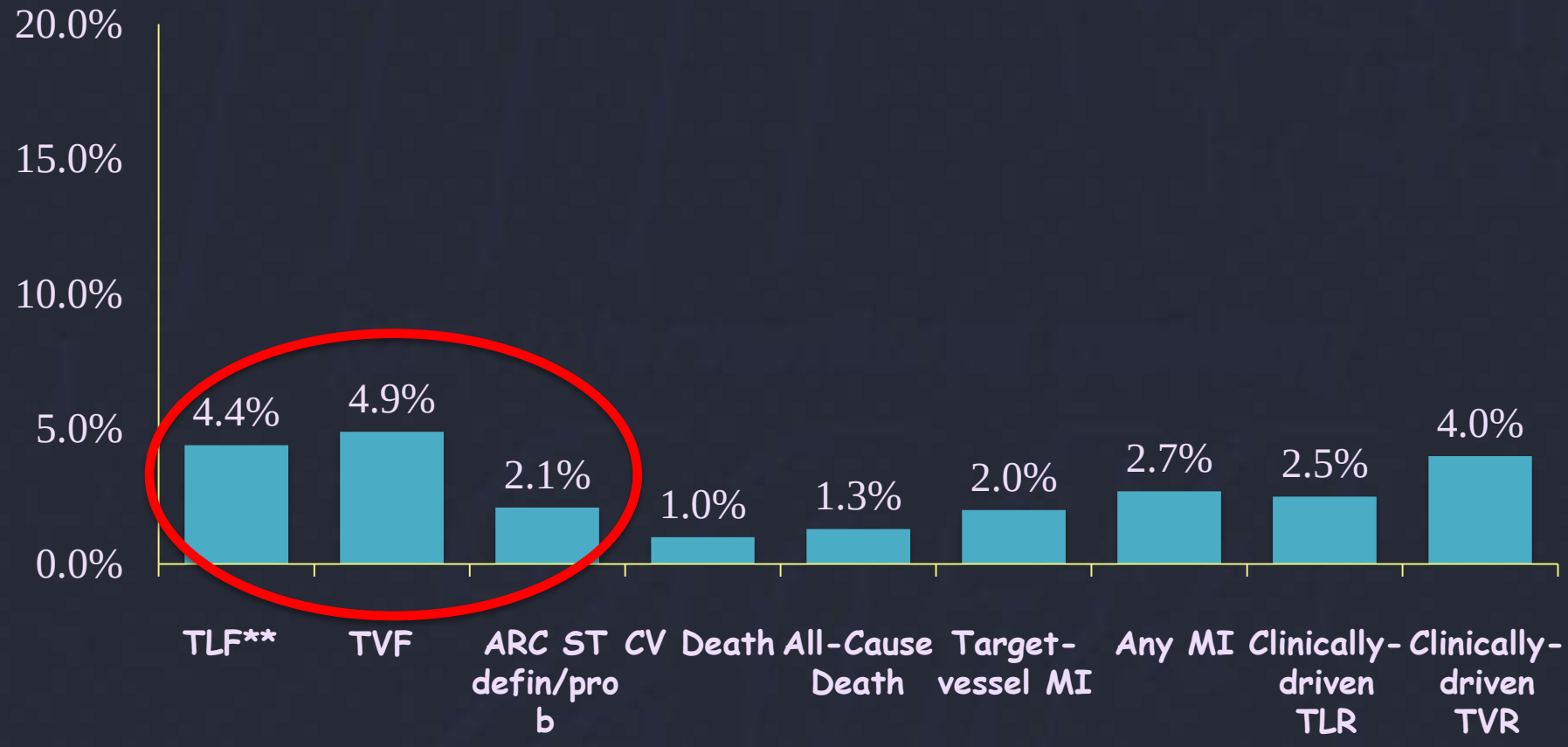
Lesion-based	
Pre-Dilatation	1,405/1,440 (98%)
Post-Dilatation	712/1,1440 (49%)
Patient-based	
No. Target Lesion/Pt	1.2±0.5
Multivessel Disease	485/1,186 (40.9%)
SYNTAX Score	11.3±7.9 (820)
Hybrid (BVS plus non-BVS)	219/1,189 (18.4%)
IVUS-guided	171/1,184 (14.4%)
OCT-guided	163/1,184 (13.8%)
Tot. Scaffold Length (mm)	32.6±23.0 (1,189)
Aver. Scaffold Diameter (mm)	3.0±0.5 (1,189)
Tot. Scaffold Implanted (n)	1731

EMO GVM CENTRO CUORE COLUMBUS

GHOST-EU

GHOST-EU

6-month outcomes



*Event rates are expressed as Kaplan–Meier estimates

** Device-Oriented composite primary endpoint

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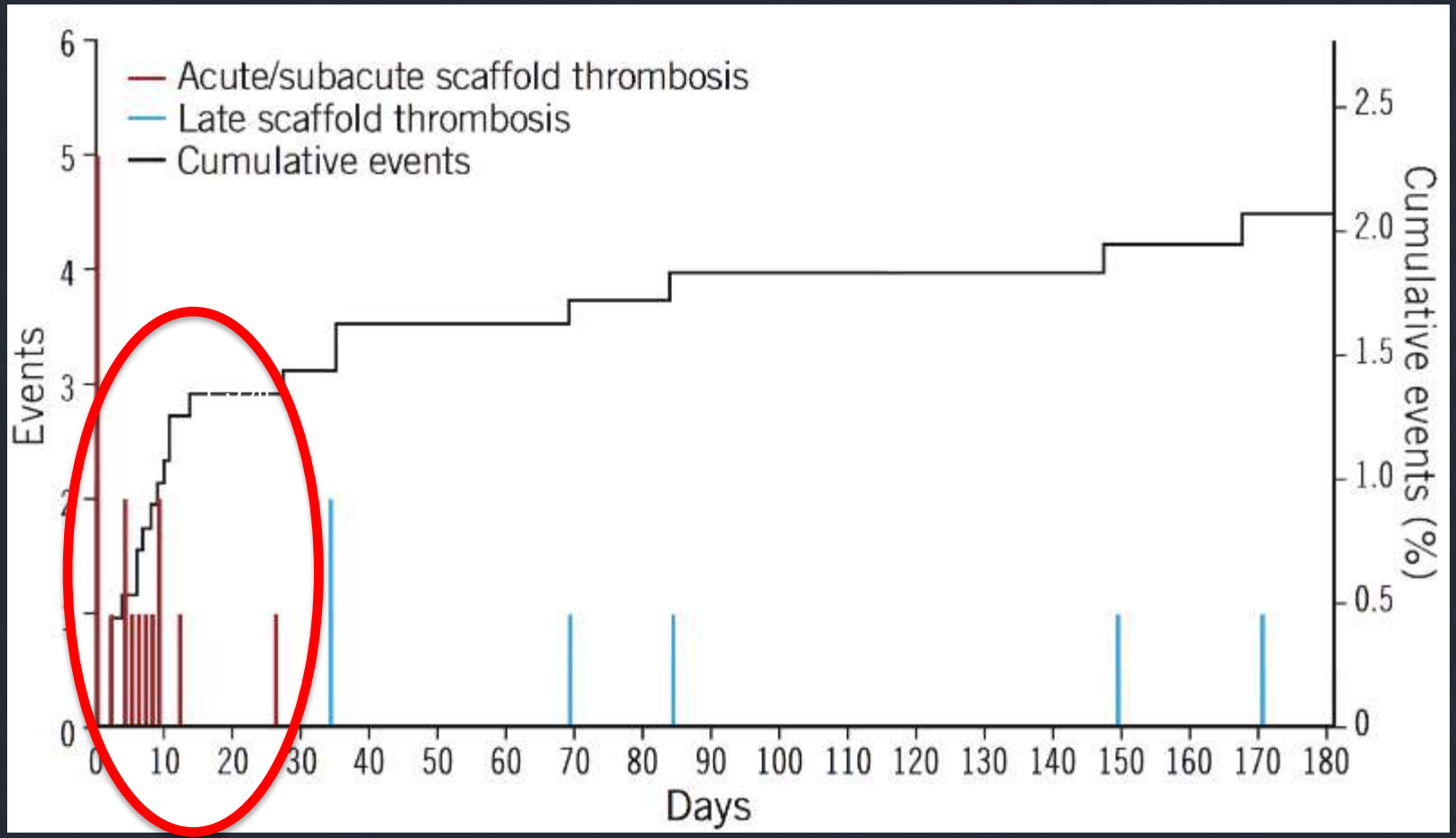
GHOST-EU

GHOST-EU
Scaffold thrombosis



Stent optimization should be considered

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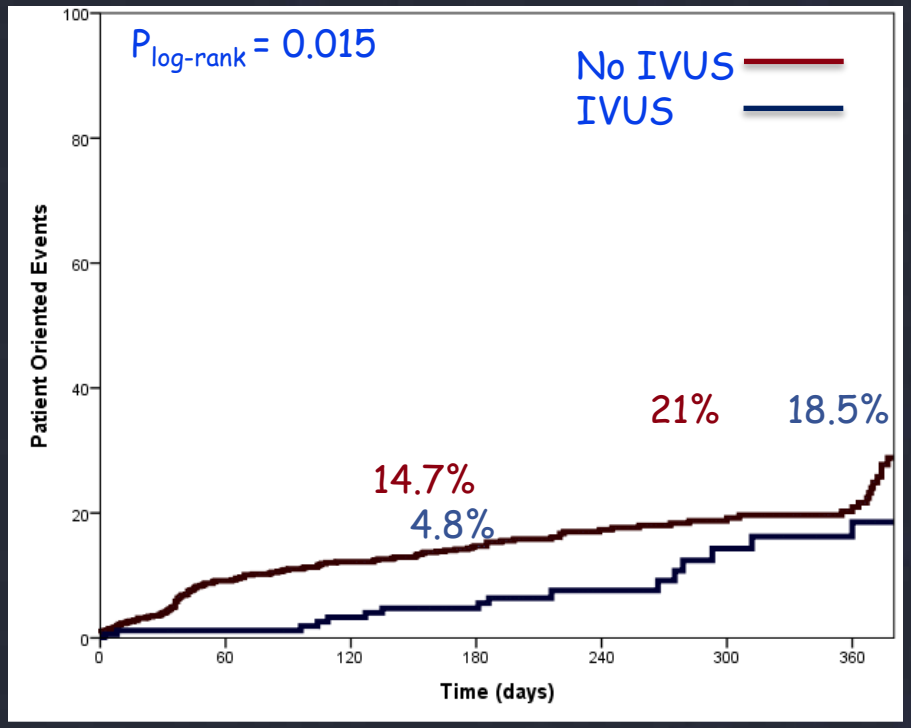
GHOST-EU

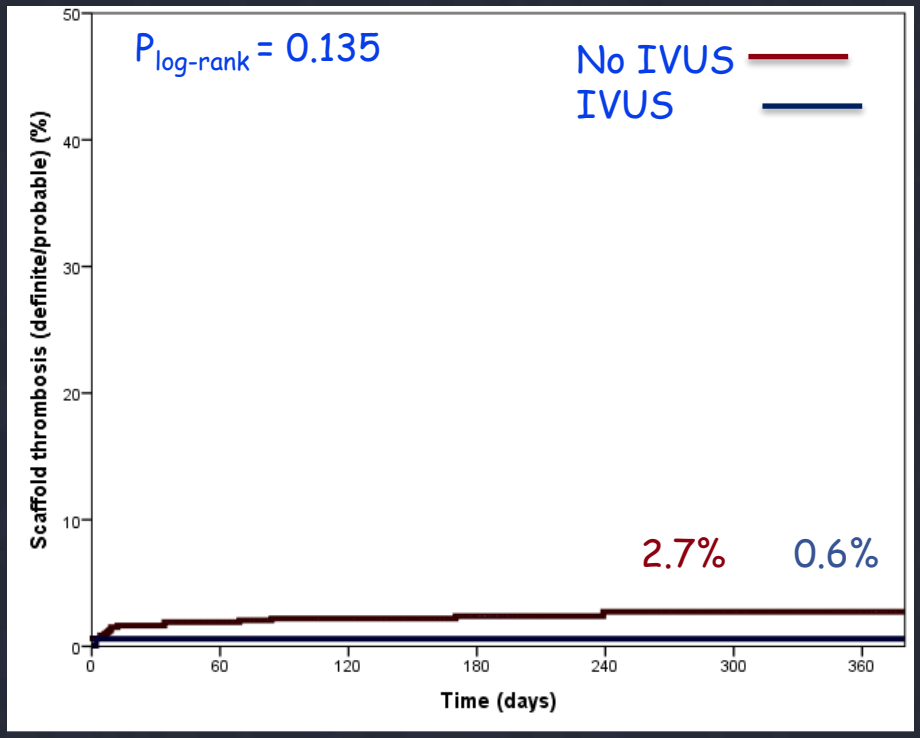
GHOST-EU IVUS sub-analysis

Death, any MI, any revas



	0	180	360
No IVUS	896	484	130
IVUS	171	119	35

Definite/probable scaffold thrombosis



	0	180	360
No IVUS	896	499	126
IVUS	171	122	37

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GHOST-EU

Deep penetration ? or High resolution ?

vessel size

malapposition

calcification

disruption

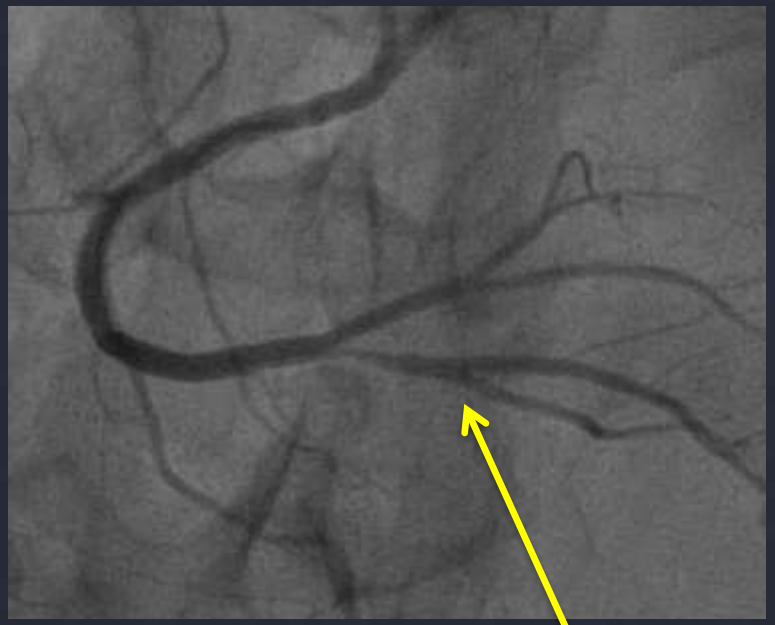
neointimal coverage

	IVUS	OCT
Axial resolution	100-150 µm	10-20 µm
Lateral resolution	150-300 µm	20-40 µm
Penetration depth	4-8 mm	1-2 mm
Blood clearance	No	Yes

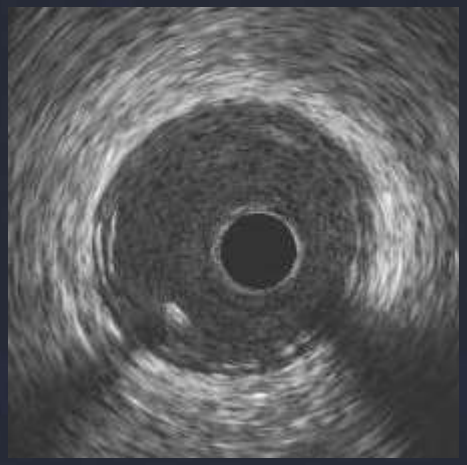
IVUS Guidance

- Plaque composition and severity of the calcification
- Select proper stent size and lenght according to vessel size and lesion length
- After stent implantation to evaluate stent expansion

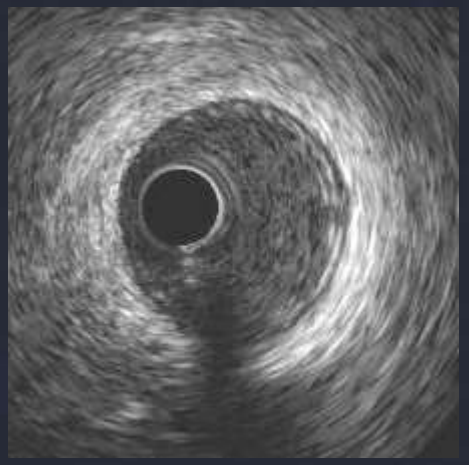
IVUS case



Which size of BRS?



Prox REF = 3.3 x3.3mm

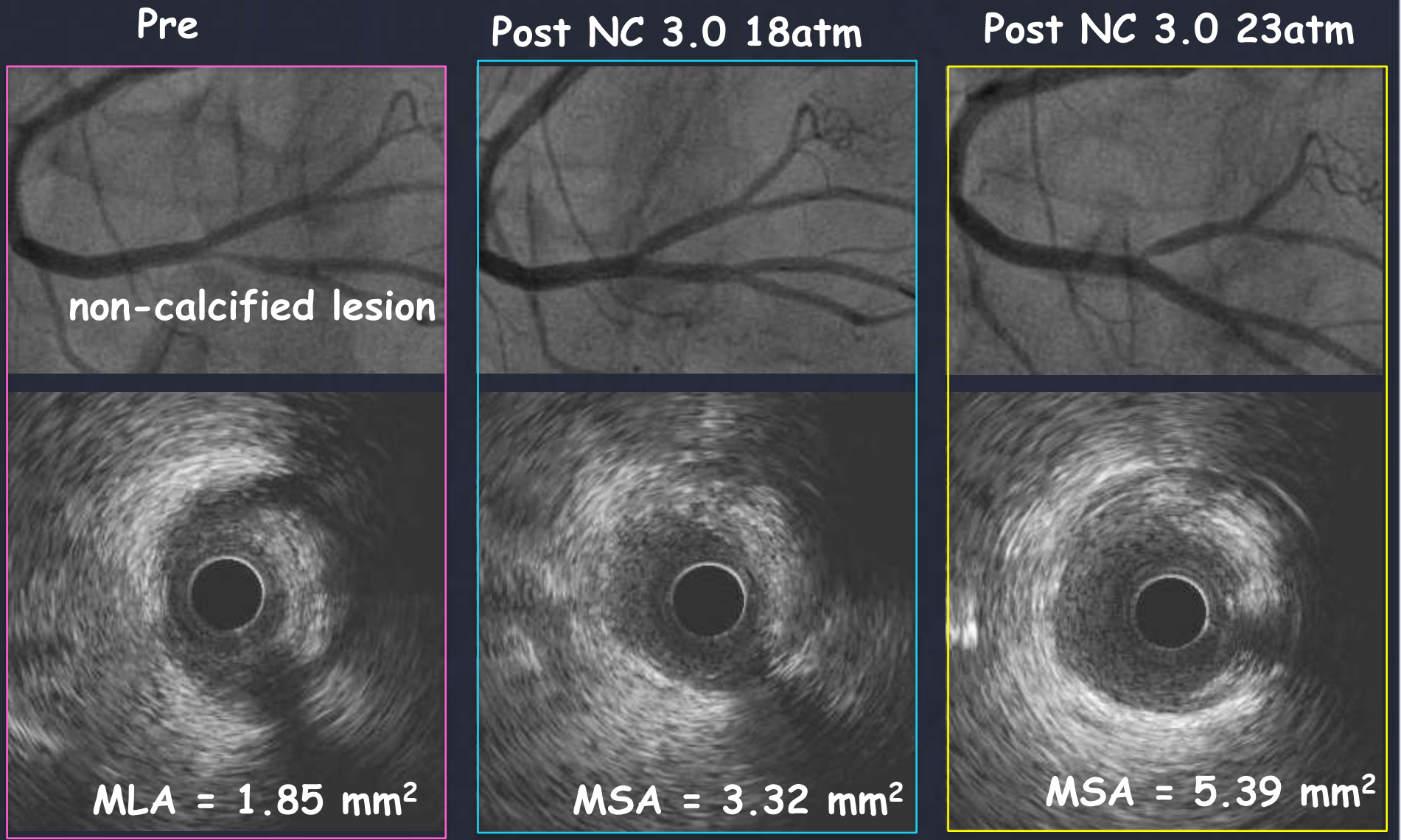


Dist REF = 2.8x2.9mm

Nominal Scaffold Diameter	Expansion limits	Maximum Dilatation Limit
2.5 mm	→	3.00 mm
3.0 mm	→	3.50 mm
3.5 mm	→	4.00 mm

3.0mm BRS → post dilatation

IVUS case


Pre
Post NC 3.0 18atm
Post NC 3.0 23atm
non-calcified lesion
MLA = 1.85 mm²
MSA = 3.32 mm²
MSA = 5.39 mm²

OCT Guidance

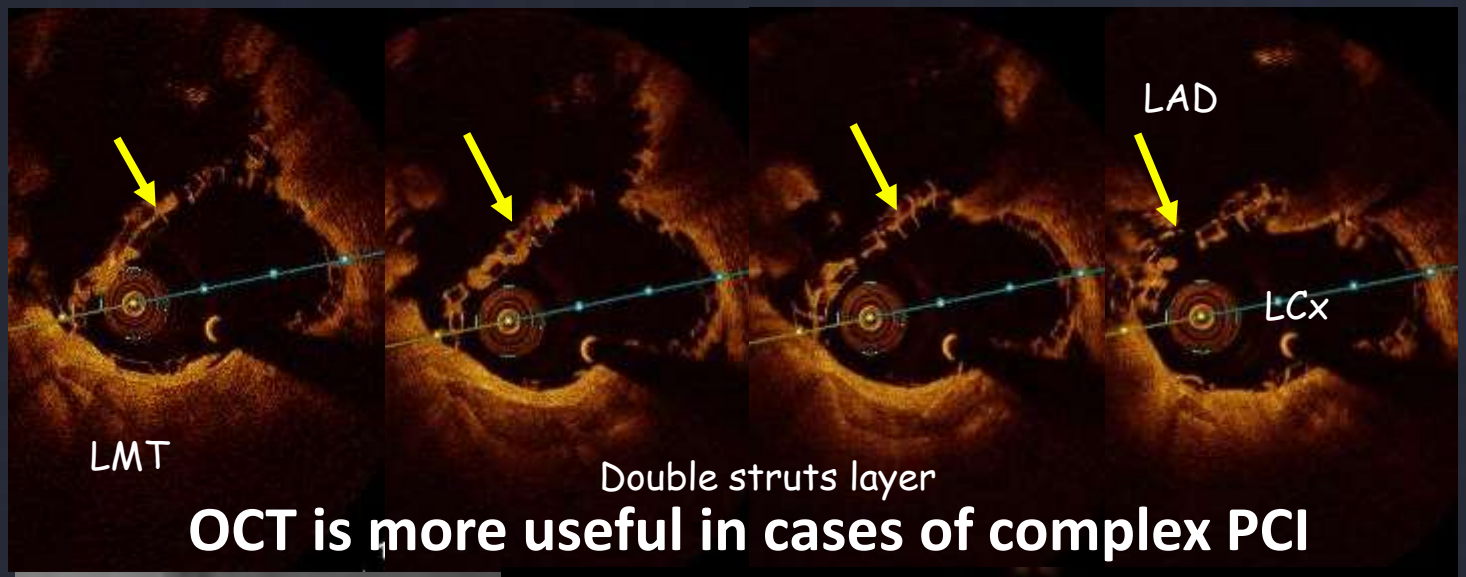
After Stenting

- Stent expansion, malapposition
- Scaffold disruption
- Edge dissections and full lesion coverage

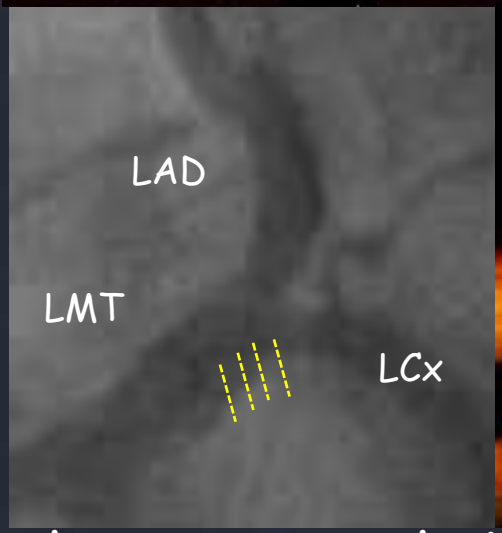
Follow Up

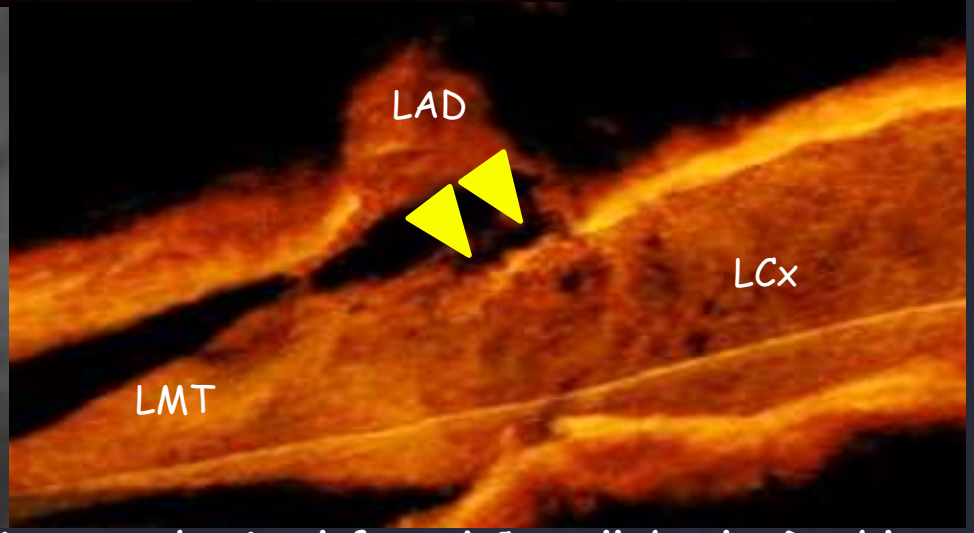
- Neointimal coverage

OCT case



OCT is more useful in cases of complex PCI

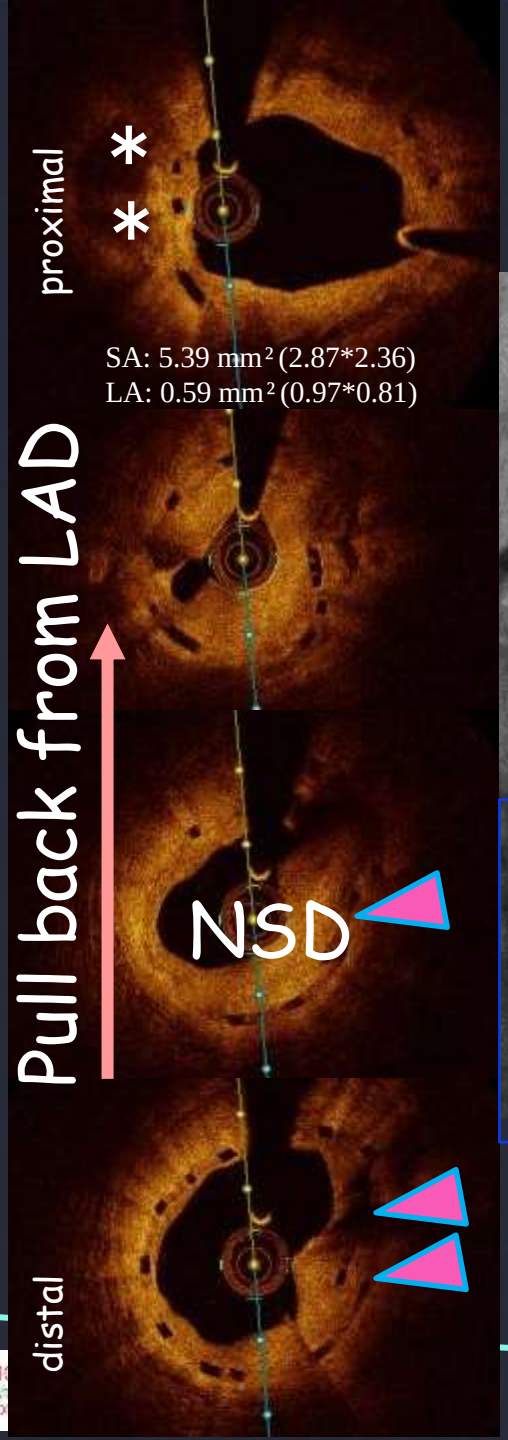


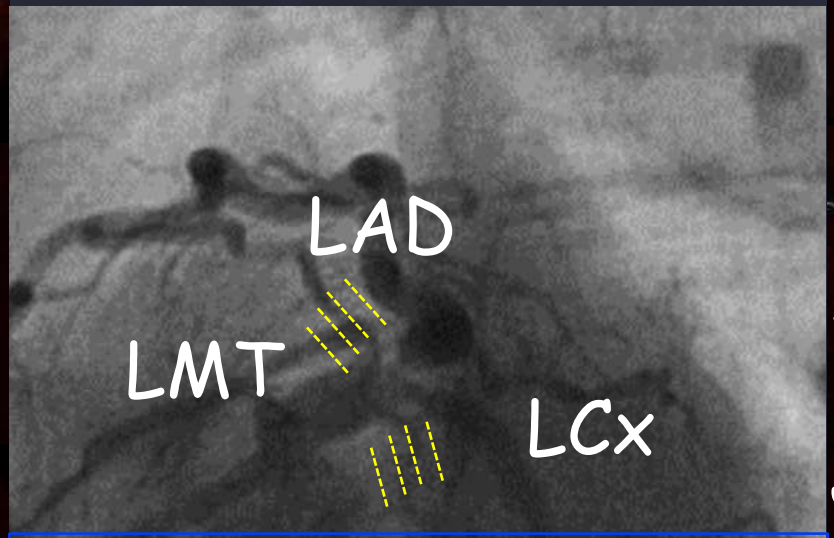


Optical coherence tomography images obtained from LCx pull-back. Double-strut layer in left main trunk was shown (white arrows).

OCT case

Follow-up OCT images





OCT can detect the mechanism of restenosis

neointimal hyperplasia…

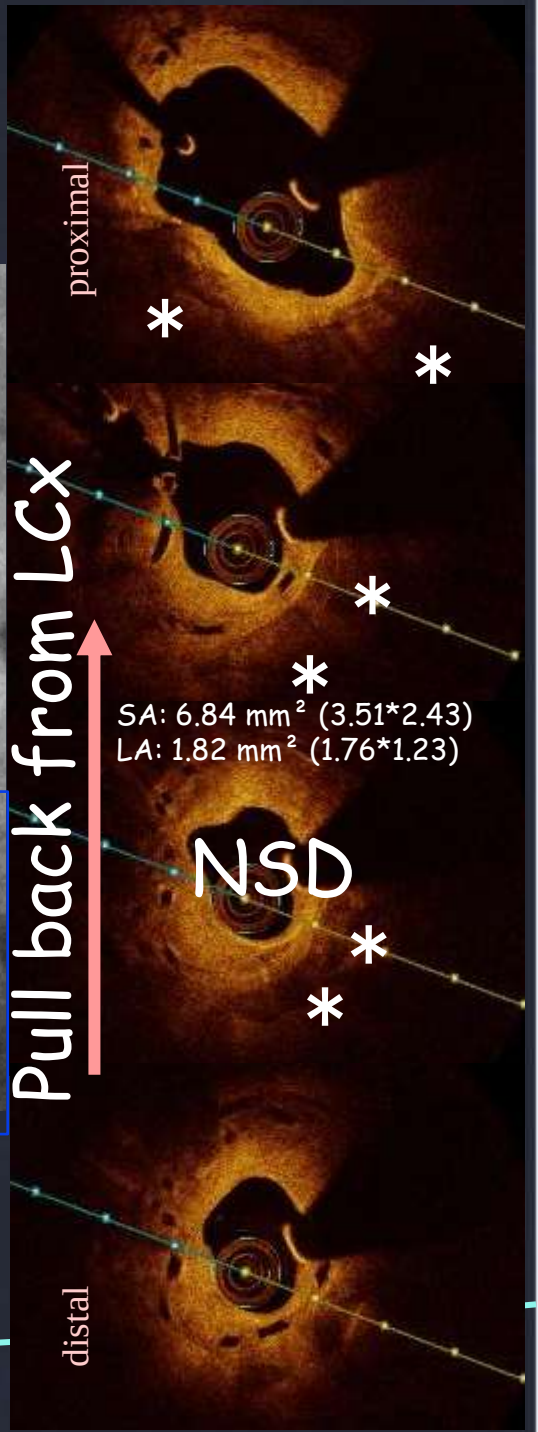
strut disruption…

uncovered struts…

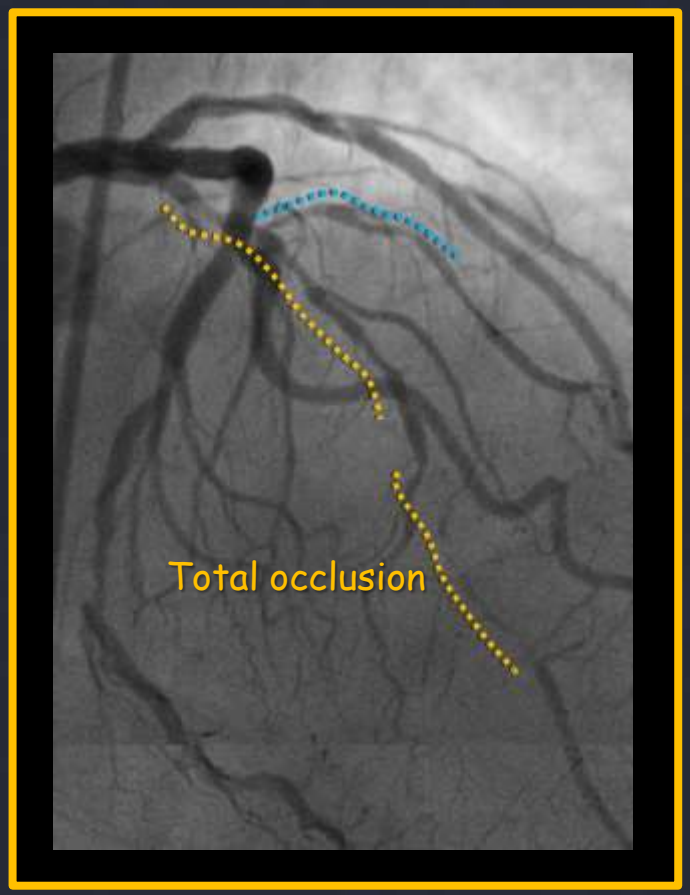
Calcium (*)

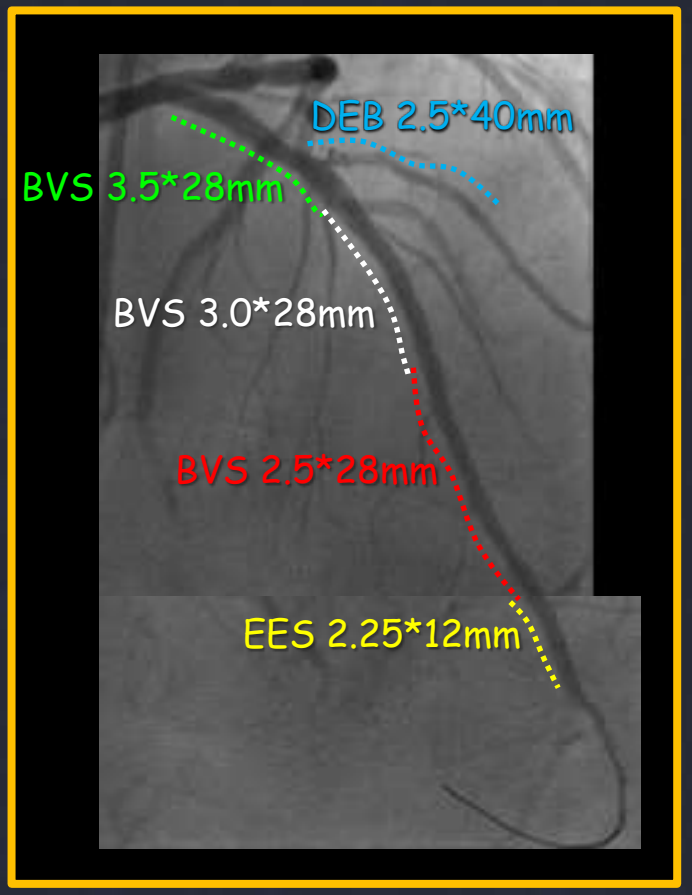
Strut disruption ( )

Non-uniform strut distribution (NSD)



Chronic Total Occlusion



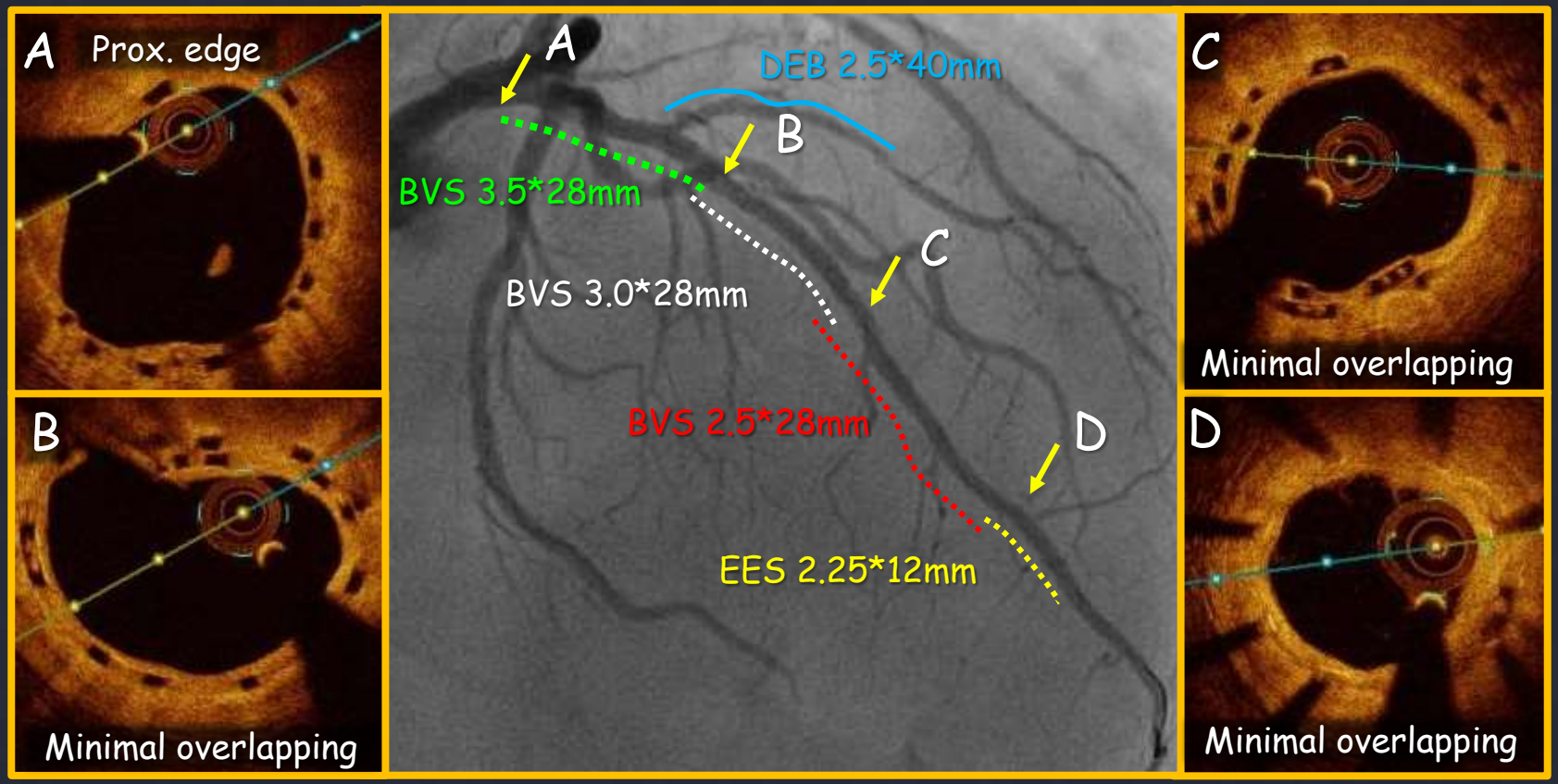


- Diffusely diseased LAD with CTO ( )
- Severe stenosis in the diagonal ( )

- All lesions were treated with 3 BVS + small EES + DEB

Chronic Total Occlusion

18M follow- up OCT images



Favorable neointimal coverage is apparent.
Black boxes: scaffolds (and/or tissue matrix) remain visible.

Conclusions

- Preliminary experience with BVS in real world is extremely promising with encouraging mid term clinical outcomes.
- Adequate lesion preparation, appropriate imaging guidance (IVUS and if possible OCT) and if necessary postdilatation are mandatory in BVS implantation in complex lesions
- Awaiting for longer term follow up data and new gen BVS 100μm