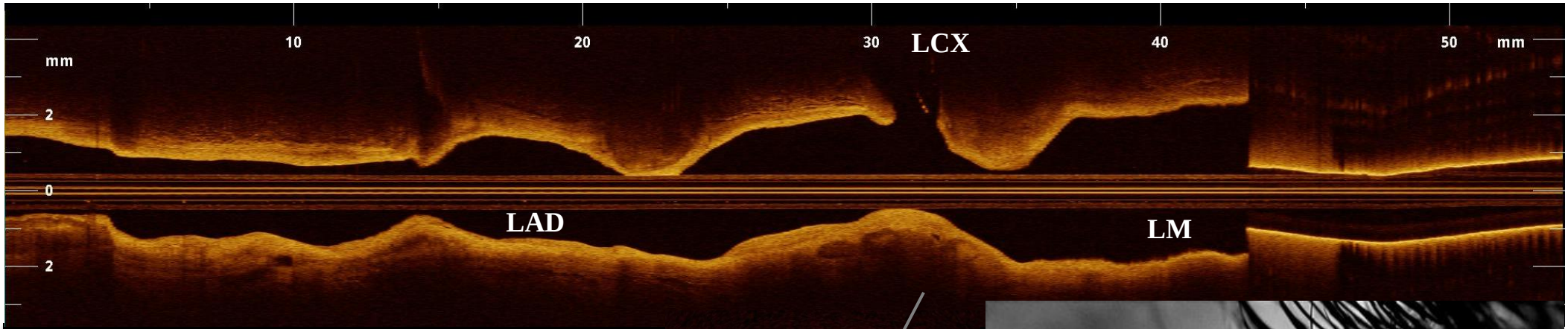
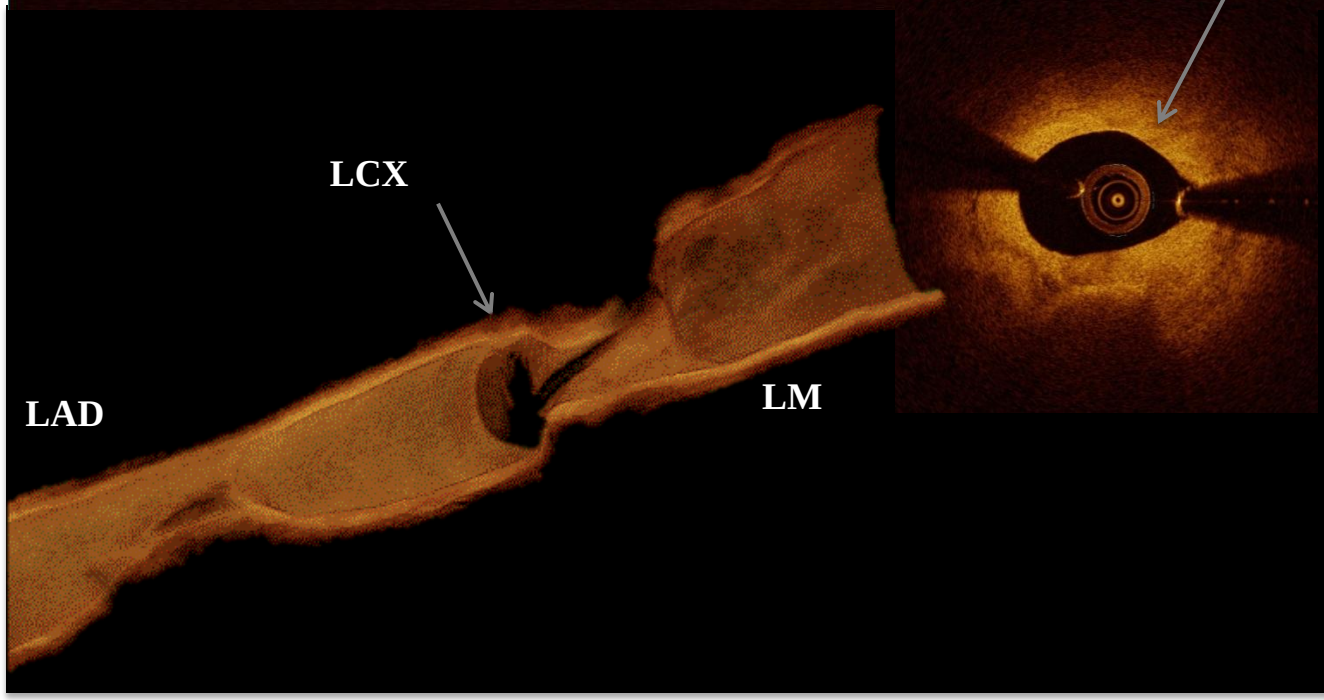
OCT TO OPTIMIZE CORONARY INTERVENTIONS:
New Tools, New Findings and Clinical Evidence





Azienda Ospedaliera
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Bergamo
Sistema Sanitario
Regione Lombardia

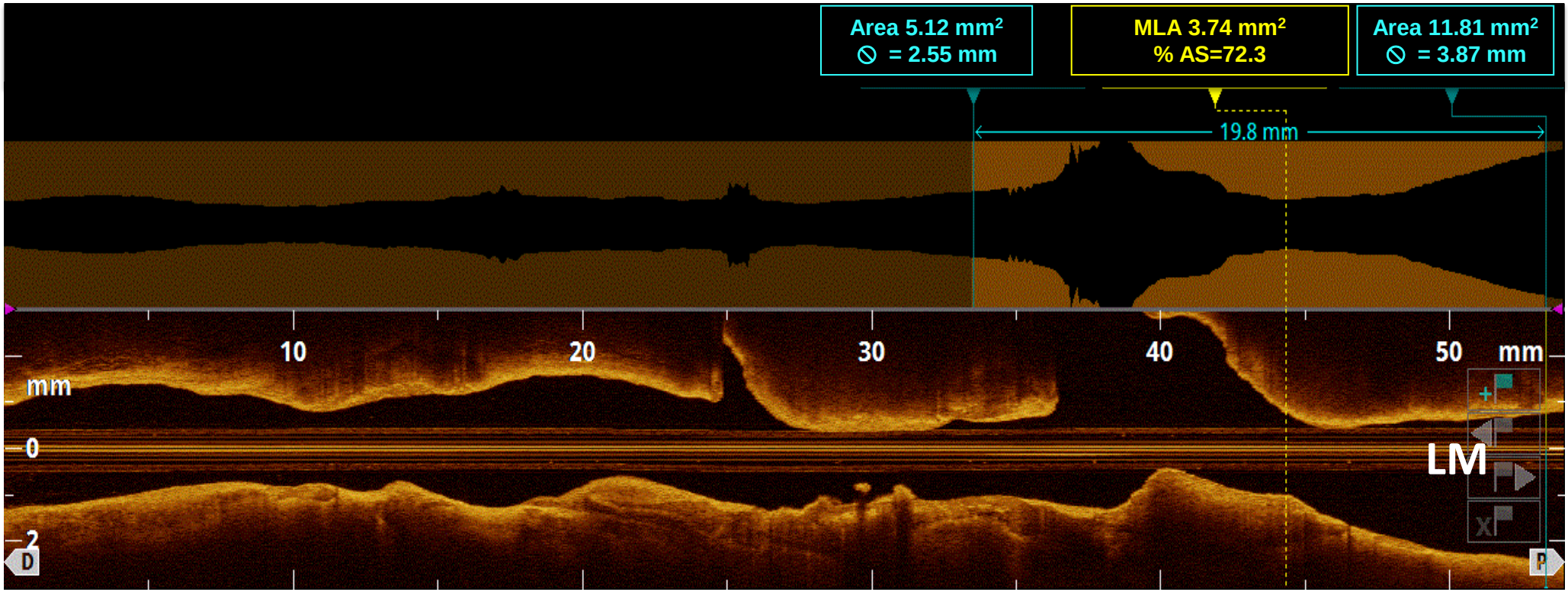
Accepted Principles in Daily Practice

Angio is least accurate to decide and mapping stent implantation in complex setting ie: LMCA, bifurcation, ostial lesions, ACS, presence of haziness and with novel bioabsorbable vascular scaffold

IVUS and OCT have been developed with the aim of overcoming these limitations

Lumen Profile Display – Minimum Lumen Area (MLA)

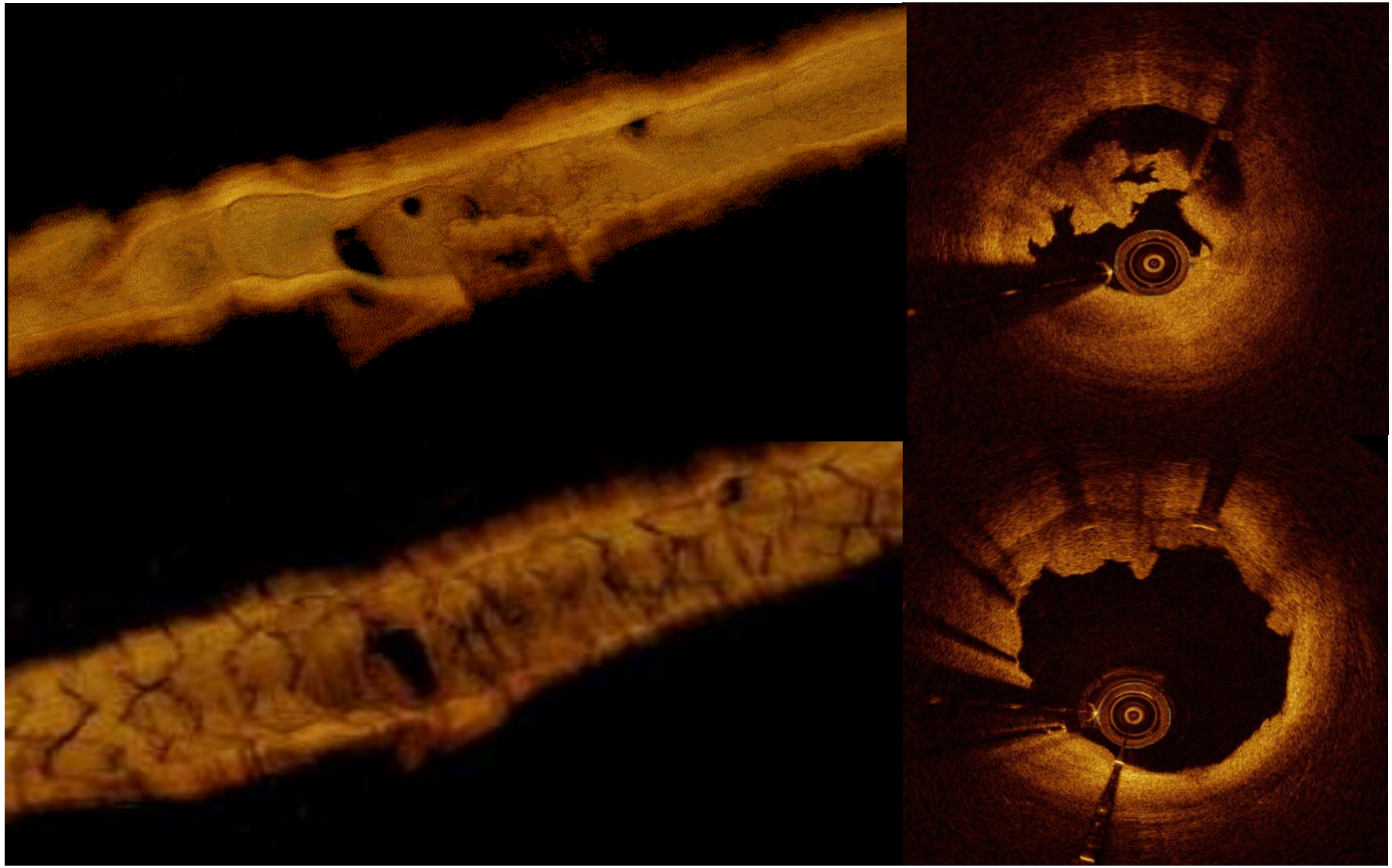
From auto-traced boundaries, lumen profile shows variations in MLA, MLD along the artery



- The software will automatically find the Minimum Lumen Area frame between any user-defined reference frames
- When MLA is first checked, the blue reference frames are set at 10% and 90% of the pullback length

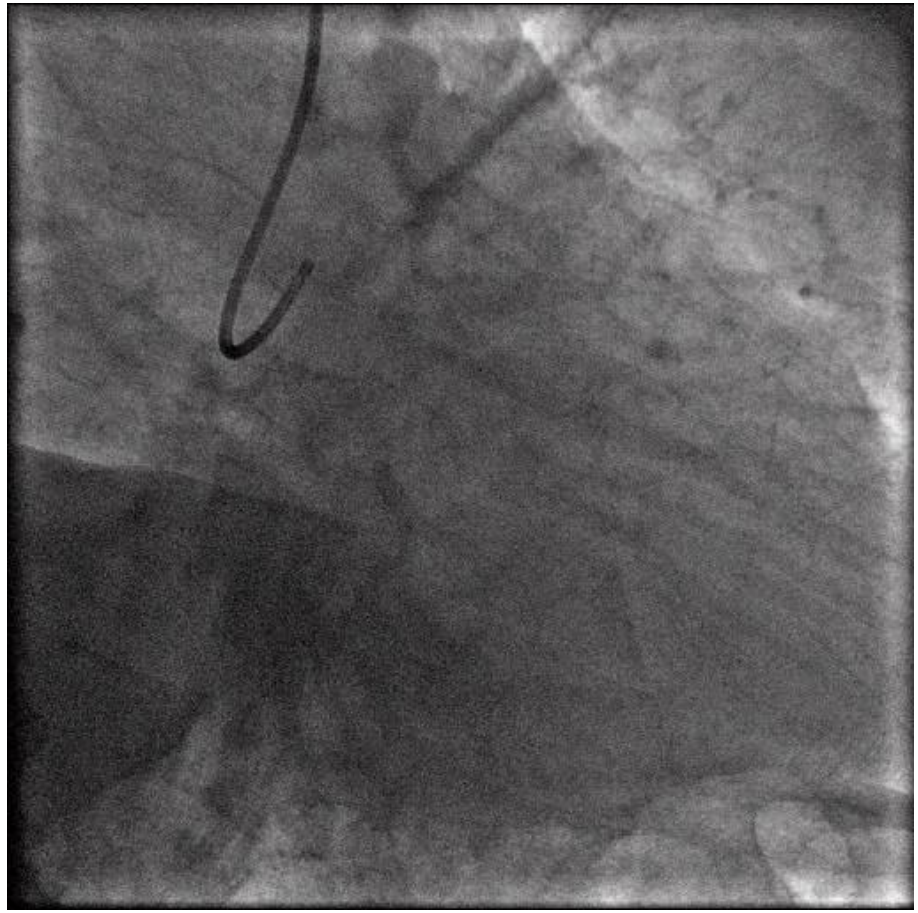
Immediate 3D Navigation View

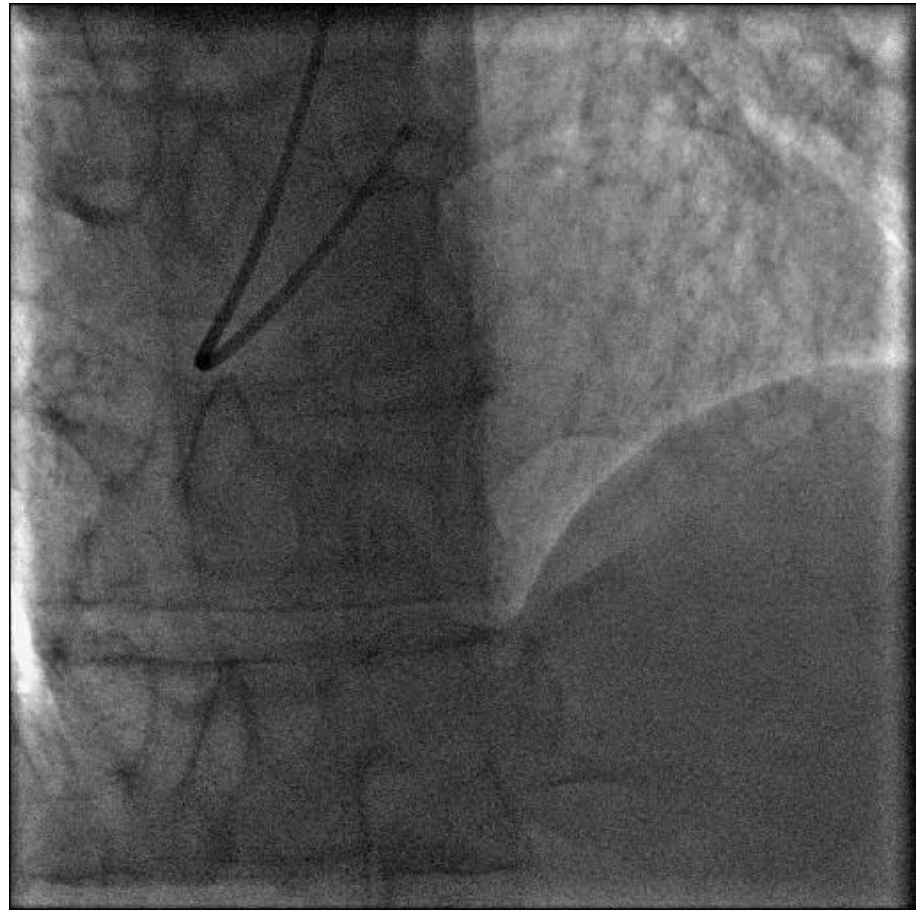
branches and stent geometry assessment



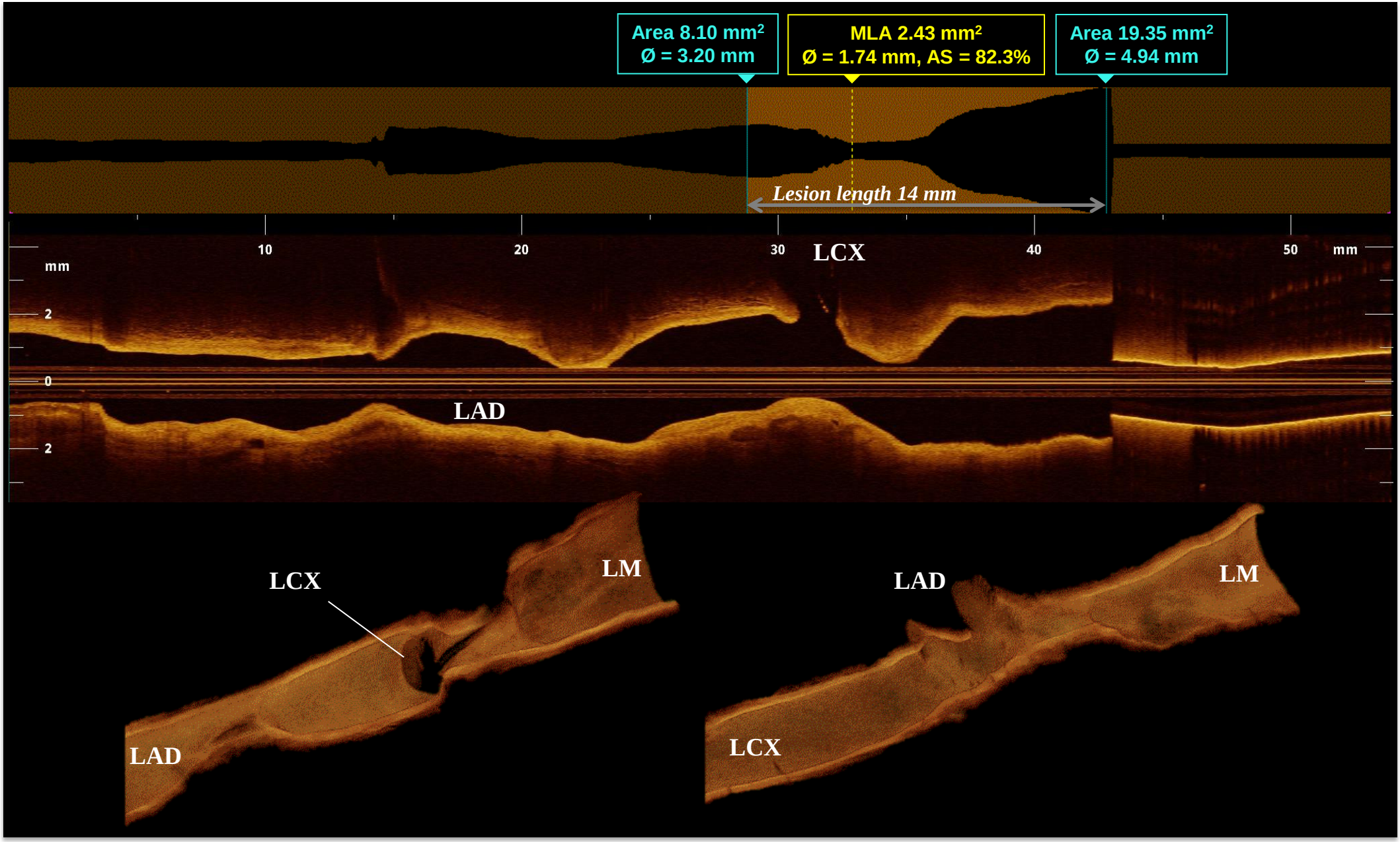
Giulio Guagliumi, MD

Should Complex Lesions be Imaged ?



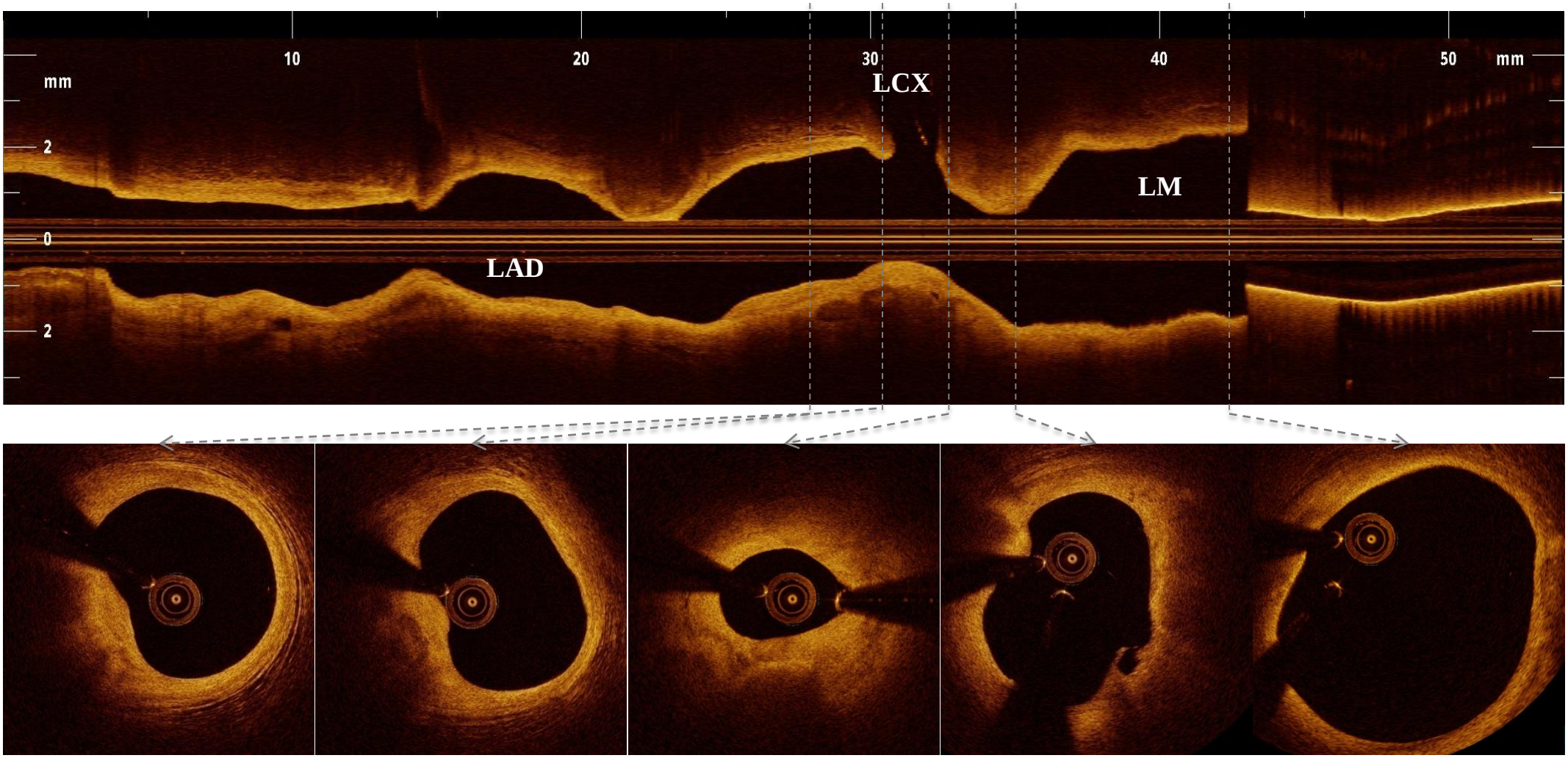


Stent strategy/ Stent length/Stent size



LAD-LM pullback pre-PCI

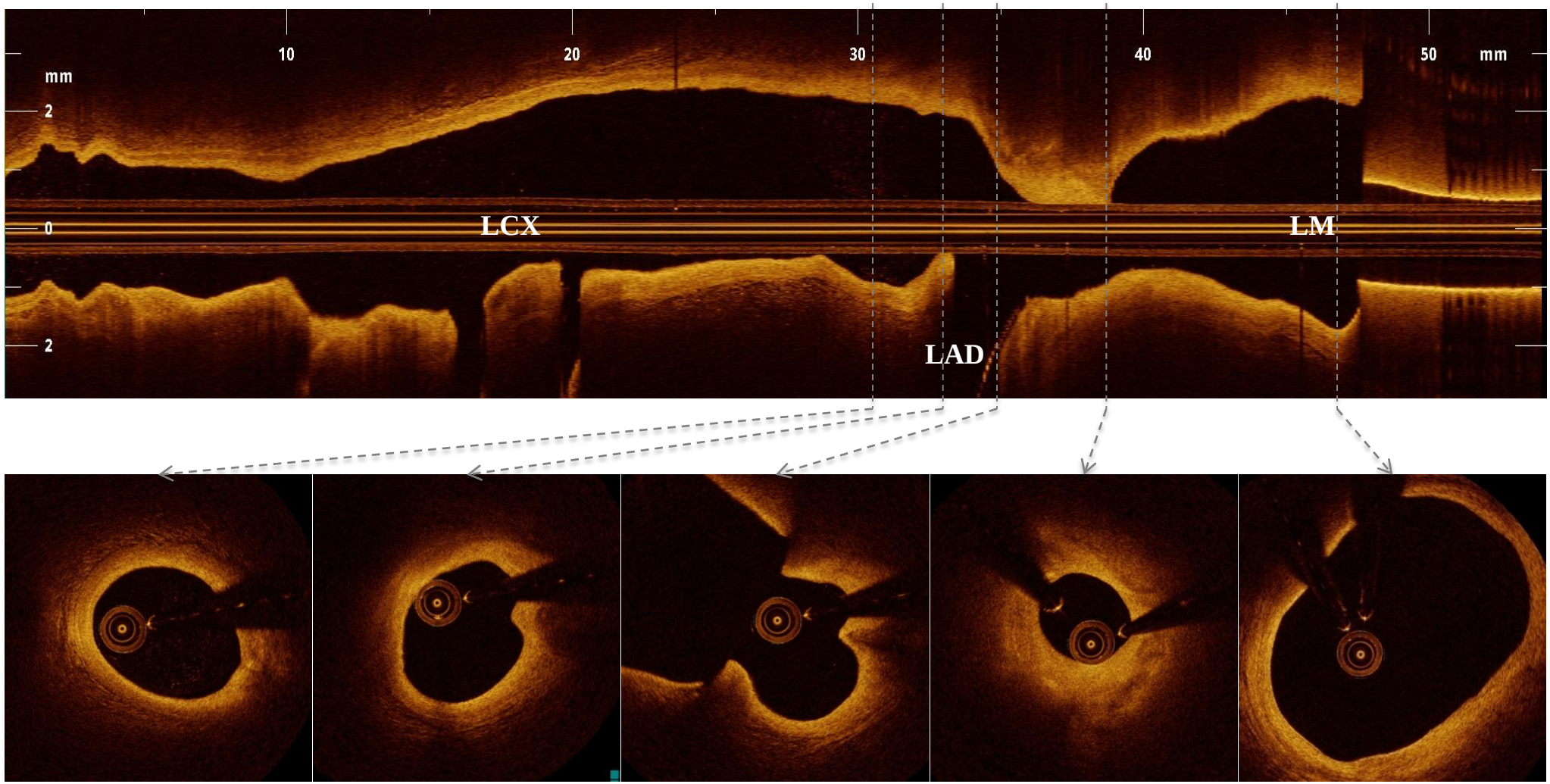
1) True extent into LAD ostium? 2) Outer wall bifurcation? 3) Carina spared?



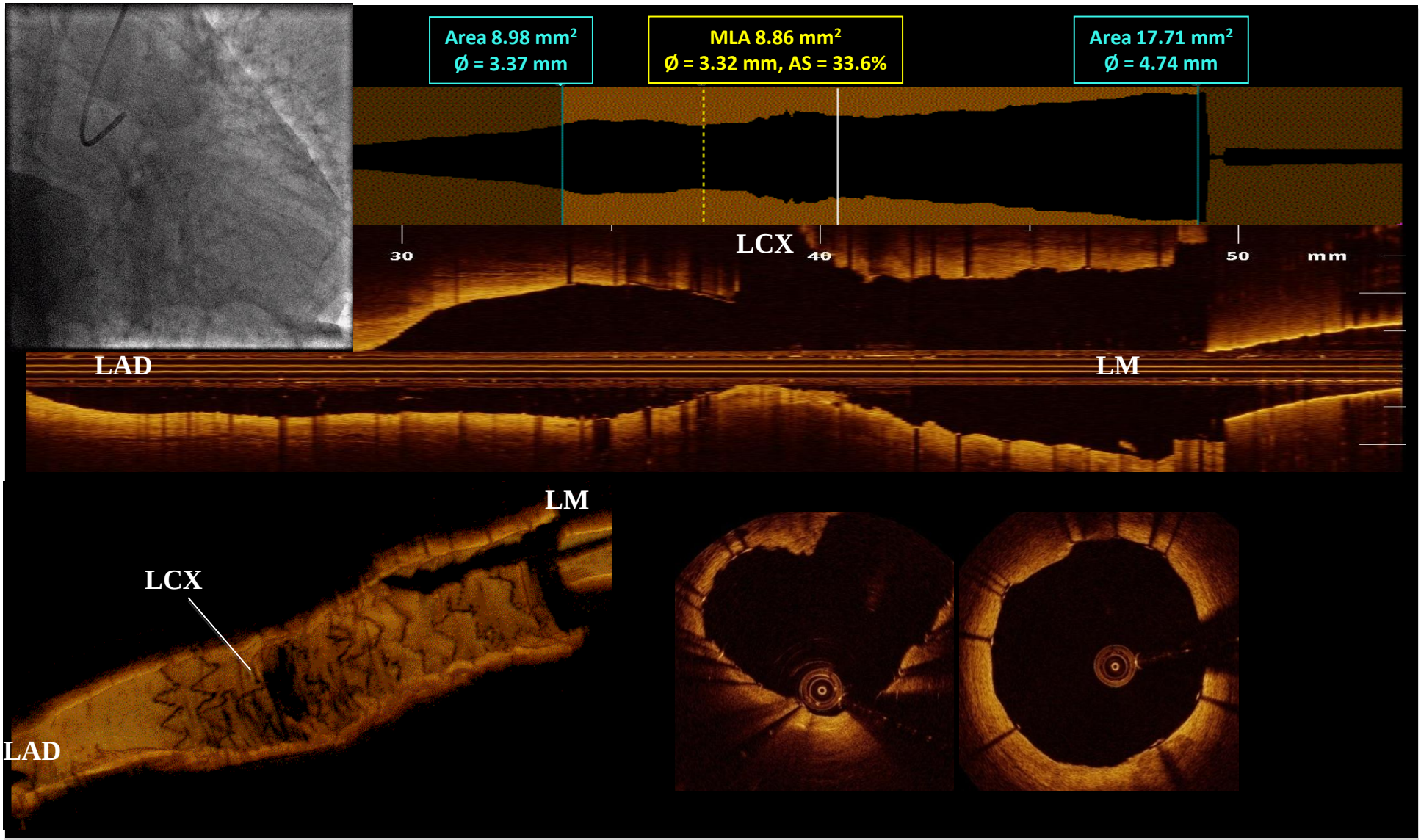
Landing Zone Distal

Landing Zone Prox

LCX-LM:1) Plaque/carina shift ? 2) Additional stent at the ostium?

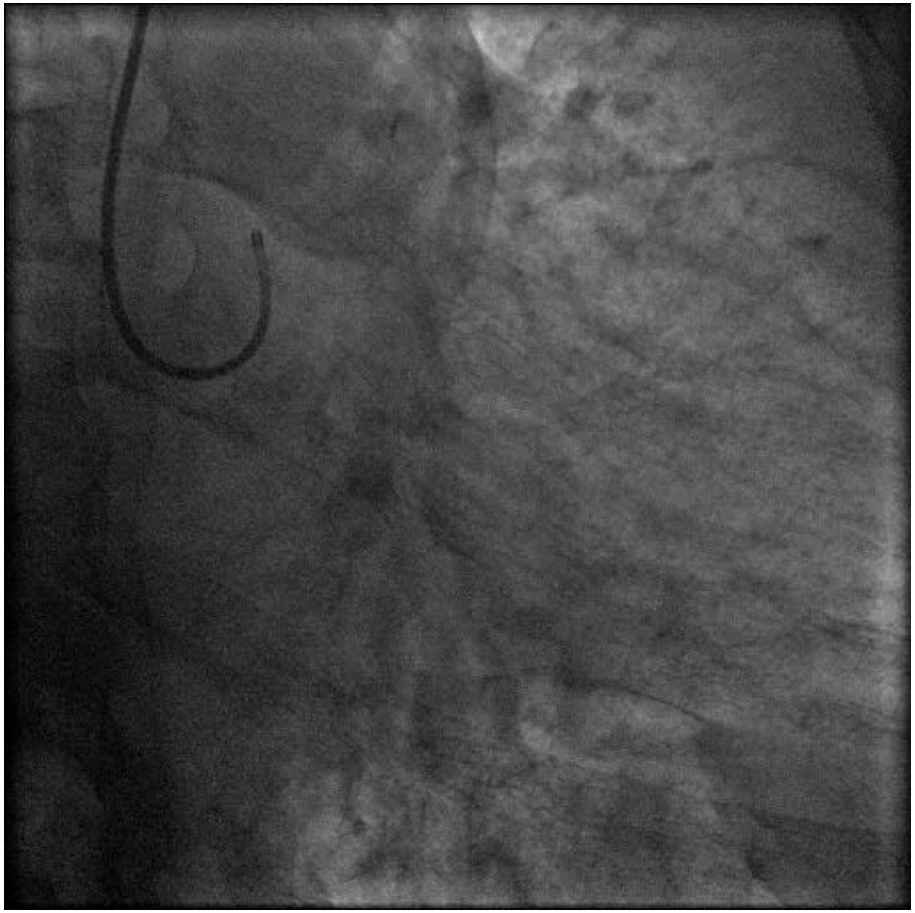


Strut apposition, MCSA, no dissection, wide MLCA at LCx ostium

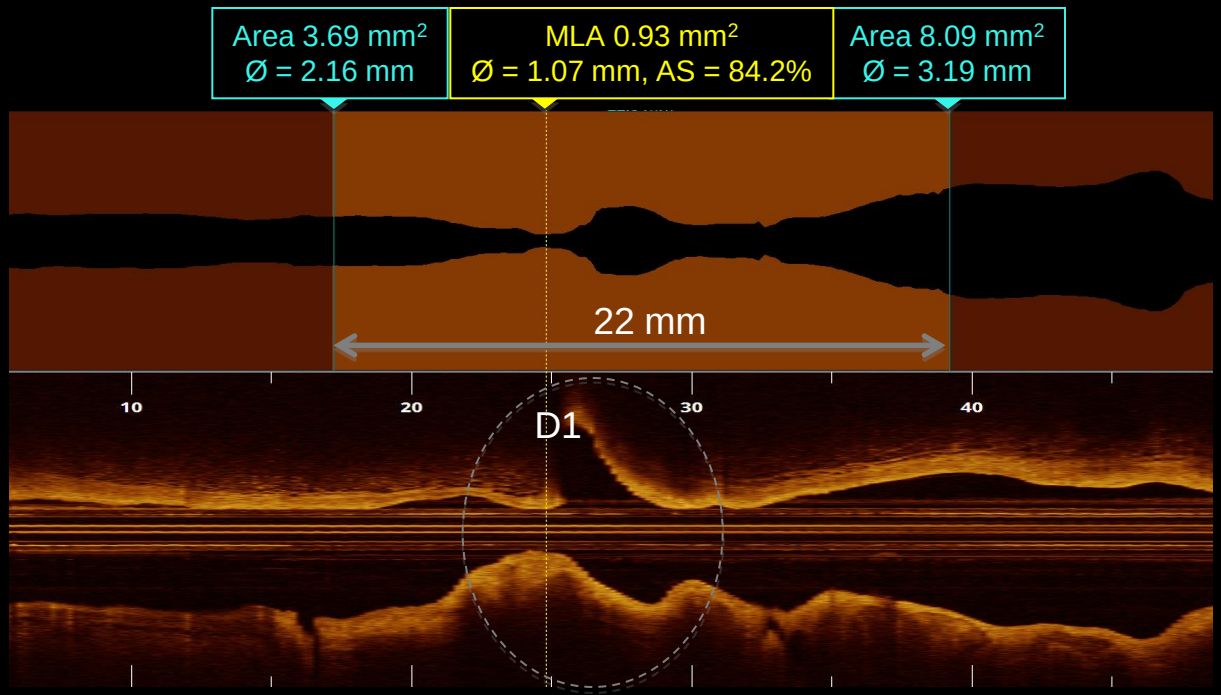


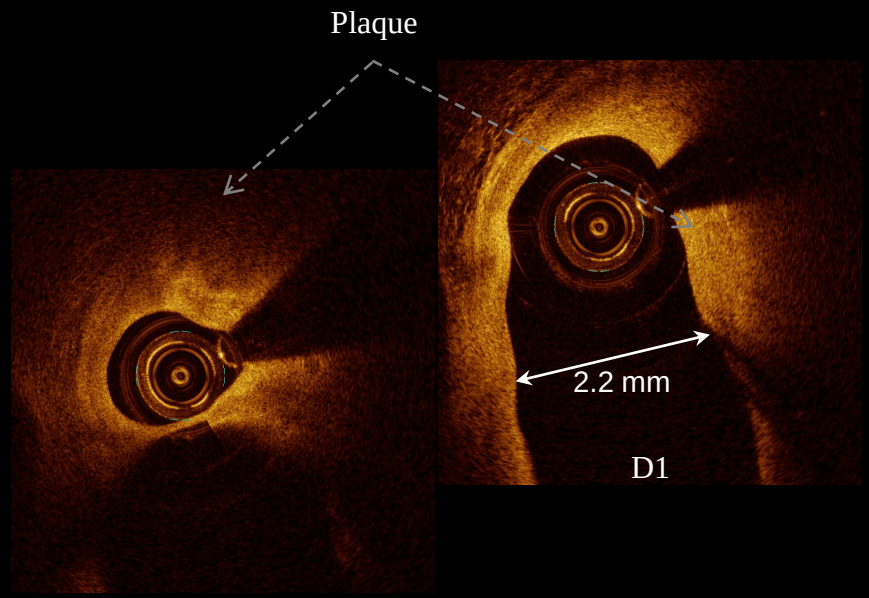
Bifurcation lesions

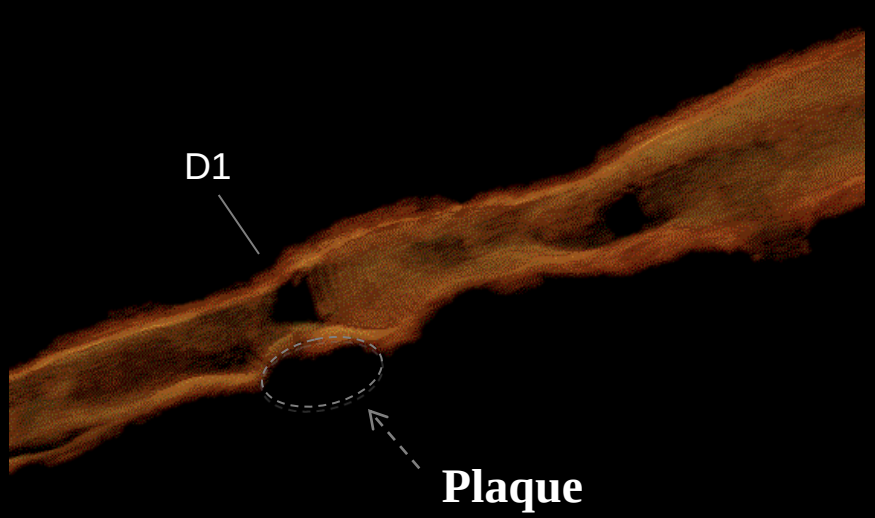
69 y.o. Stable AP

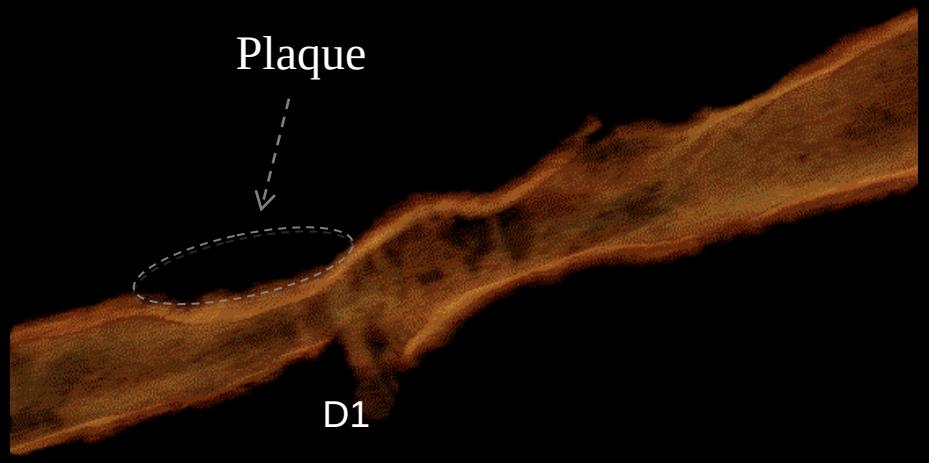


LAD-D1: Plaque on the opposite wall to the SB. Carina spared of disease

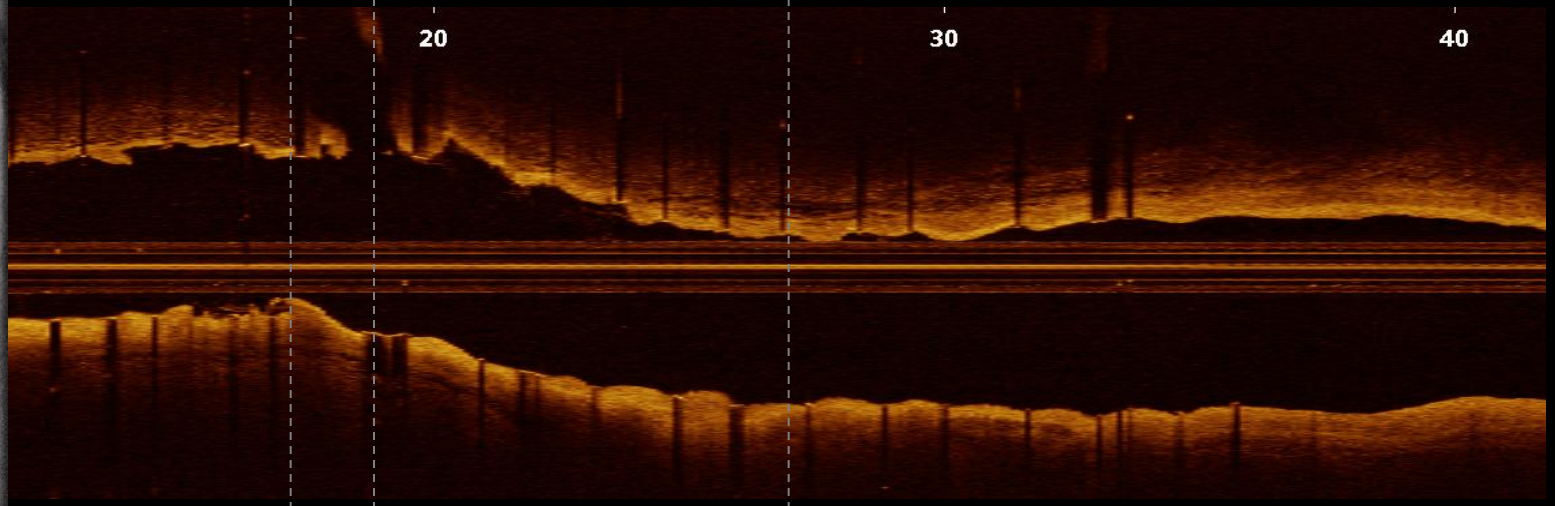


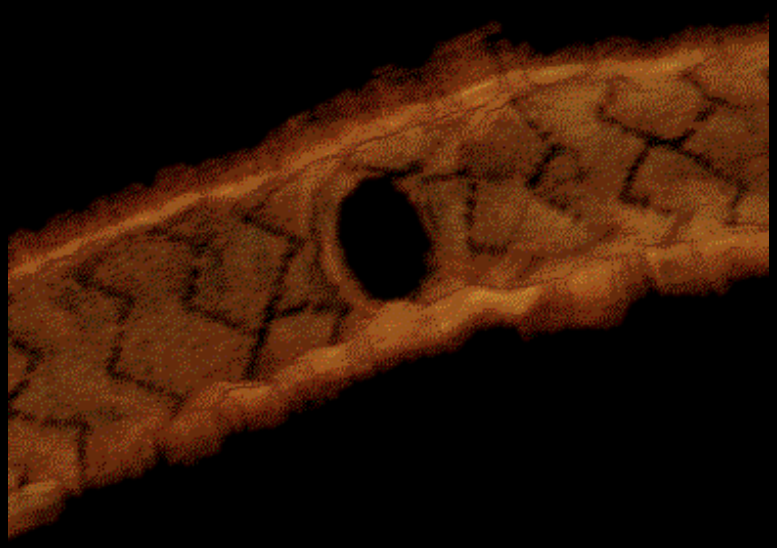


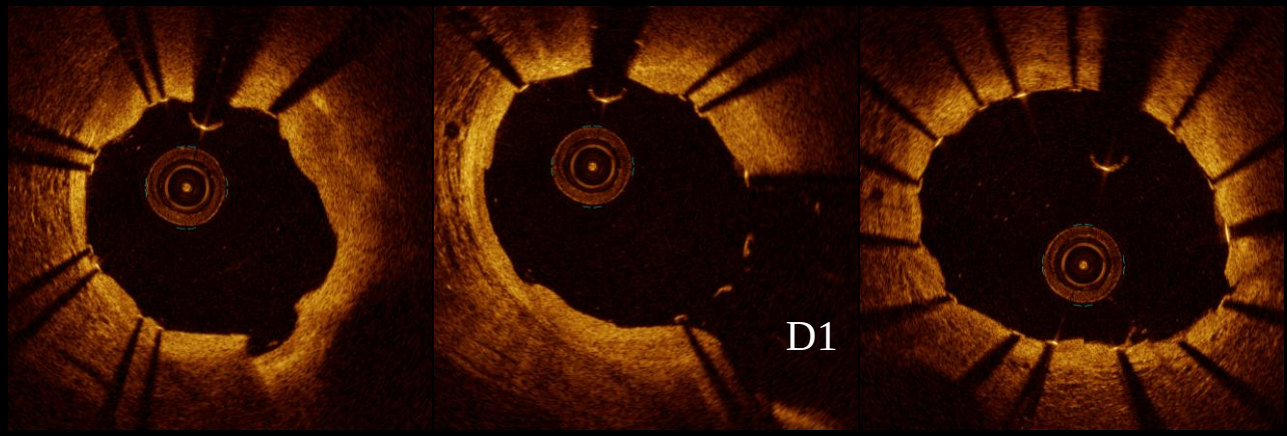




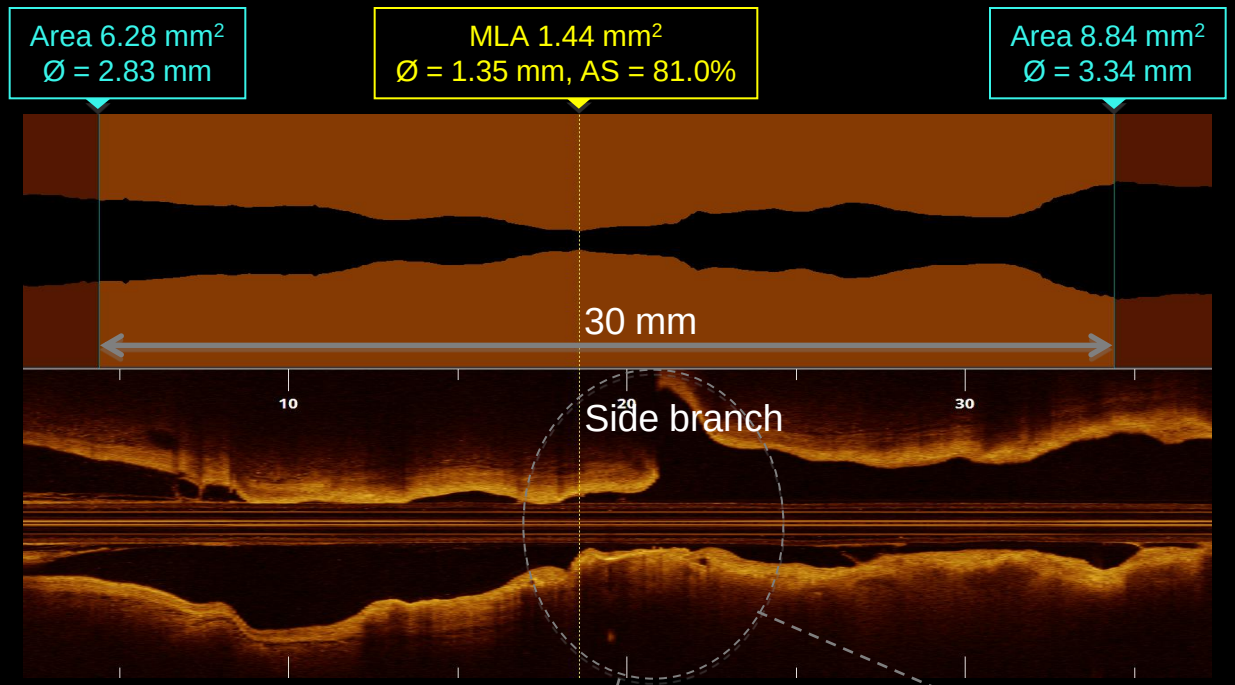
Optimal Stent Expansion, patent D1 without plaque / carina shift

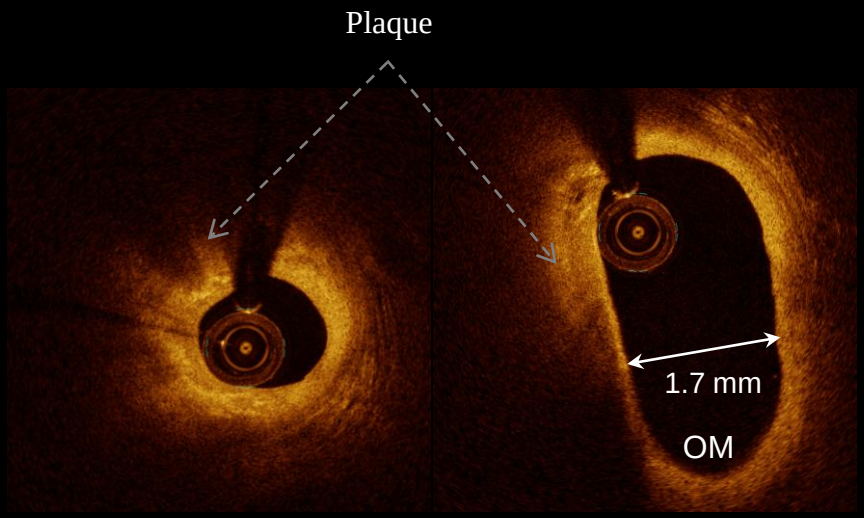


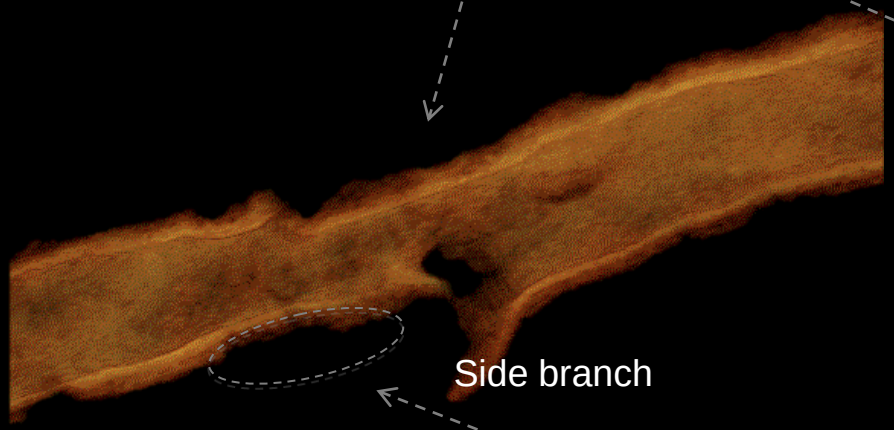


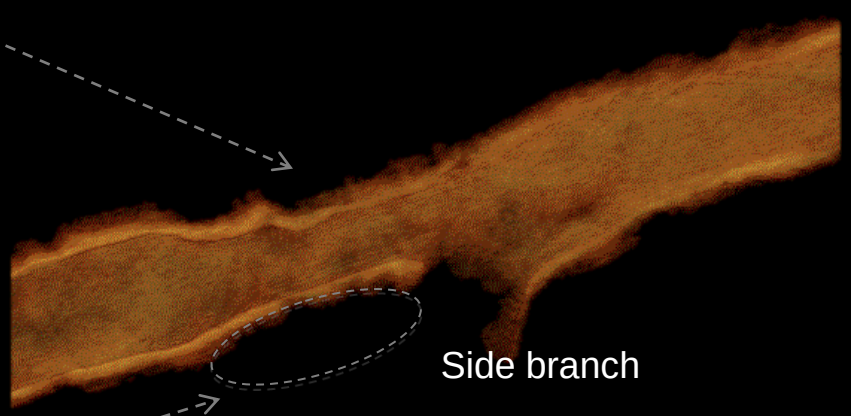


LCx-M1: Plaque even on the same side of the SB. Carina involved









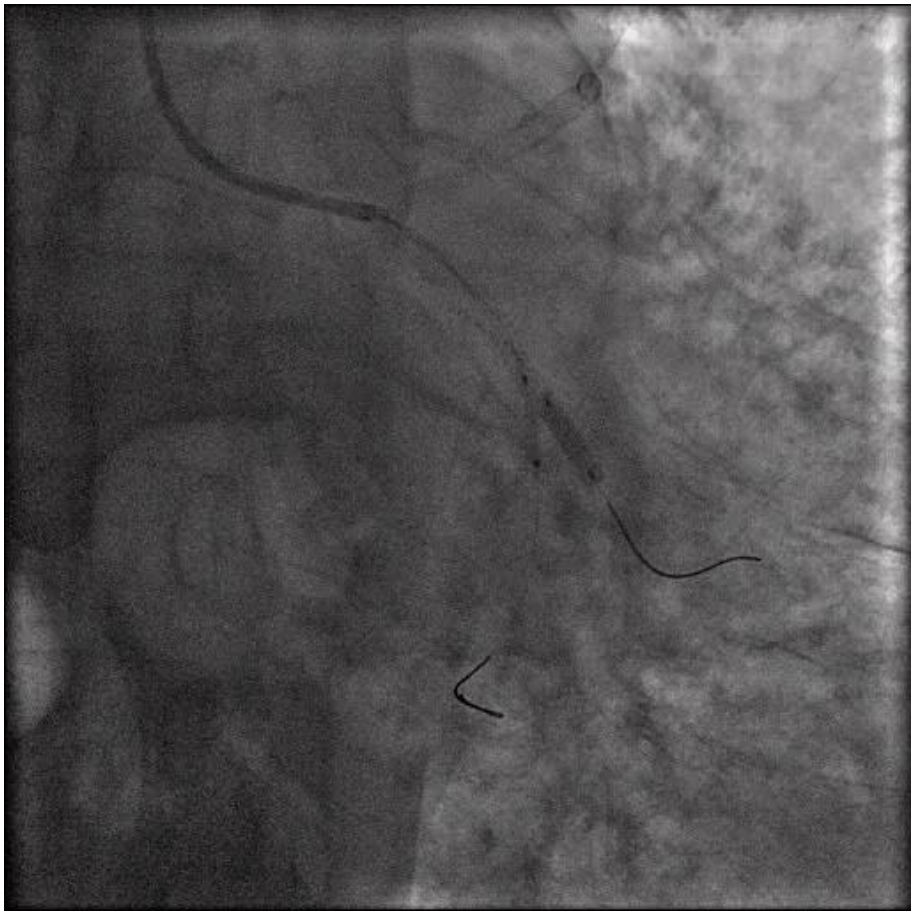
Plaque

Provisional stenting → Plaque shift

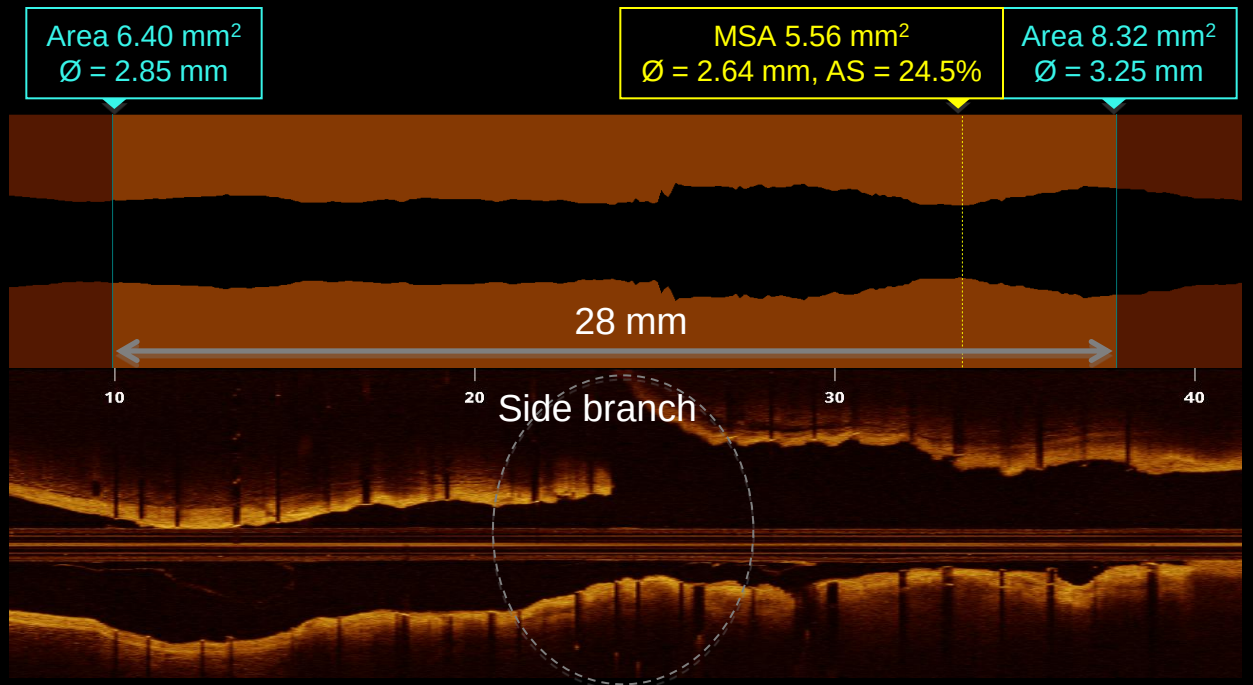
Bioabsorbable polymer EES 3.0/28 mm

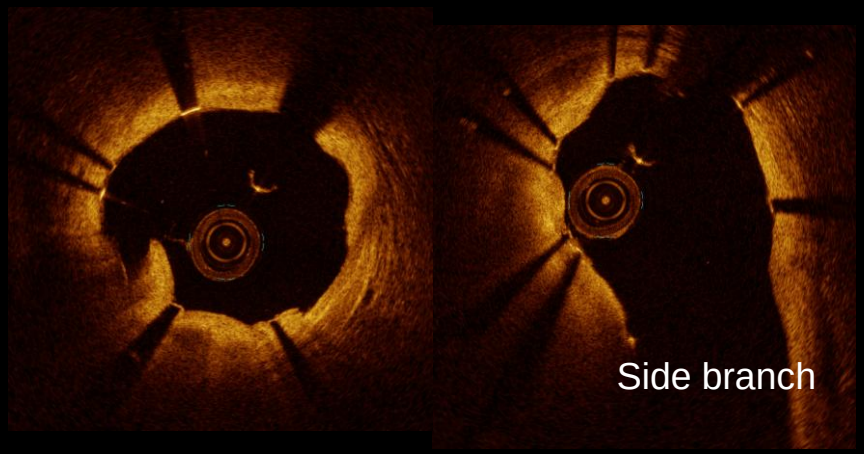
KBT

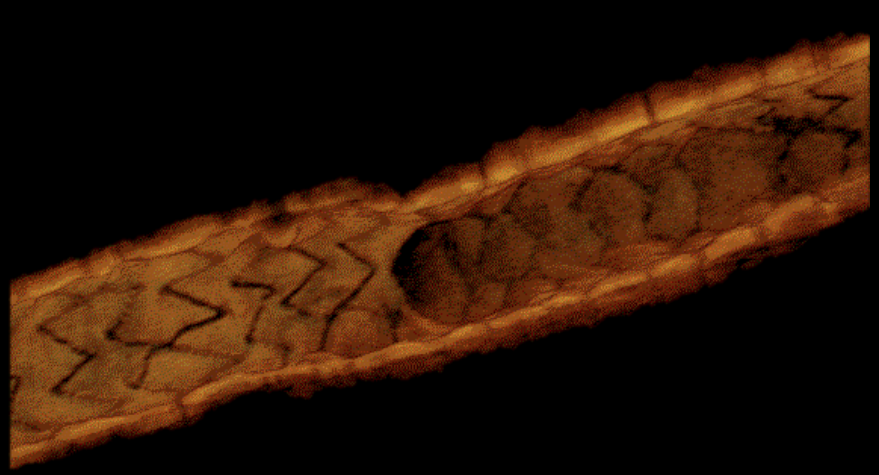
Balloon 2.5/2.0 mm

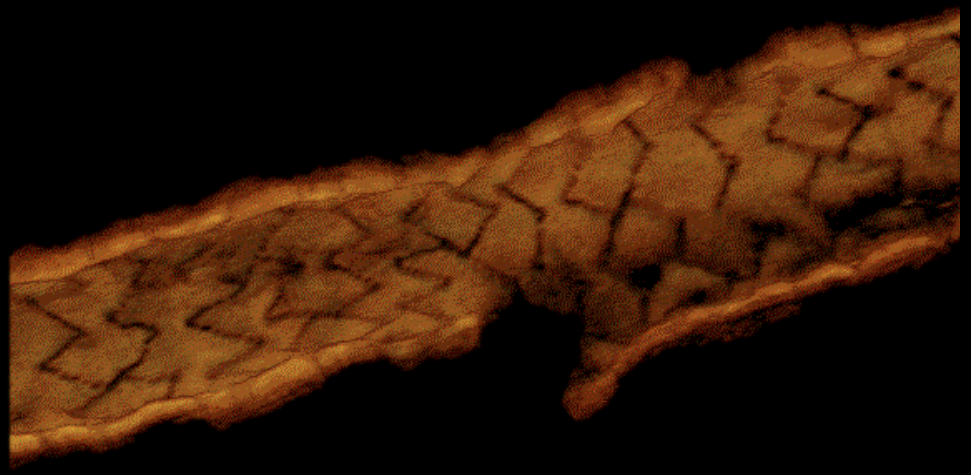


Plaque shift resolved by FKB

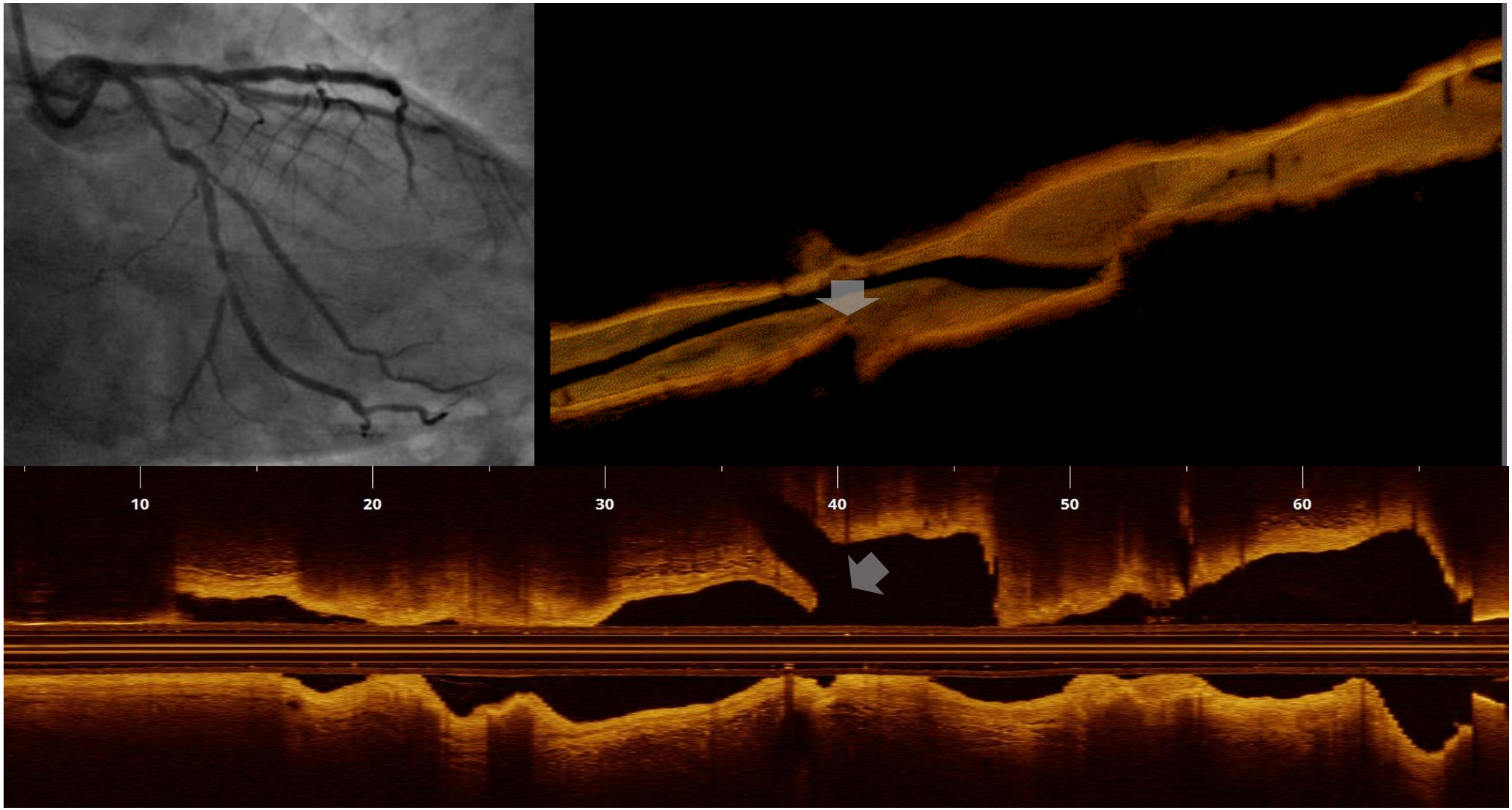


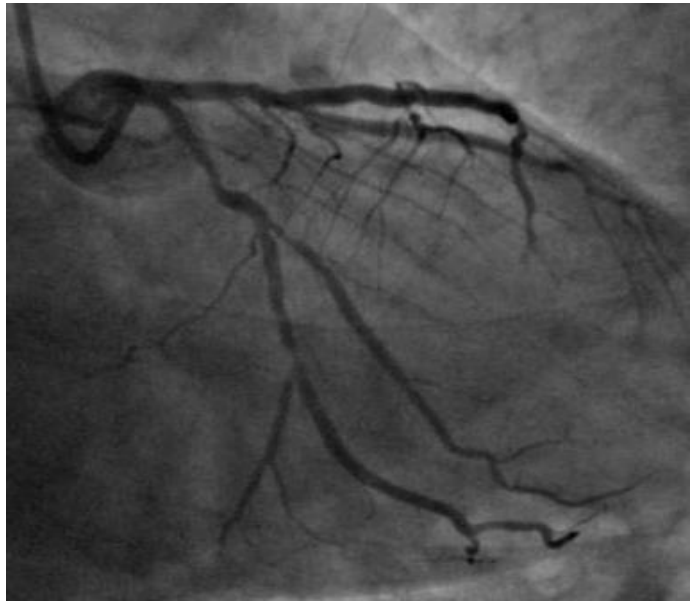


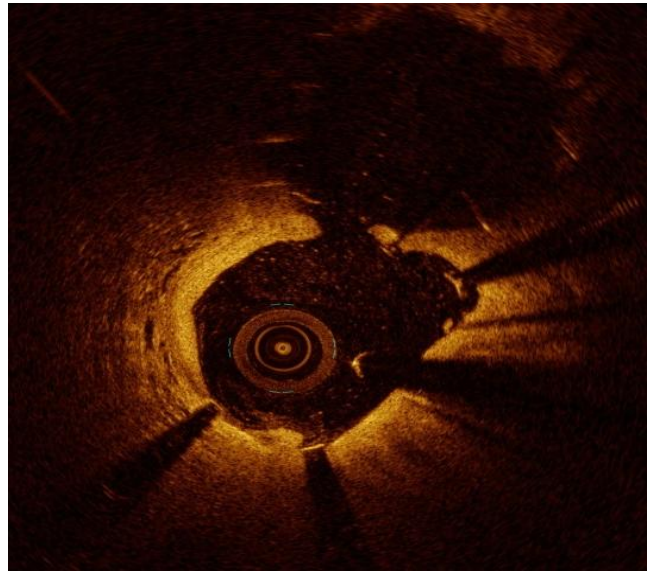


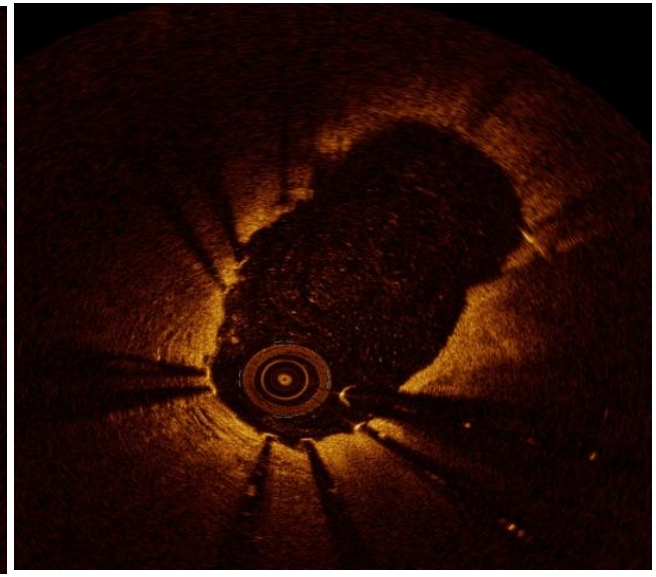


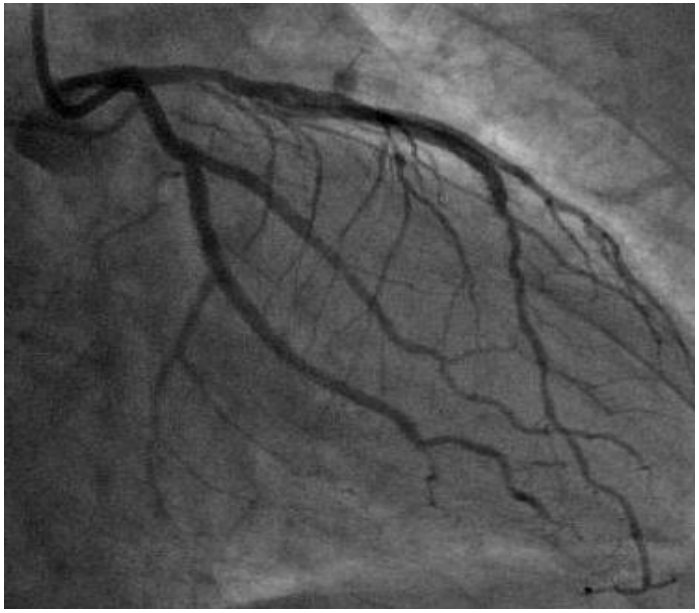
Eyebrow carina

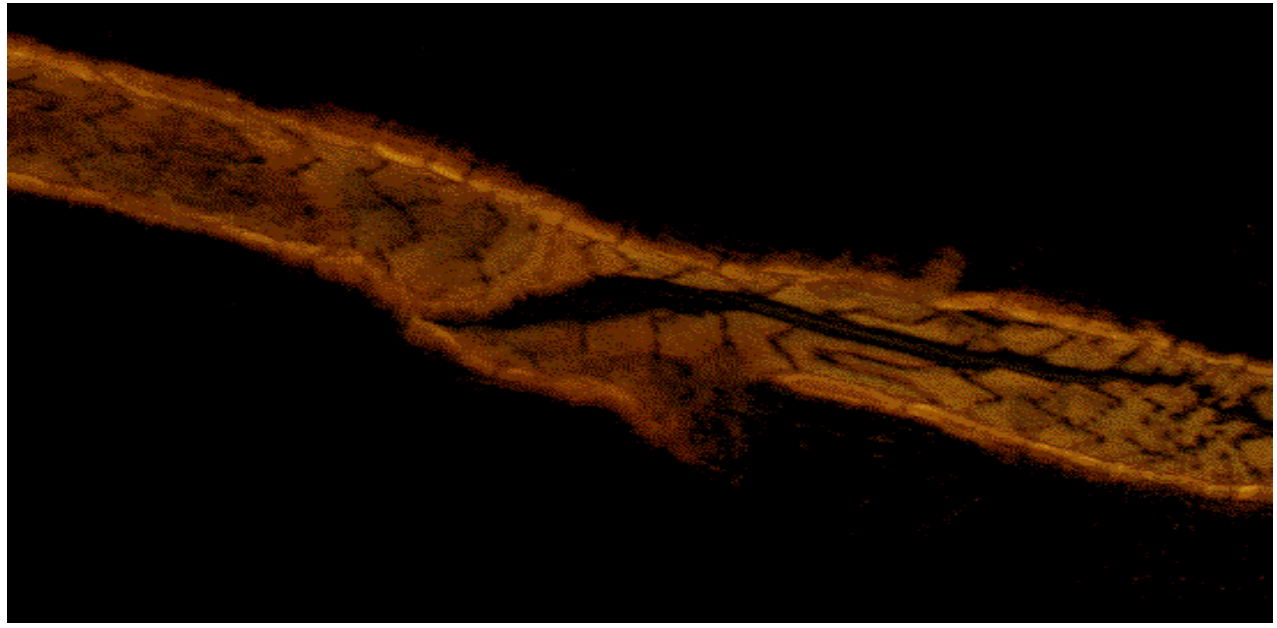






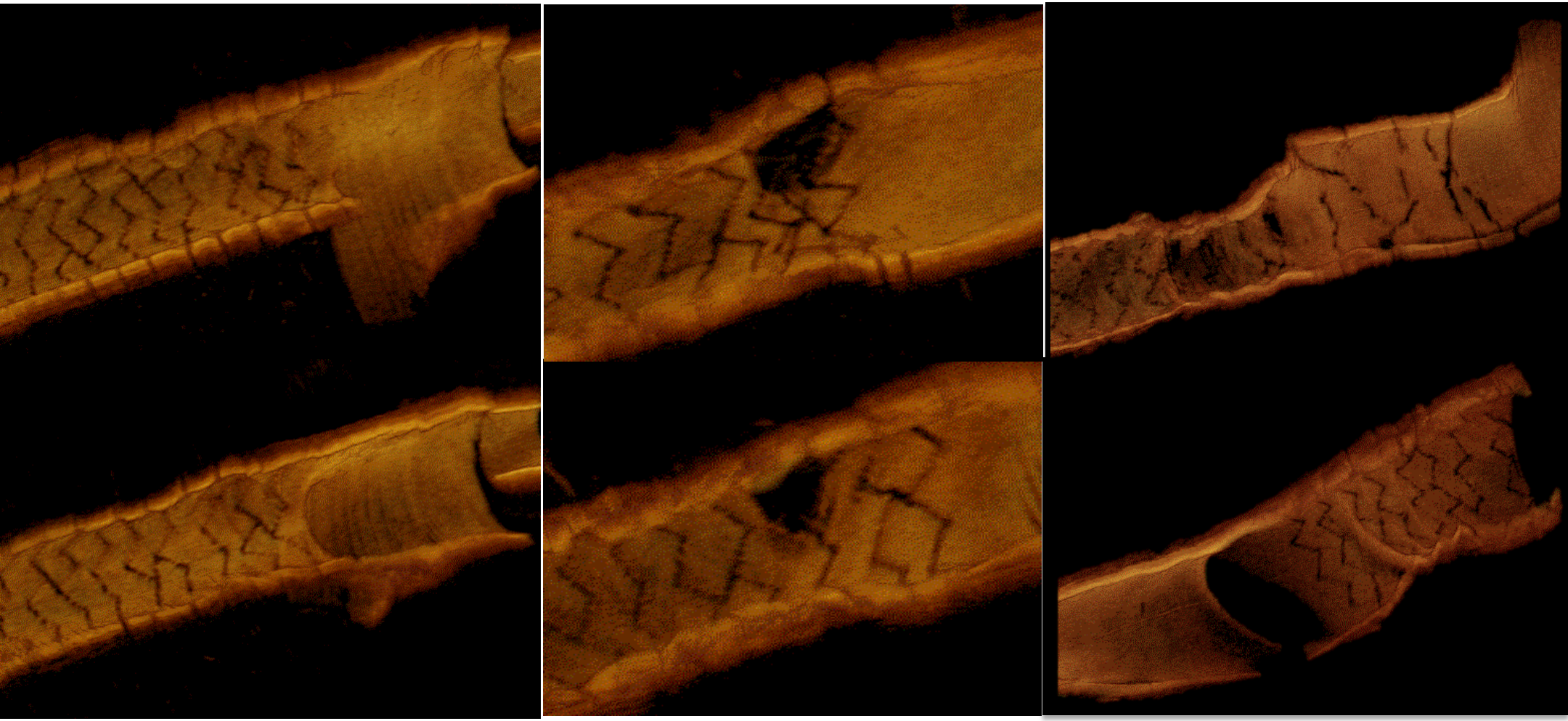




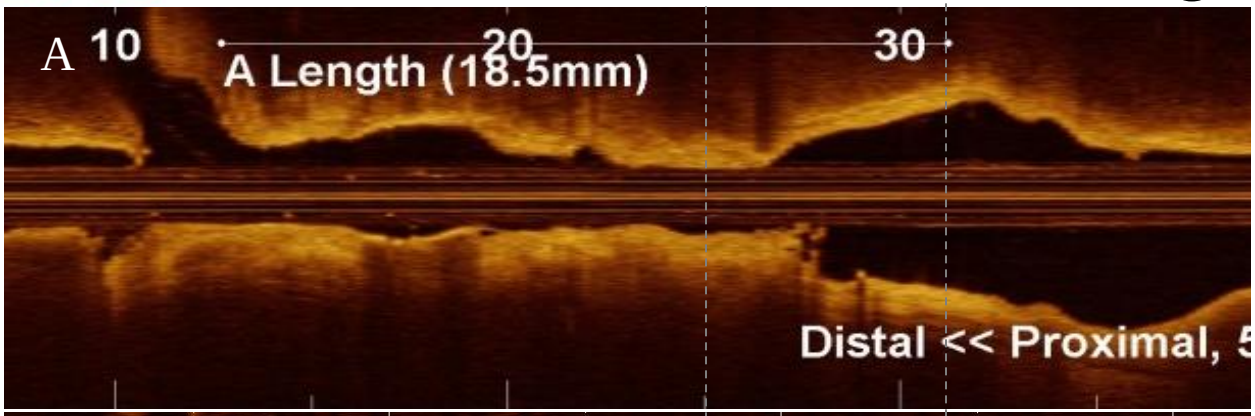


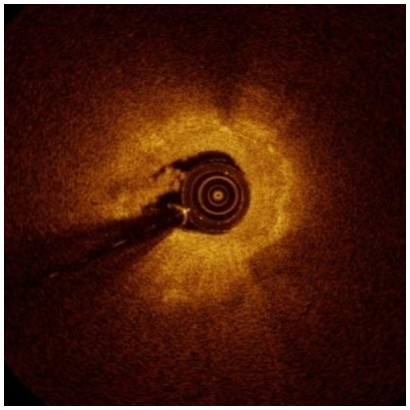
Post-stent assessment: Landing Zone, Branches, Distorsion

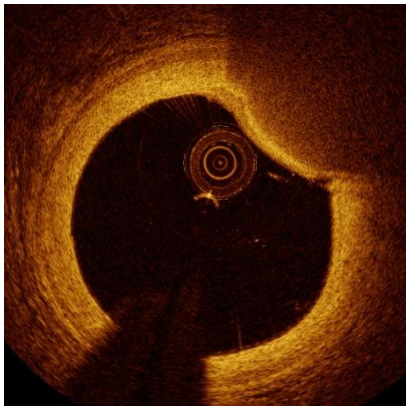
The value of 3D navigation

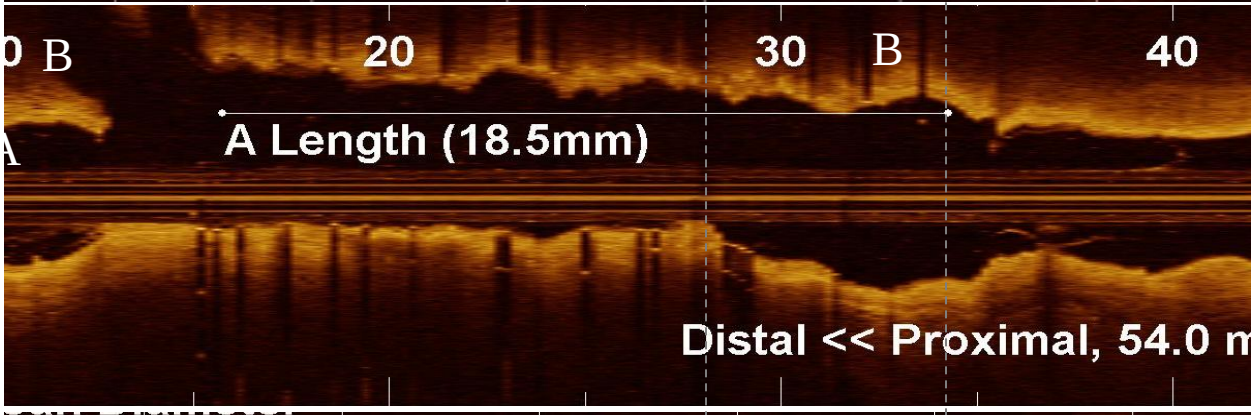


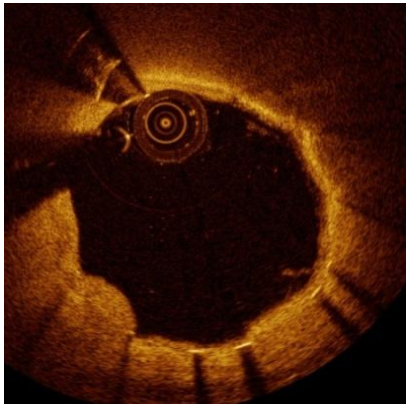
To Avoid DES Failure: detecting TFCA at Landing Zone

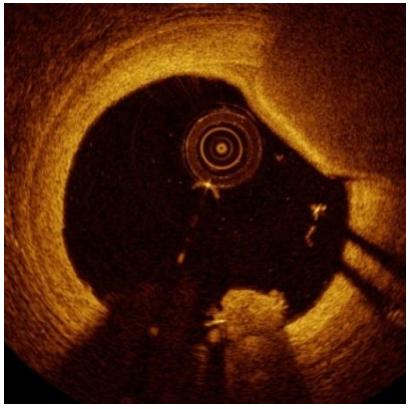


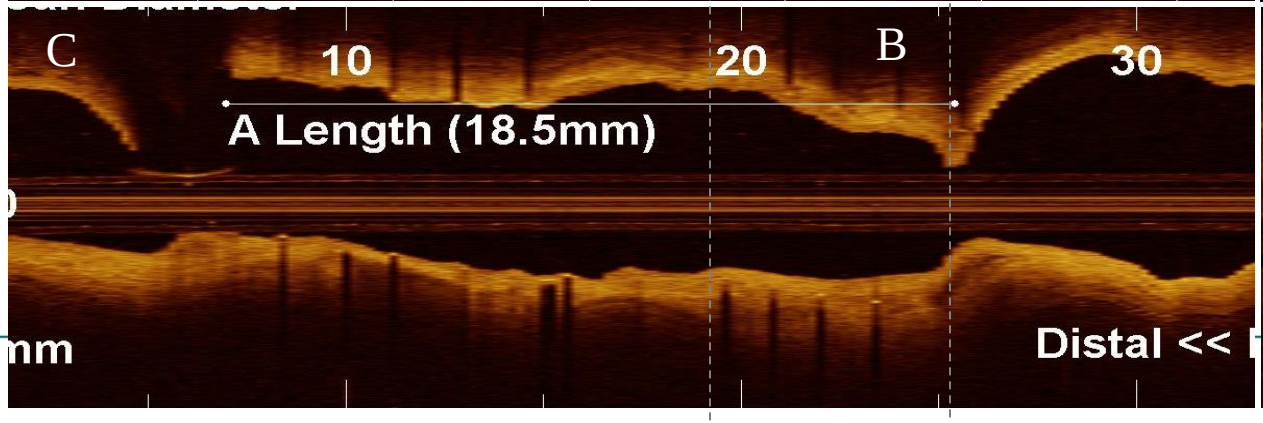


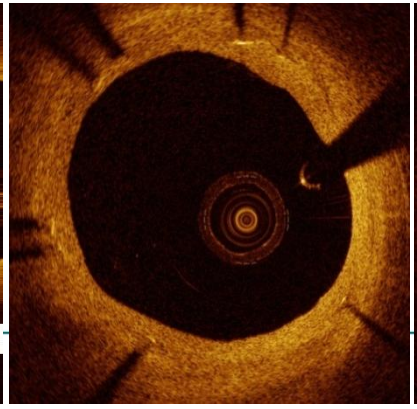


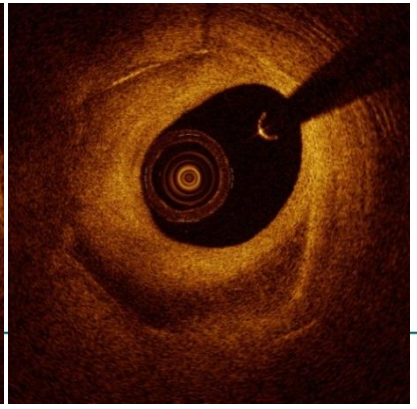






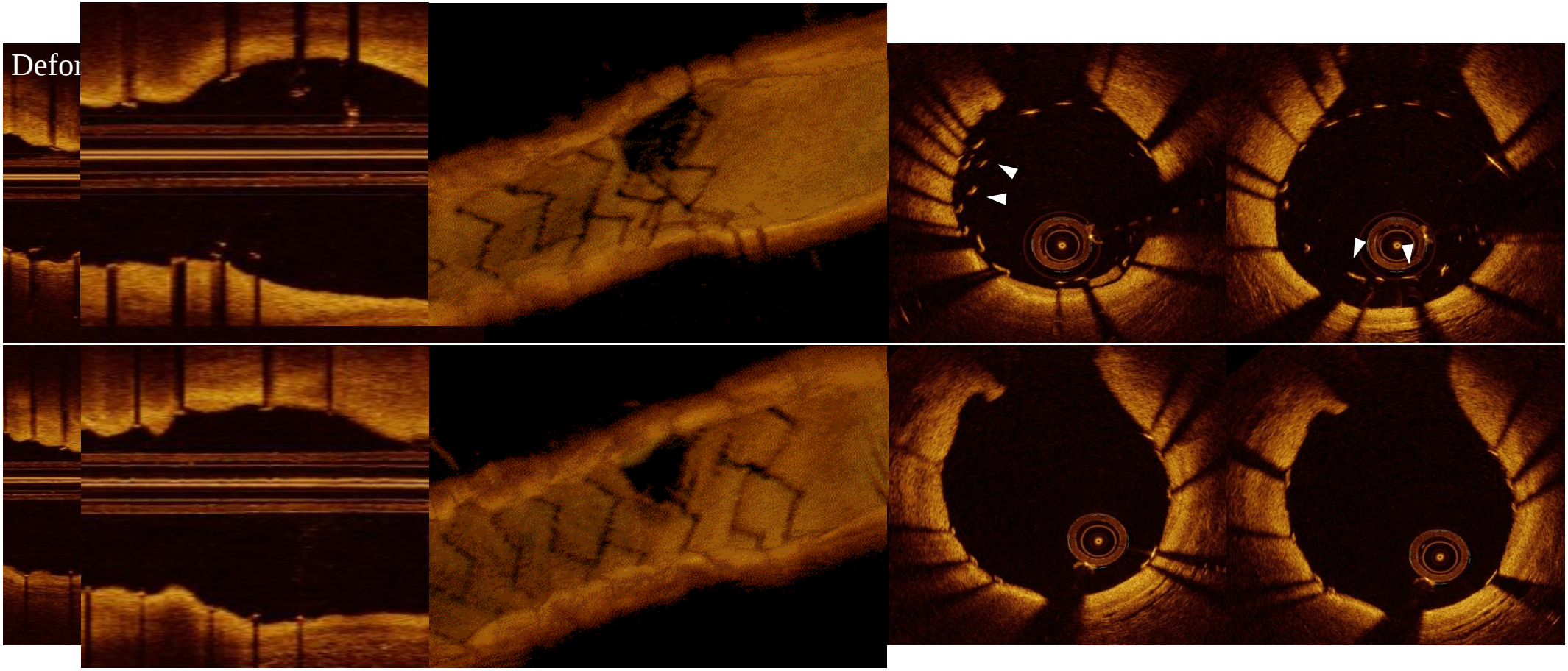


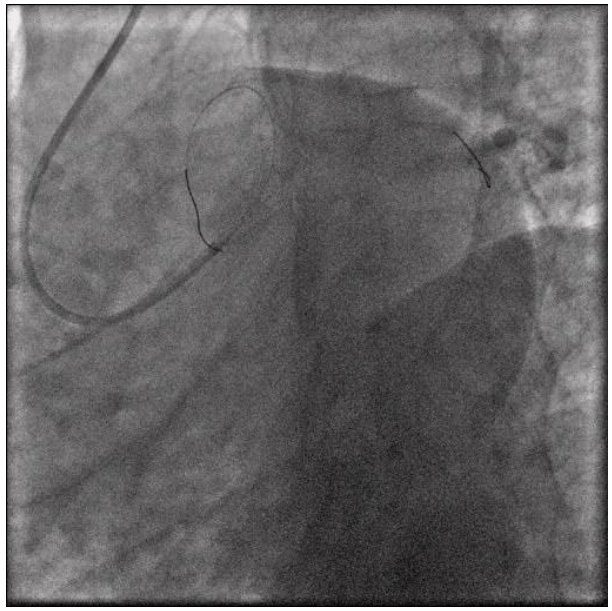
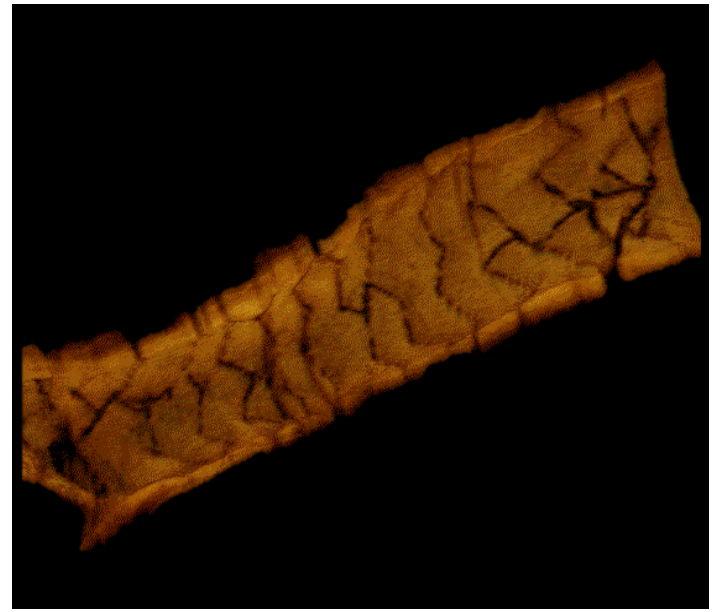
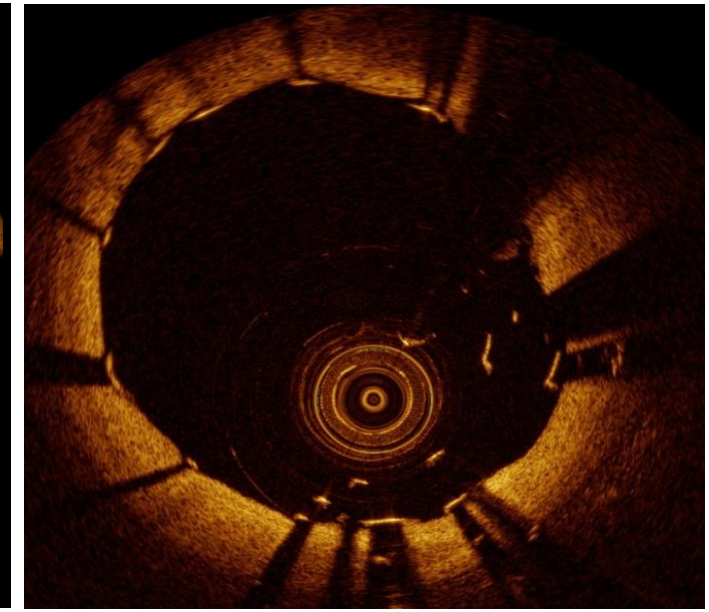


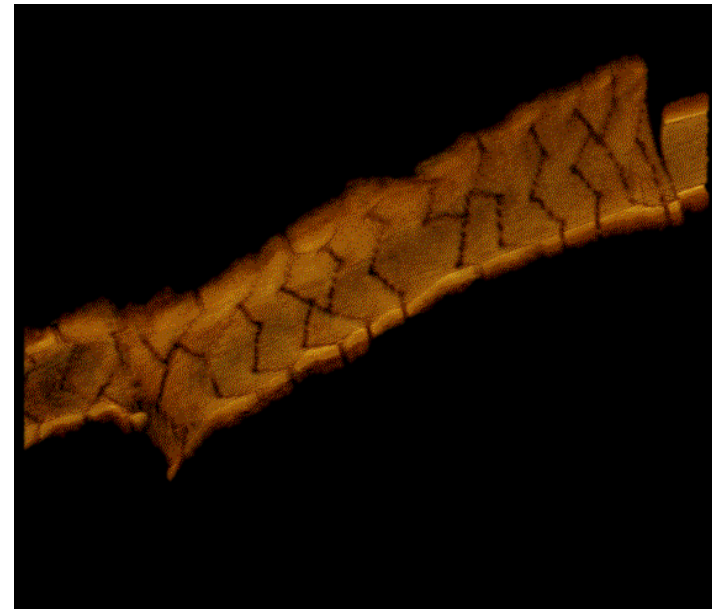
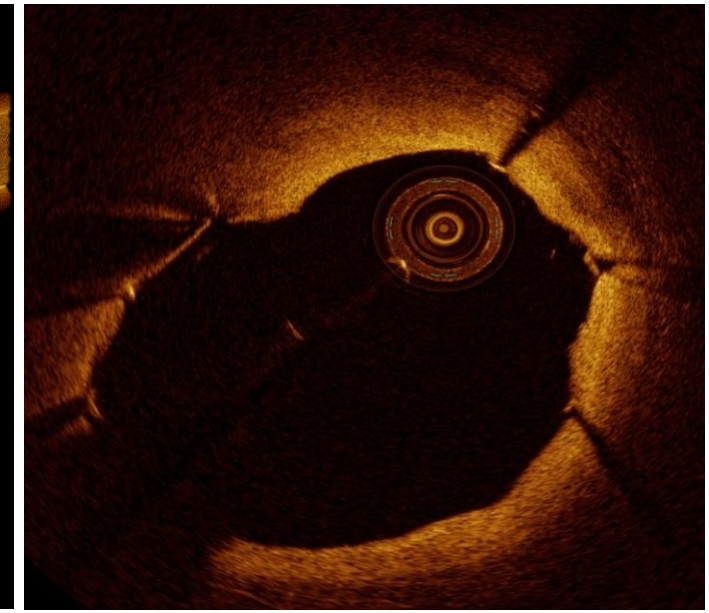


Automatic 3 Dimensional Reconstruction

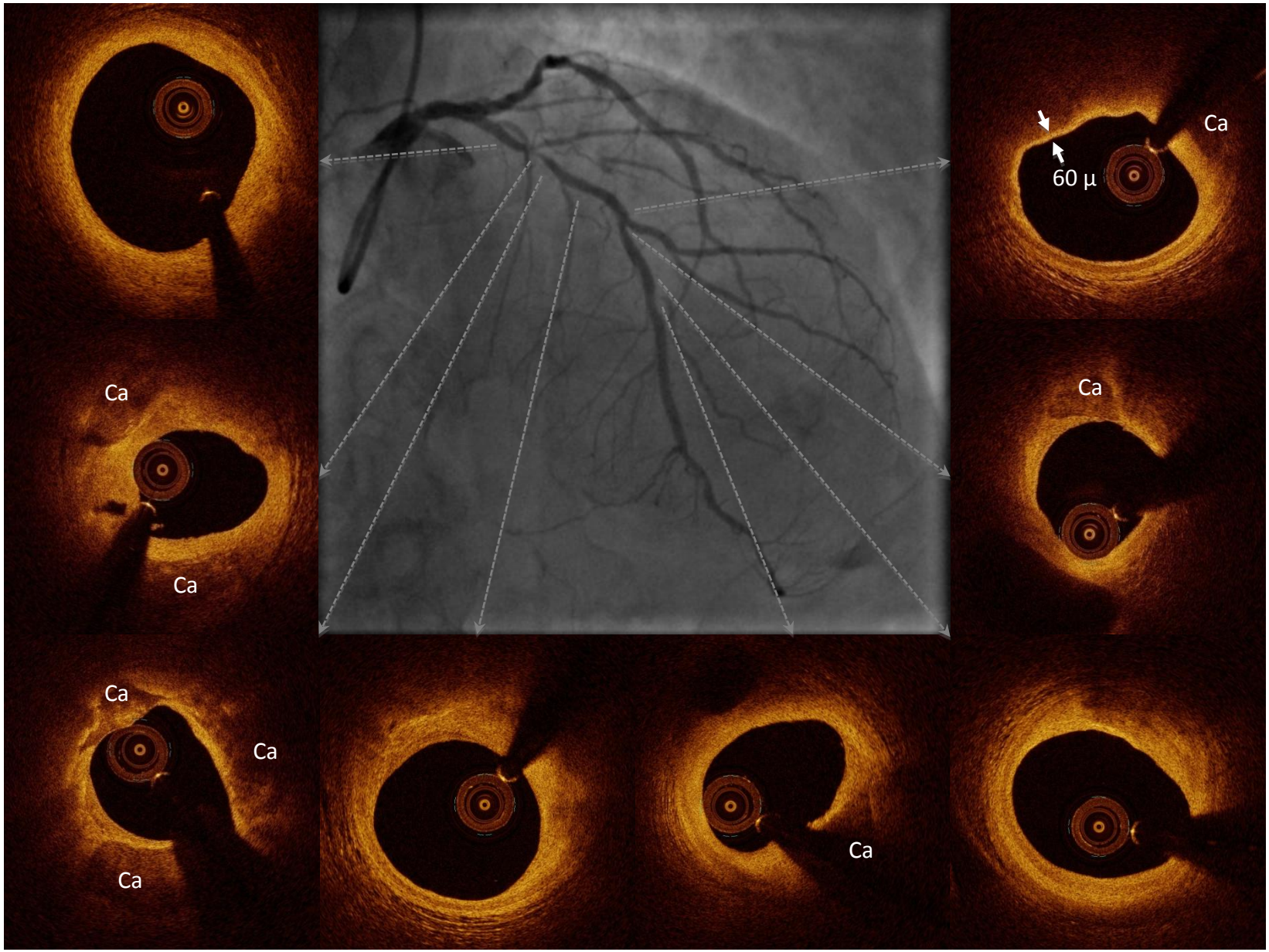
DES 3.0 x 28 mm
Malapposition and deformation at the entrance



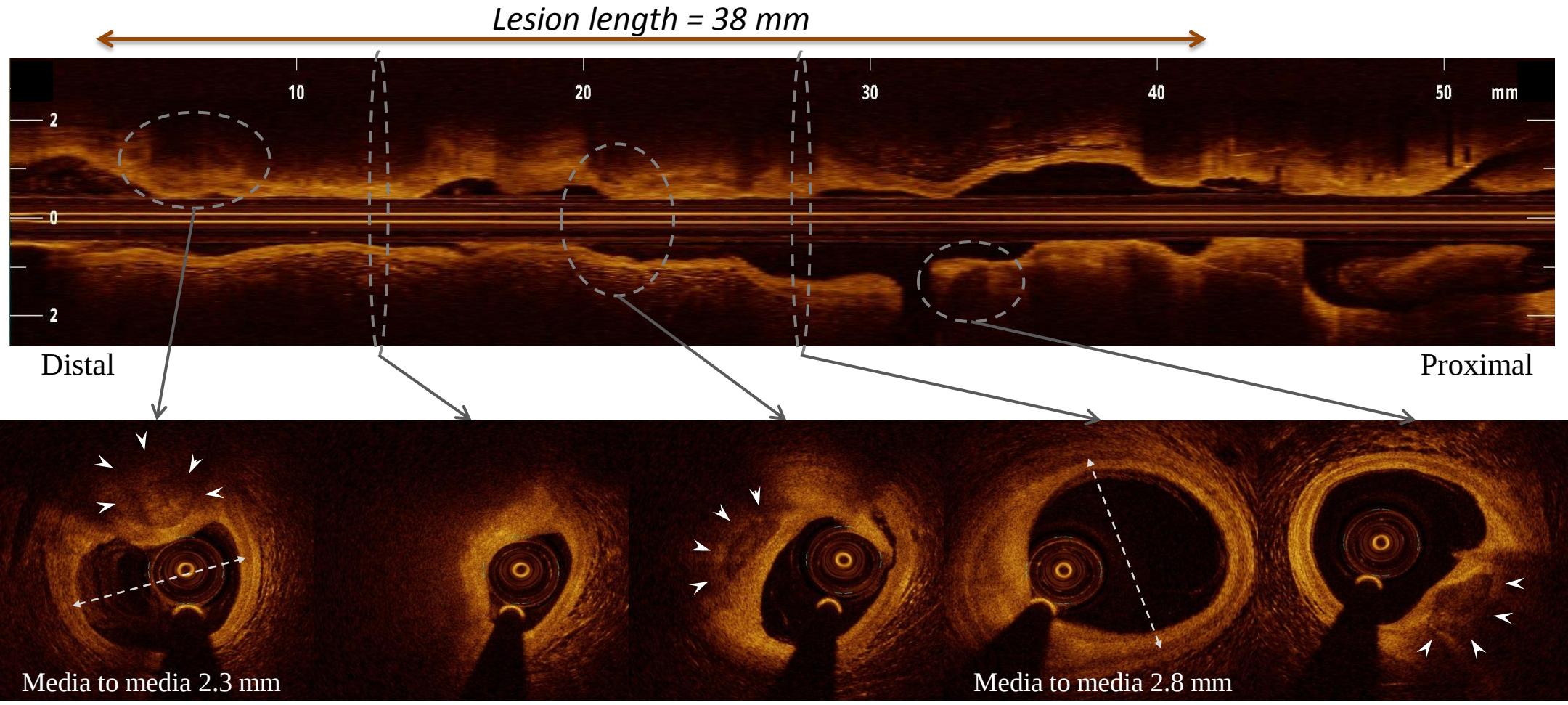




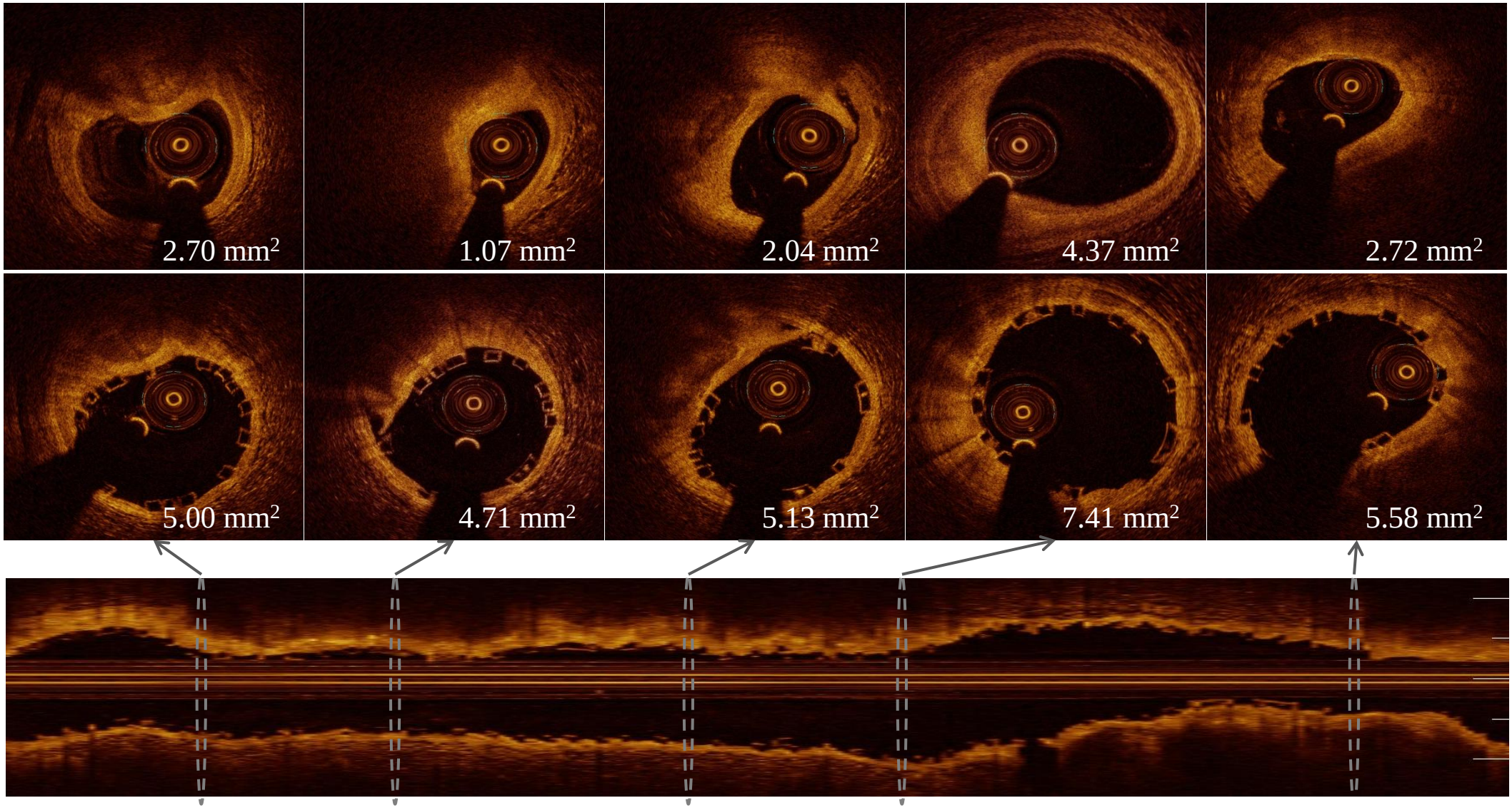
Different lesions across the target vessel



Mapping for accurate stent position in diffused disease
Lesion preparation for multiple BVS

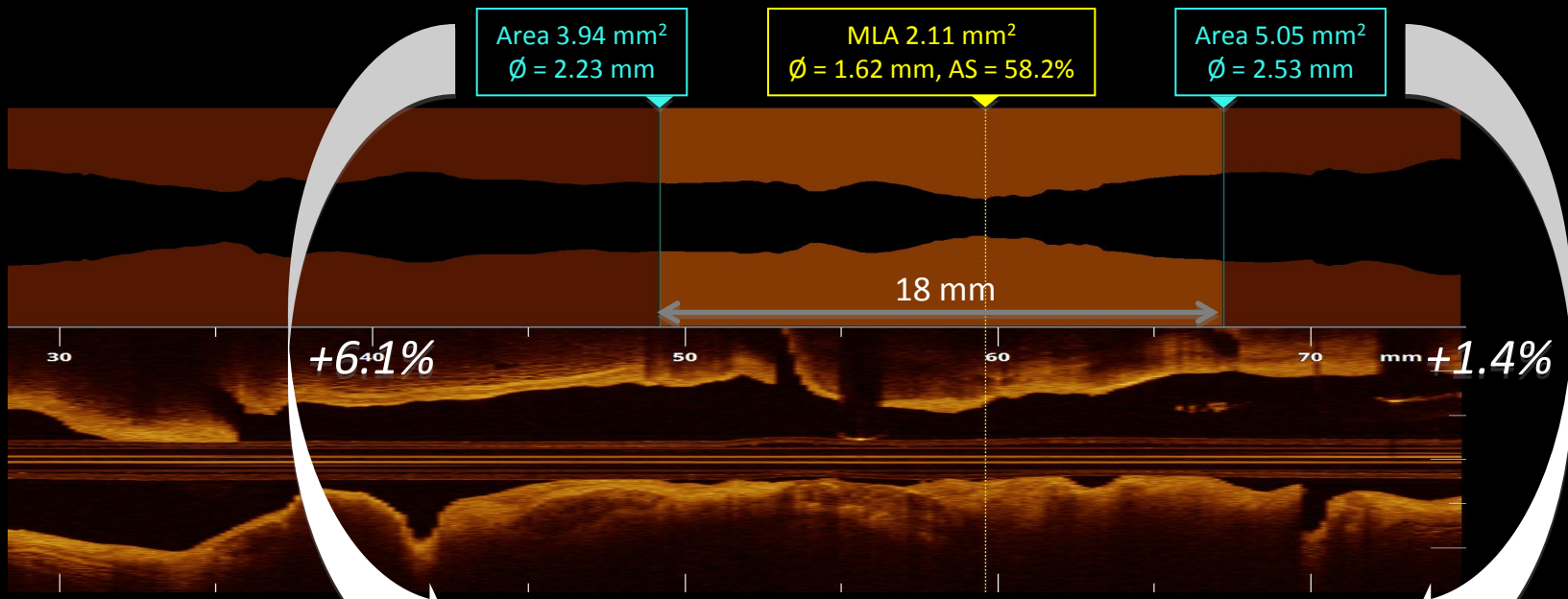


Plaque type, burden and preparation may impact on BVS results

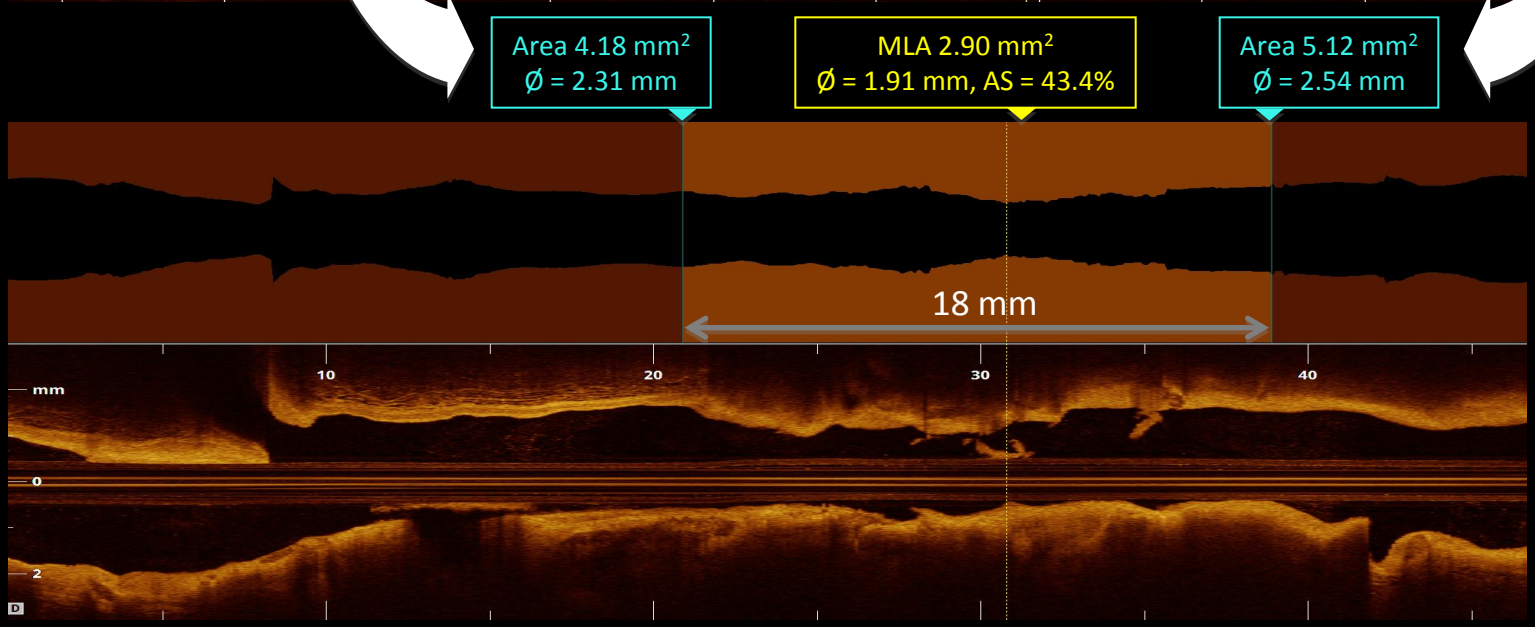


Lesion Preparation for BVS

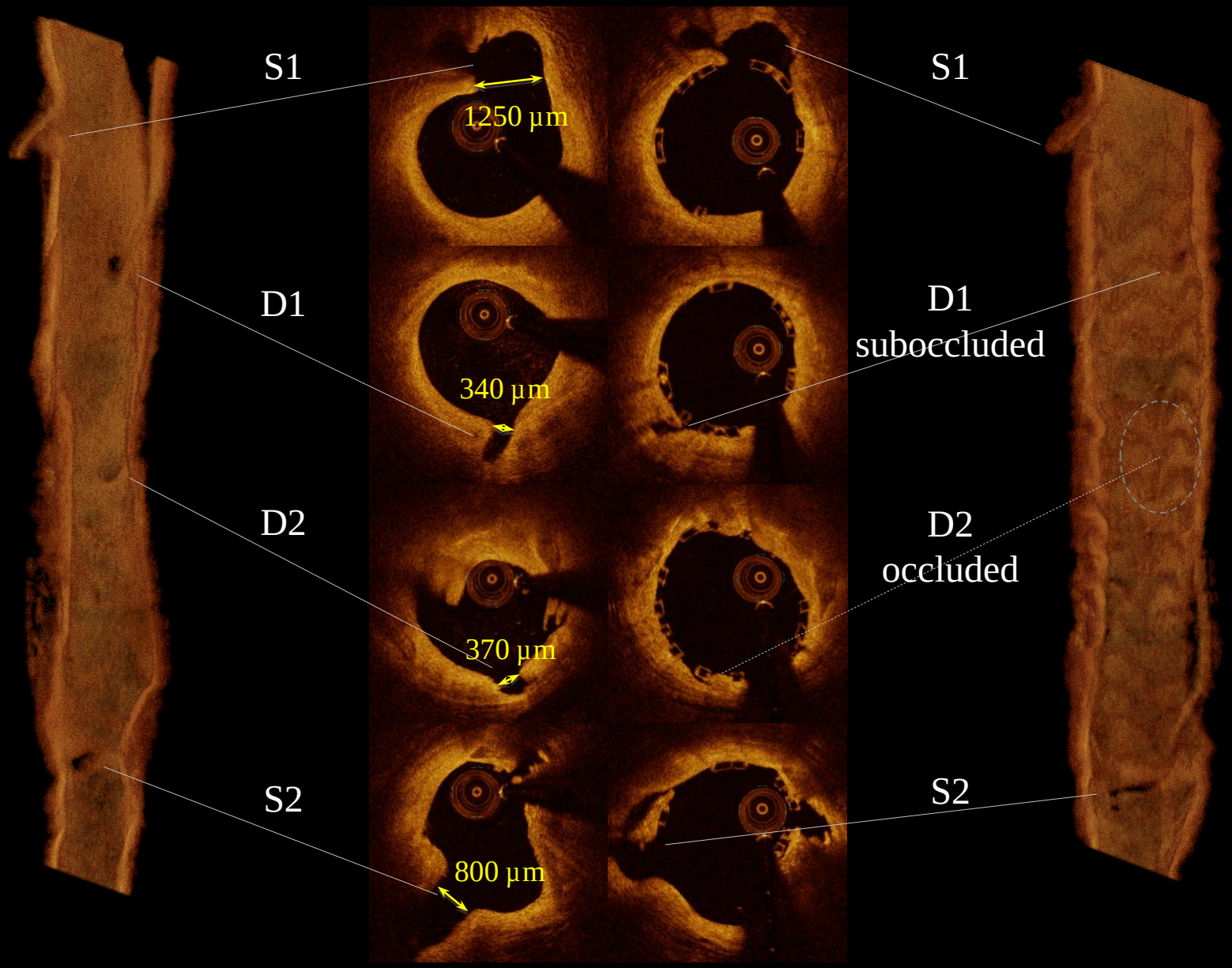
Post Ø 2.5x12 mm
Compliant balloon



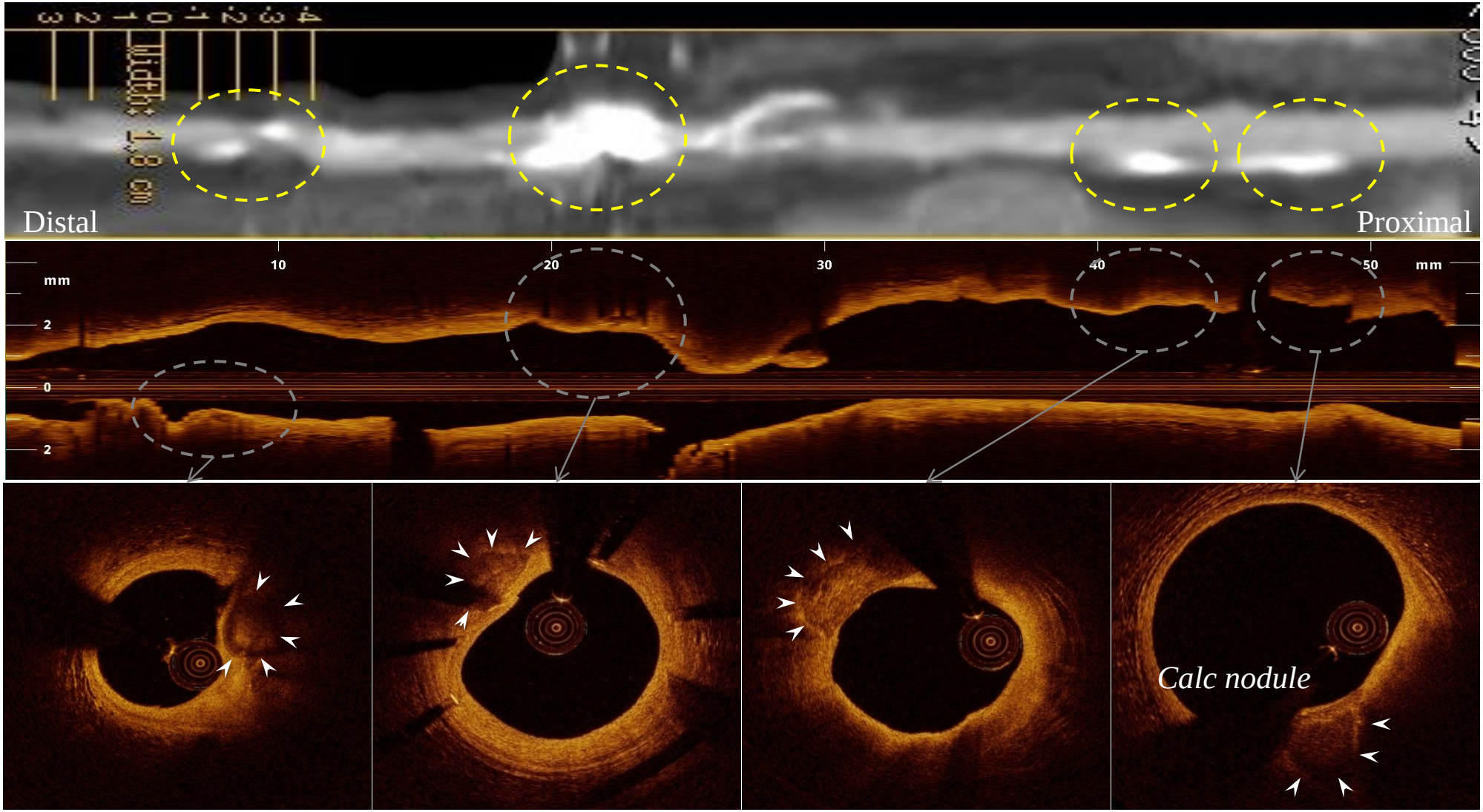
Post Ø 3.0x12 mm
Non-compliant balloon



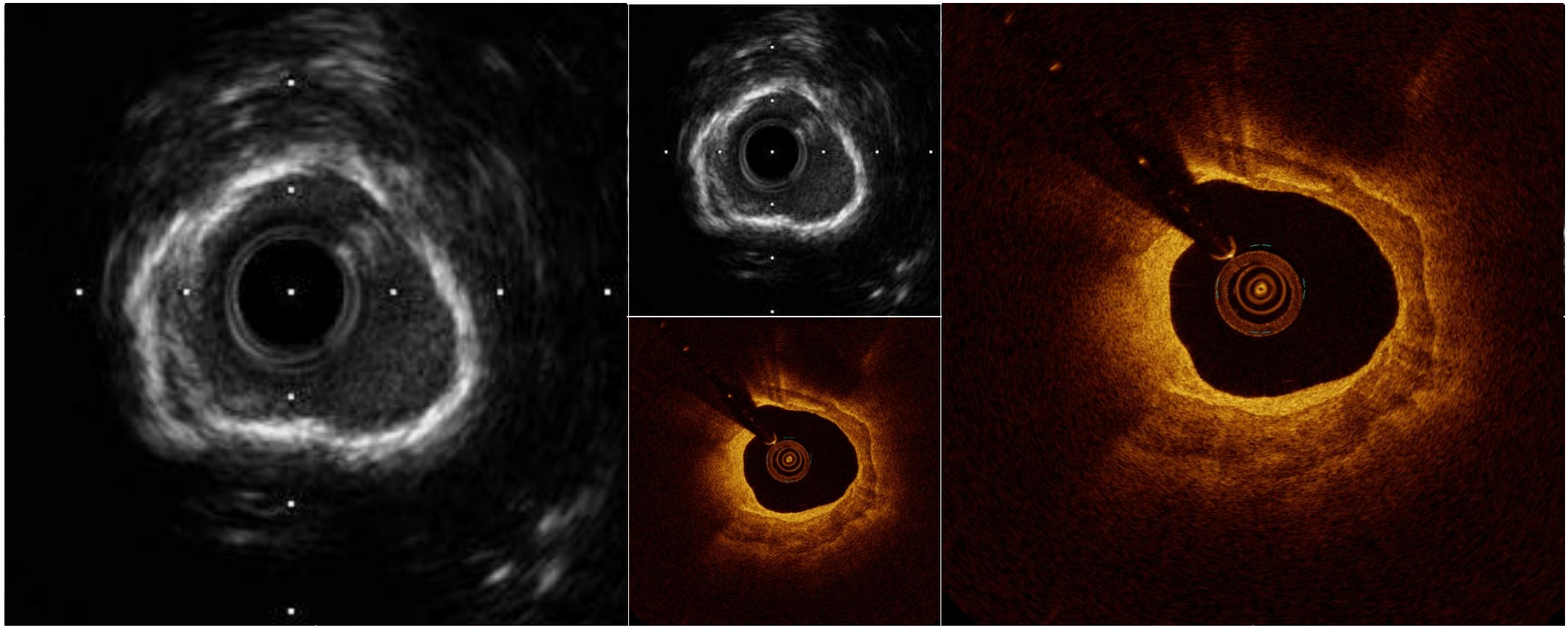
Before and after BVS implant



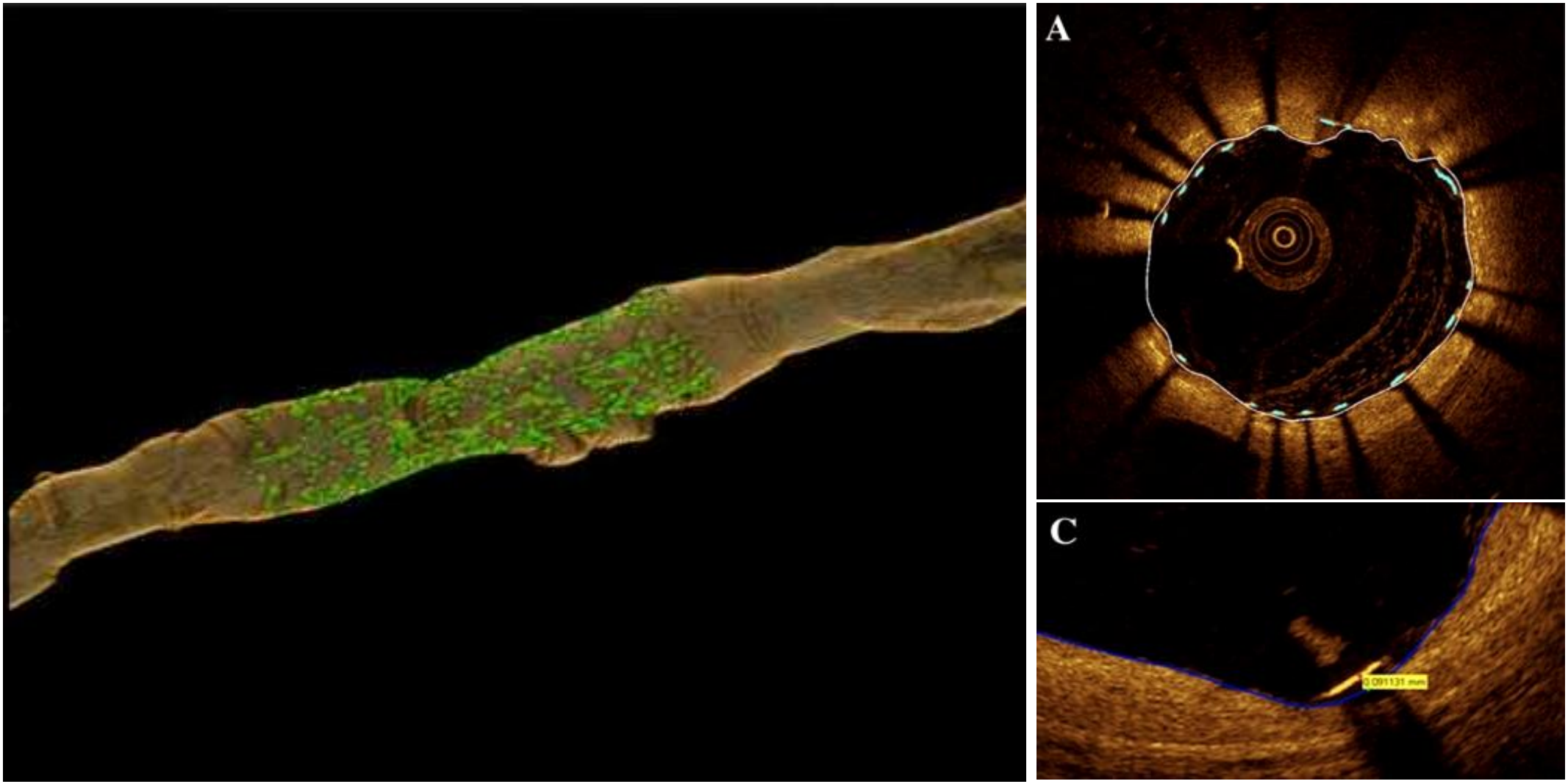
Can OCT detect calcium?



Calcified Left Main Disease: pair assessment with IVUS™ and Optis™



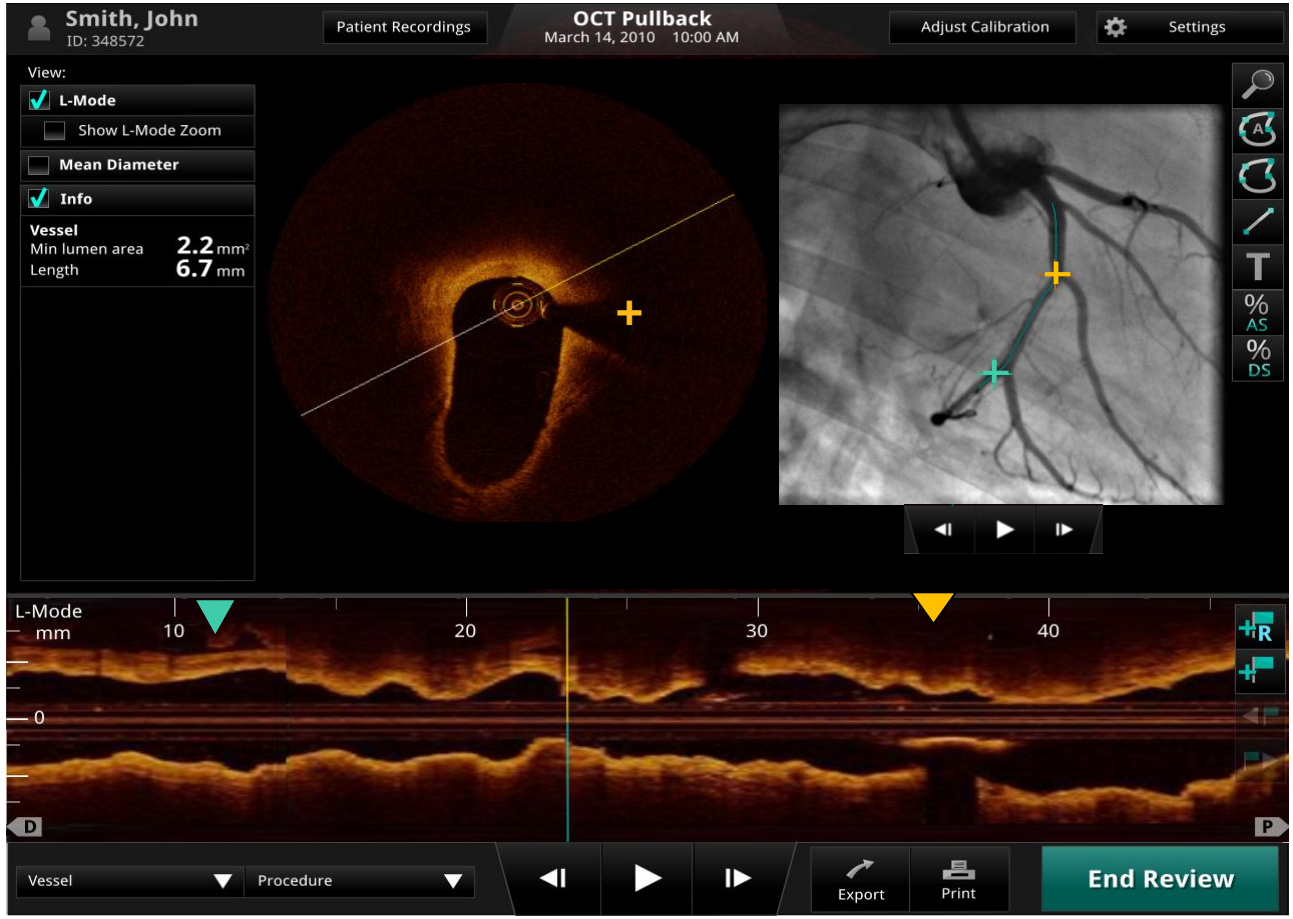
Full Automatic Analysis of Stent Strut Apposition and Coverage



Ughi G. Int J Cardiovasc Imaging (2012) 28:229-241 DOI 10.1007/s10554-011-9824-3

Coregistration

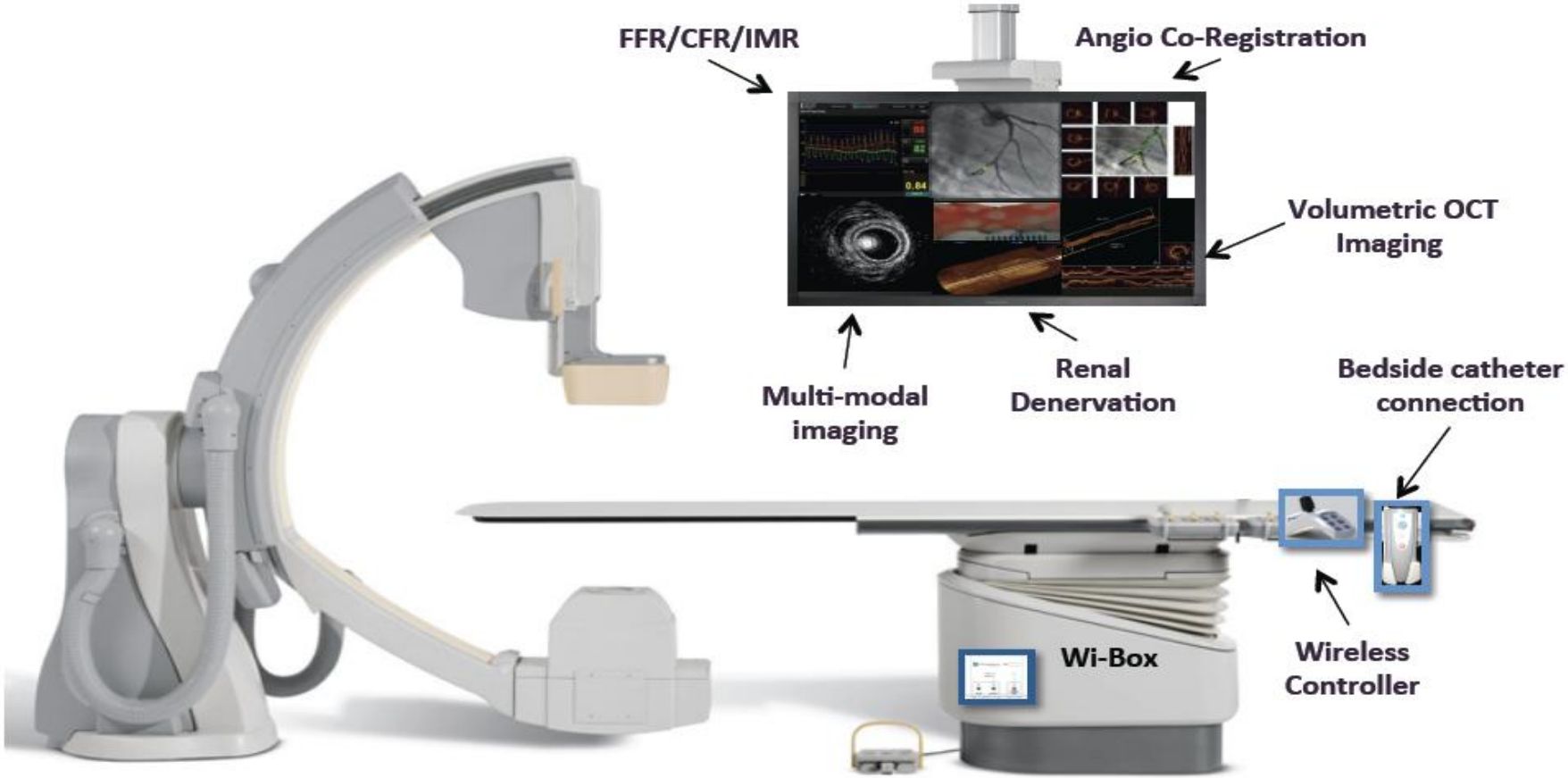
- Real-time coregistration of OCT and angiography image with single click



Proximal marker corresponds to current OCT frame

Distal markers corresponds to bookmarked frames

Integrated System



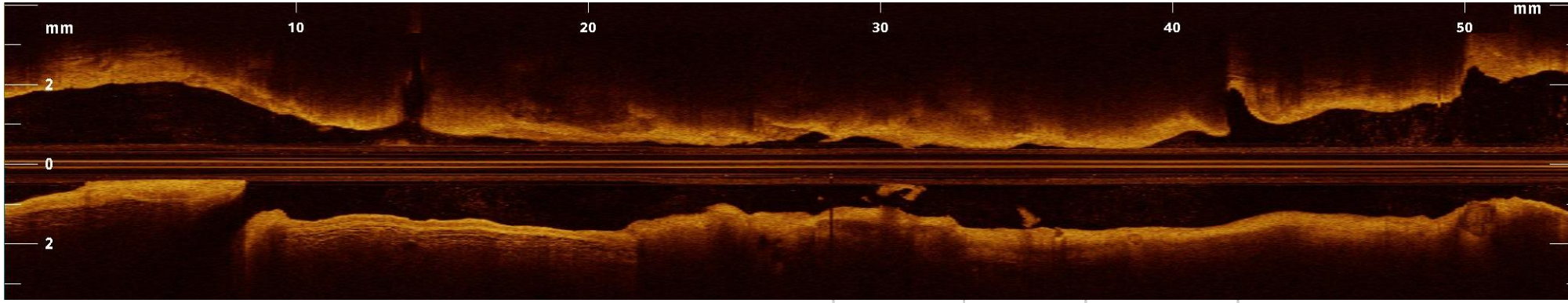
Adjunctive technologies are available tableside at the Interventional Cardiologist's fingertips

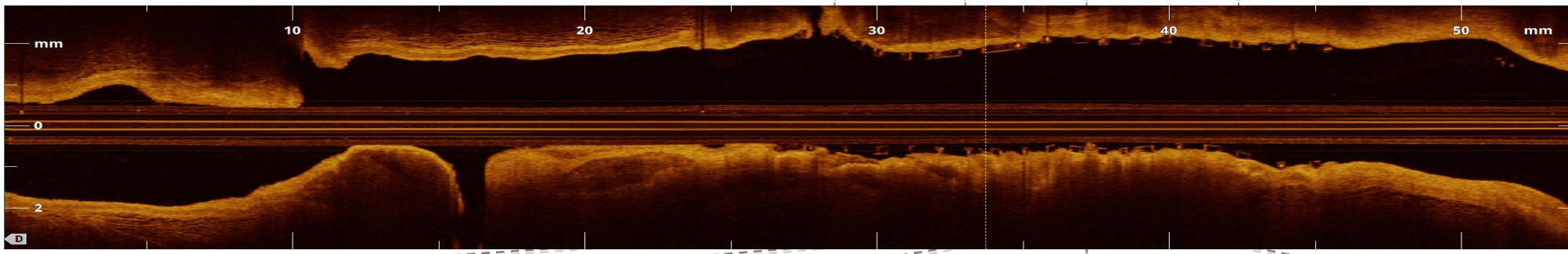
Slide courtesy of St. Jude Medical

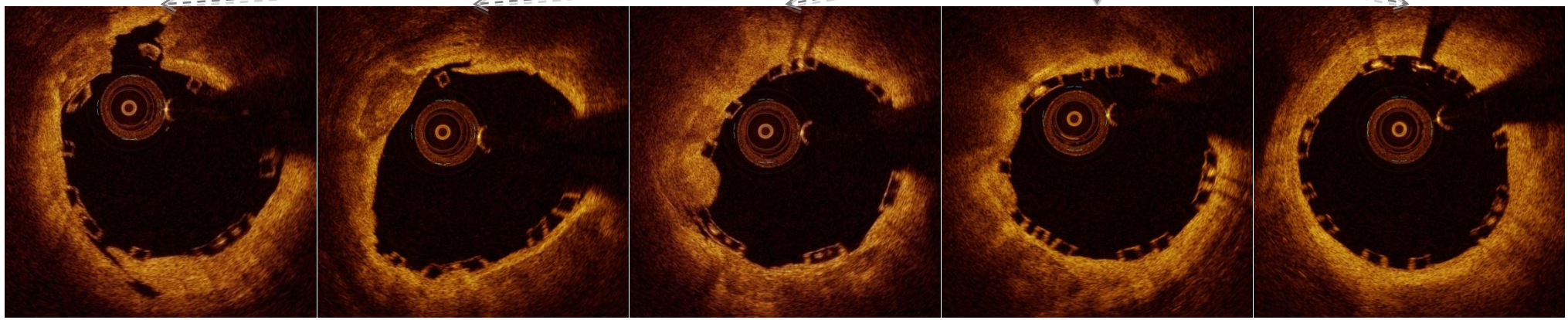
OCT to Optimize Stent Interventions:
New Tools, New Findings and Clinical Evidence

- Angio (eyeball, QCA) is no longer the gold standard in challenging cases
- Morphology is useful to guide technical aspects in complex PCI (including LM, bifurcation, ACS and new BVS implant).
- OCT best for mapping and positioning the planned stent with high quality point-to point longitudinal view (automatic lumen profile and stent measures) and great software capabilities (3D navigation, angio co-registration).
- Impact on outcome of this innovative technology remains to be proved.

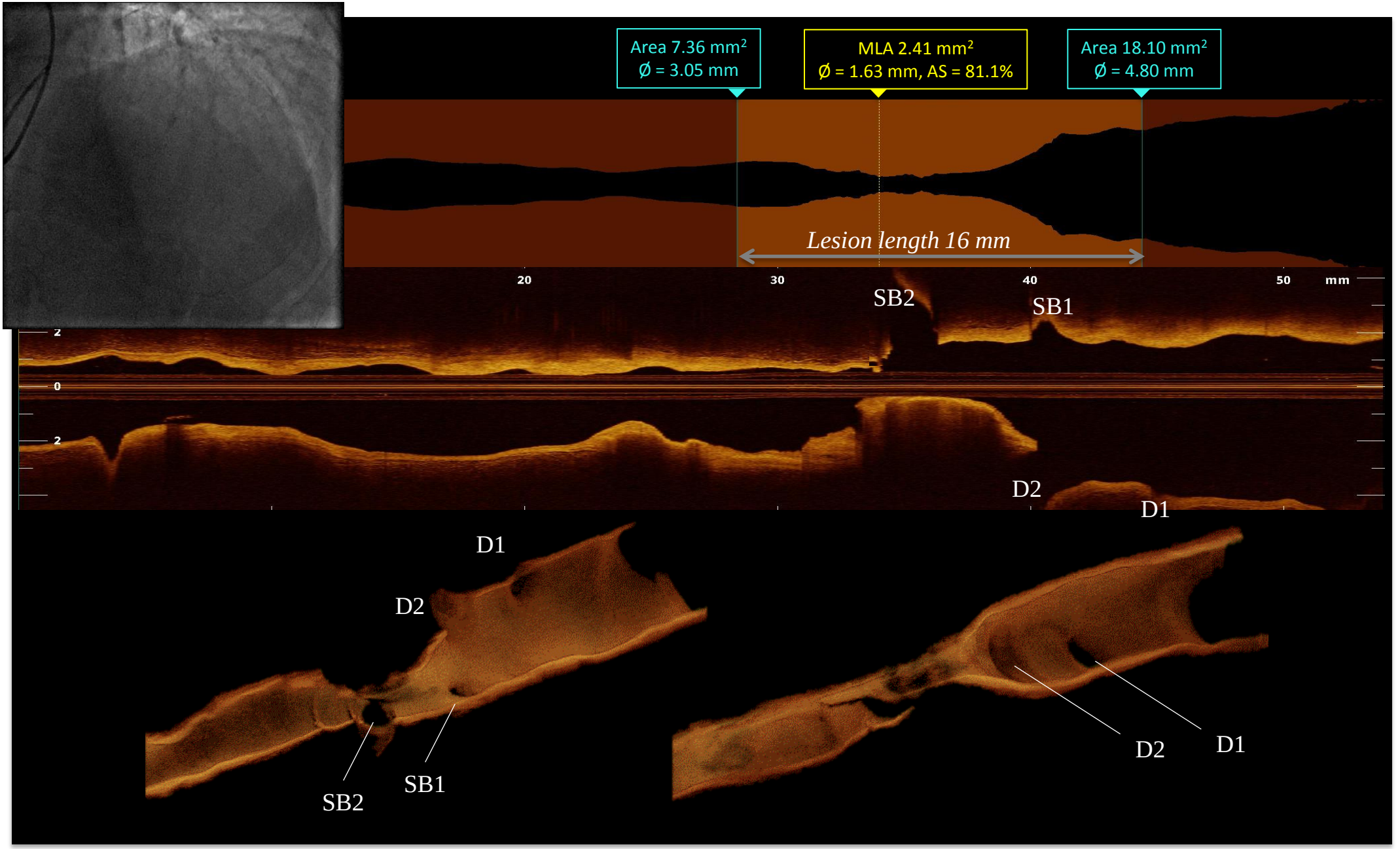
Bioabsorbable Vascular Scaffold: Lesion preparation







Automatic Lumen profile and 3D for stent planning



Automatic Lumen profile and 3D for post-stent assessment