A novel technique for distal left main lesion treatment using DES & BVS

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Disclosure Statement of Financial Interest

Within the past 12 months, I or my spouse/partner have had a financial interest/arrangement or affiliation with the organization(s) listed below.

Affiliation/Financial Relationship	Company
• Grant/Research Support	• Abbott Vascular, Boston Scientific
• Consulting Fees/Honoraria	• Abbot Vascular, Biosensors, Boston Scientific, Cordis J&J, Medtronic
• Major Stock Shareholder/Equity	
• Royalty Income	
• Ownership/Founder	
• Intellectual Property Rights	
• Other Financial Benefit	

Novel technique for left main:

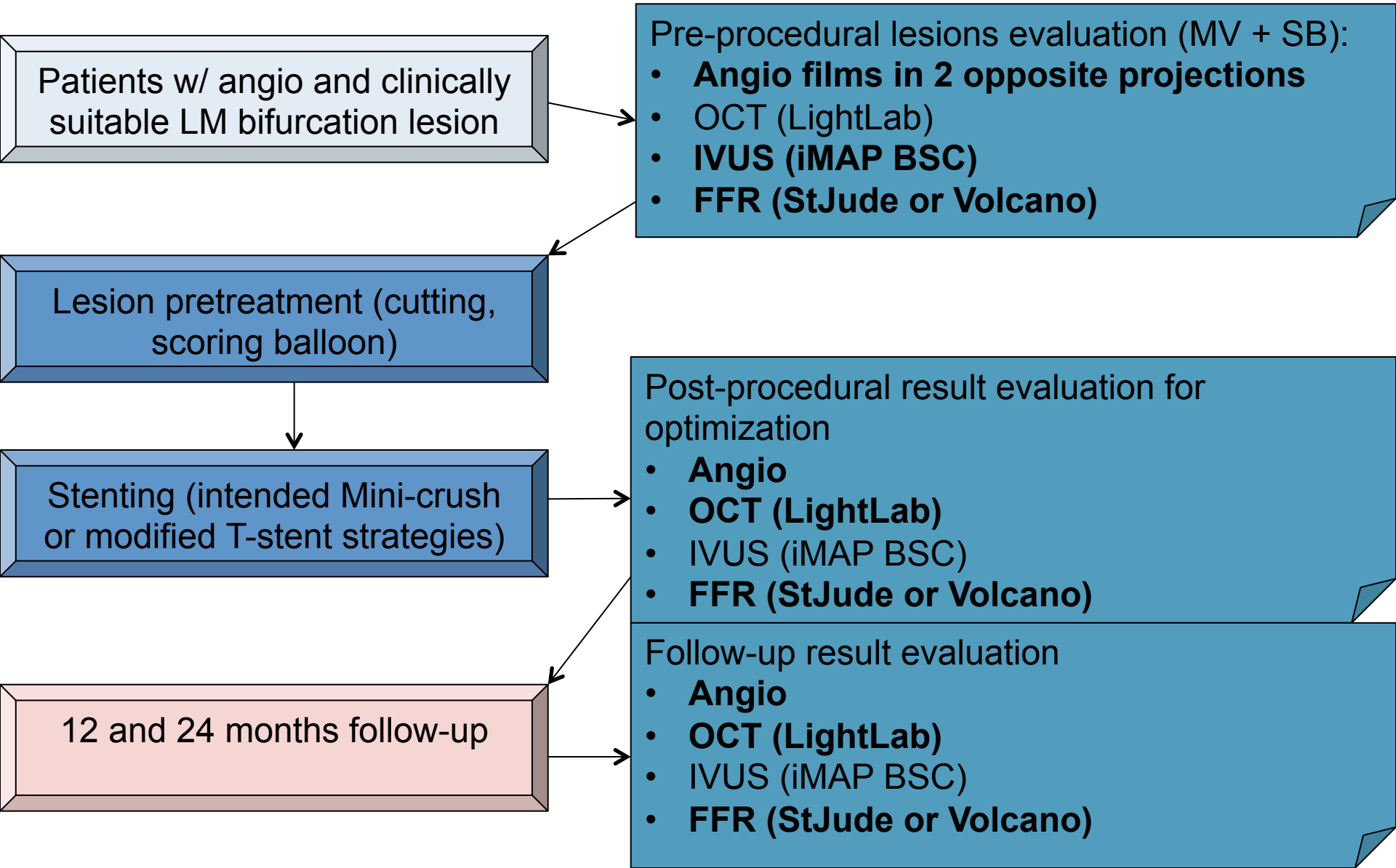
Unprotected LM Intervention by IVUS-guided and OCT-Optimized Combined BVS and DES stents Implantation Using 2- Stent Technique

- Pilot, prospective, consecutive, one center registry analyzing feasibility of IVUS-guided and OCT-optimized two stent technique (Mini-crush or T-stent strategy) using everolimus-eluting platinum chromium coronary stent with bioabsorbable polymer coating (Synergy) in LM/LAD and bioresorbable vascular scaffold (Abbsorb) in Cx for the treatment of distal ULMCA true bifurcation stenosis

- Study population: Elective patients with distal ULMCA true bifurcation stenosis

- Hypothesis:
  - Treatment of distal ULMCA true bifurcation stenosis with everolimus-eluting platinum chromium coronary stent with bioabsorbable polymer coating (Synergy) in LM/LAD and bioresorbable vascular scaffold (Abbsorb) in Cx using two stent techniques (Mini-crush or T-stent strategies) is safe and feasible with similar performance (non-inferior) to historical control with two DES.
  - Acute and long-term outcomes of ULMCA true bifurcation stenosis treatment with combined BVS and DES will be better than two DES treatment in historical control.

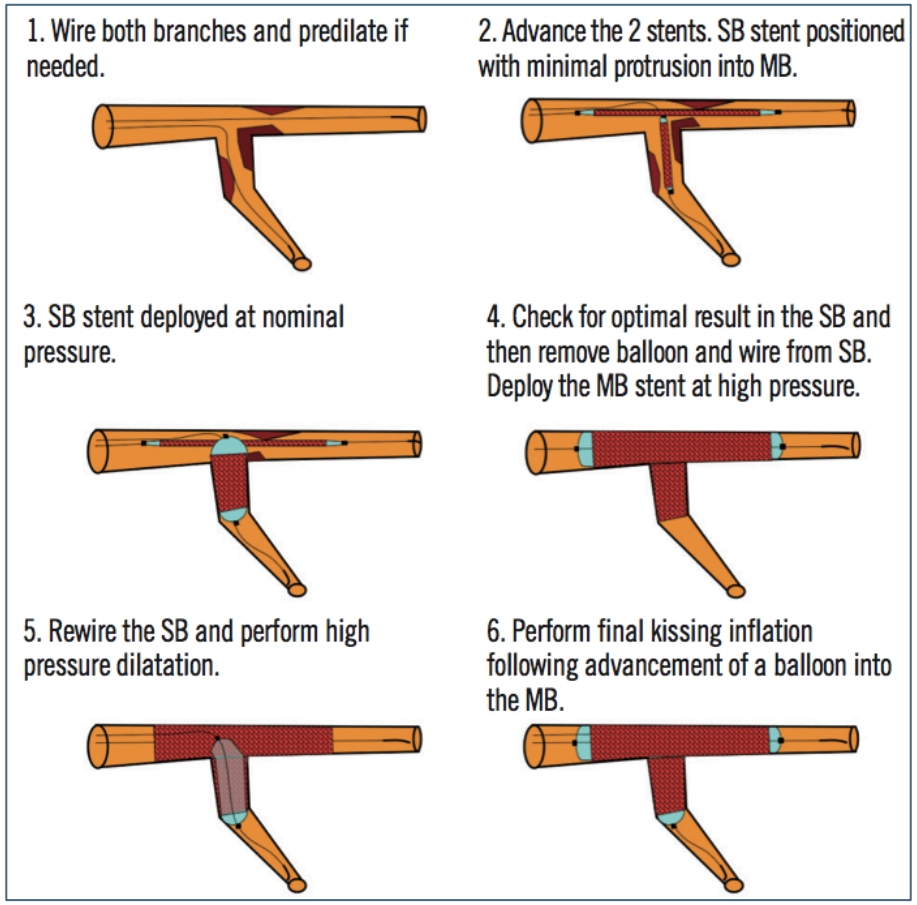
LM with BVS+DES flow chart



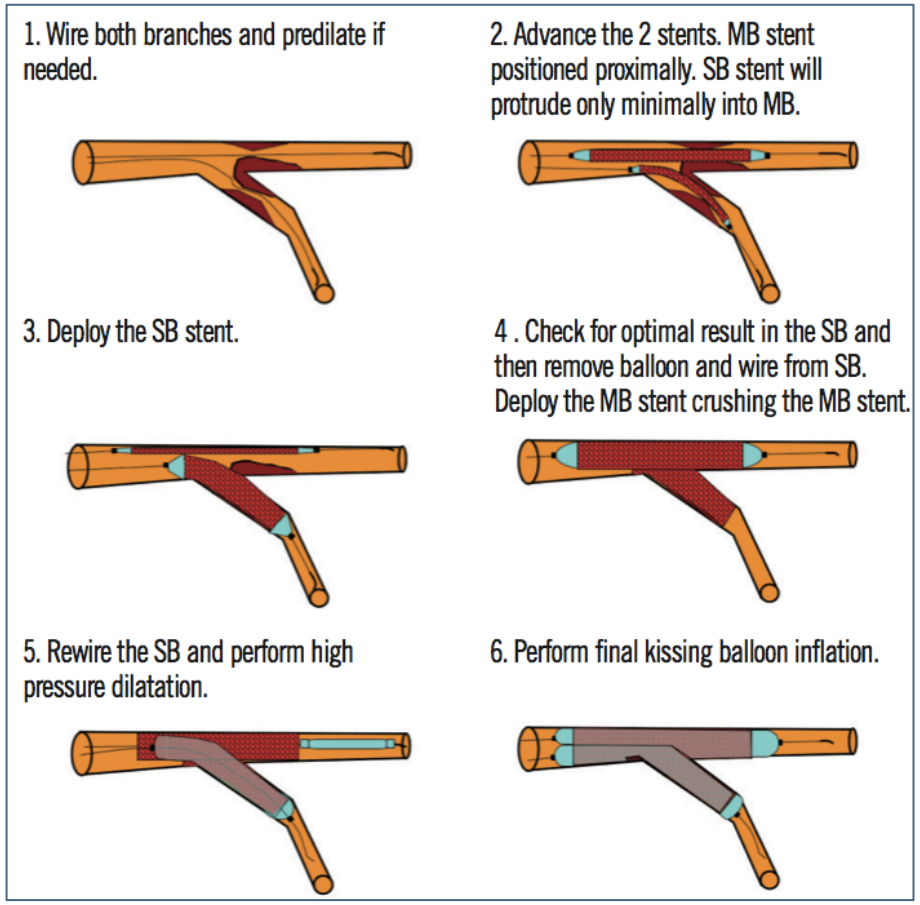
Stenting Techniques

1. Plaque pretreatment with cutting balloon
2. SYNERGY at LM/LAD; ABSORB at Cx

Modified T stenting



Minicrush stenting



Latib A et al. *EuroIntervention.* 2010;6 Suppl J: J81-J87

Patient and Angiographic Characteristics

Patient clinical characteristics N=30 (%)	
Age (years), mean ± STD	64 ± 8
Male, n (%)	24 (80)
Arterial hypertension, n (%)	29 (97)
Dyslipidemia, n (%)	26 (87)
Diabetes mellitus, n (%)	3 (10)
Current smokers, n (%)	9 (30)
Stabile angina diagnosis, n (%)	30 (100)
Previous MI, n (%)	10 (33)
Previous PCI, n (%)	14 (47)
PAD, n (%)	5 (17)
LVEF %, mean ± STD	58 ± 9

Patient angiographic characteristics N=30	
Mean SYNTAX score	27.6 ± 2.6
True bifurcation (Medina 111, 101, 011)	30 (100)

Procedural characteristics

Patient angiographic characteristics N=30	
Radial approach, n (%)	10 (33)
Cutting balloon pre-dilatation in LM-LAD, n (%) Mean CB diameter, mm	23 (77) 3.38±0.32
Cutting balloon pre-dilatation in Cx, n (%) Mean CB diameter, mm	23 (77) 3.17±0.36
Stenting technique: T stent technique Minicrush technique	 10 (33) 20 (67)
Mean SYNERGY stent length in LM/LAD, mm Mean SYNERGY stent diameter in LM/LAD, mm	22.80±7.64 3.77±0.31
Mean ABSORB scaffold length in Cx, mm Mean ABSORB scaffold diameter in Cx, mm	16.27±4.32 3.20±0.36
Final kissing, n (%)	30 (100)
Proecedural success, n (%)	30 (100)

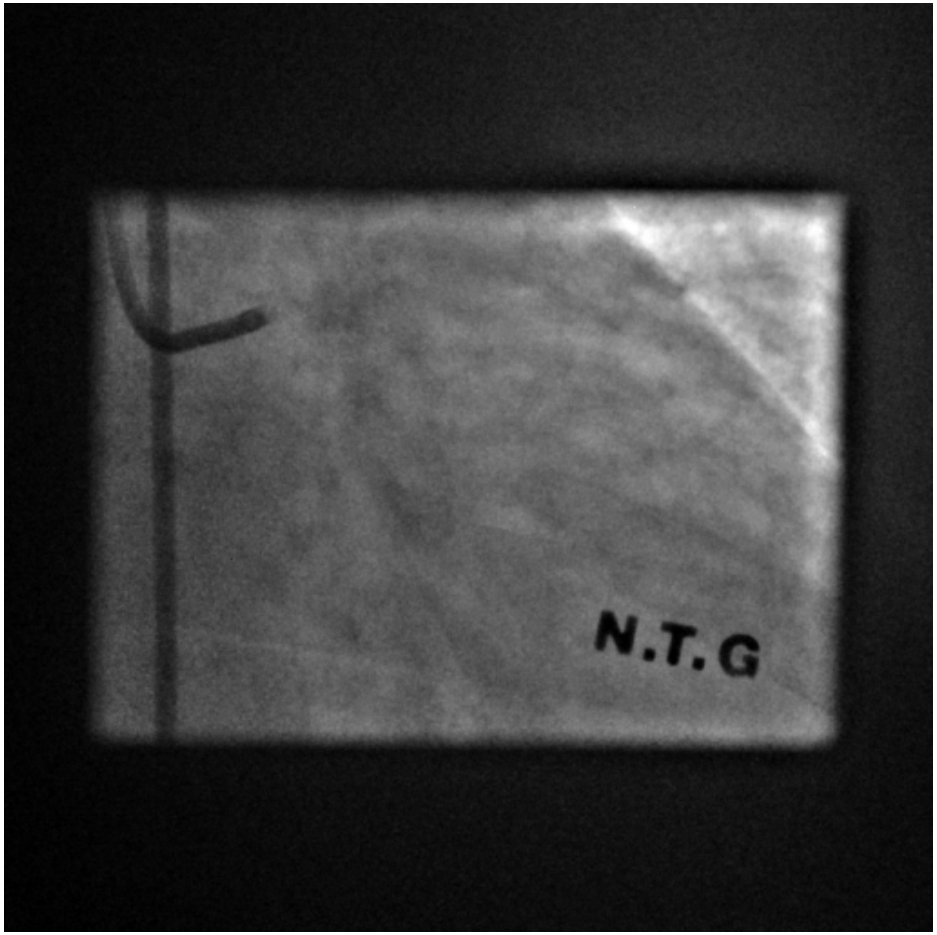
First results

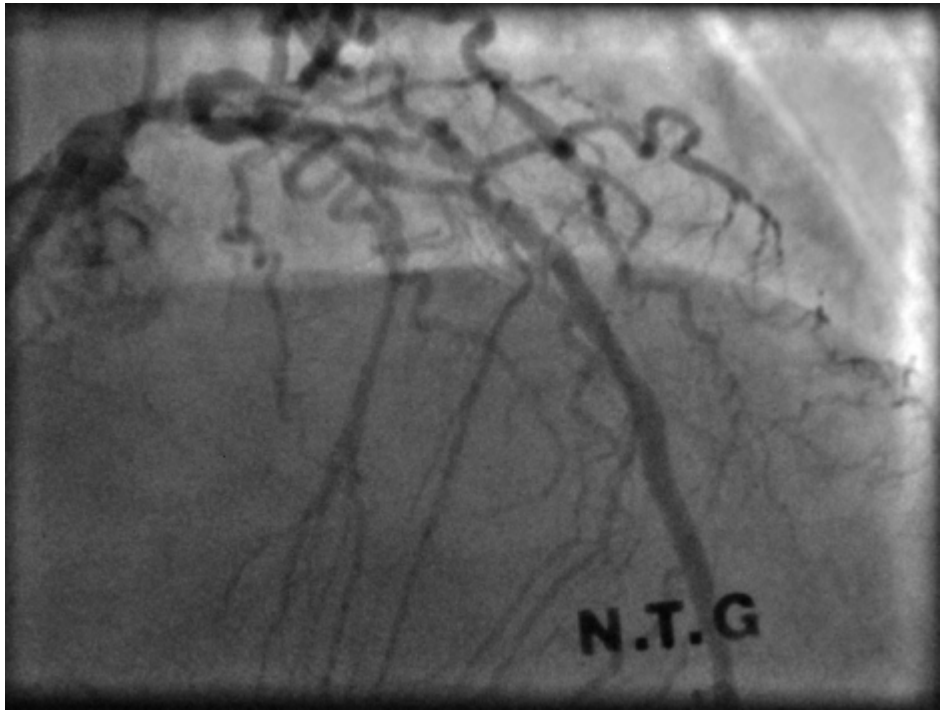
30 days follow-up, N=30 (%)	
Death, n (%)	0 (0)
Cardiac death, n (%)	0 (0)
QMI, n (%)	0 (0)
TVR, n (%)	0 (0)
TLR, n (%)	0 (0)
ST, n (%)	0 (0)
MACE, n (%)	0 (0)

Case Example #1

LM distal bifurcation 75% stenosis to LAD and LCX.

RCA chronic total occlusion

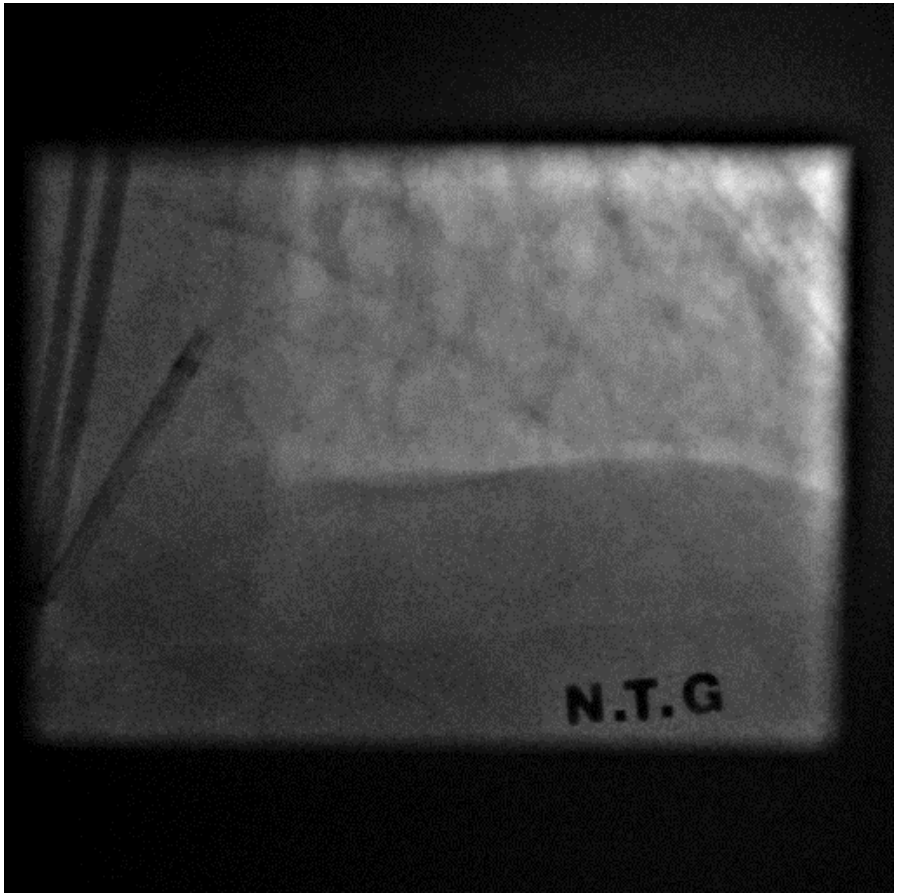


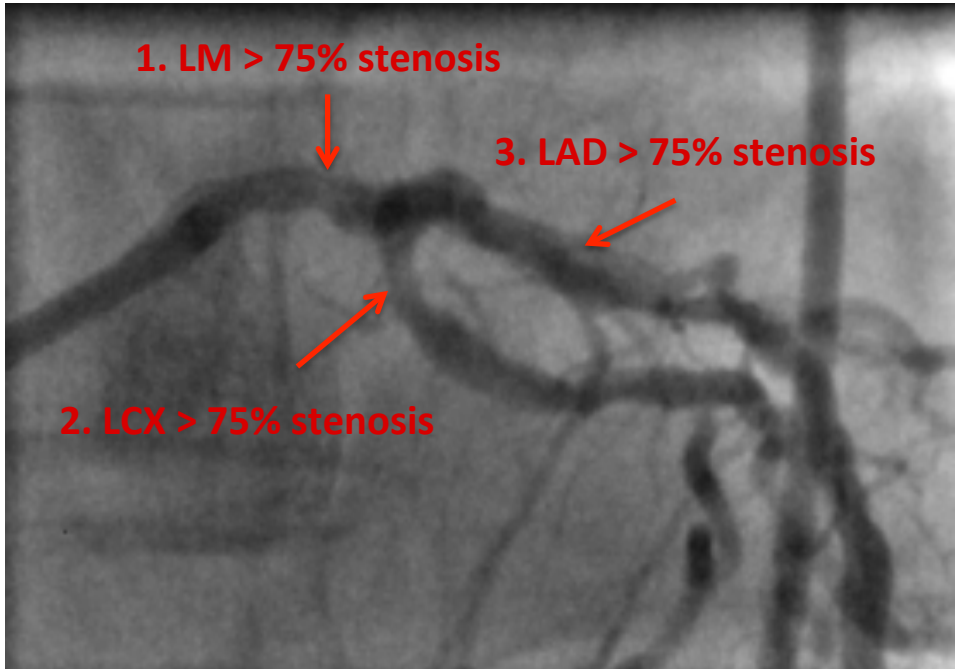


Coronary angiography

LM distal bifurcation 75% stenosis to LAD and LCX.

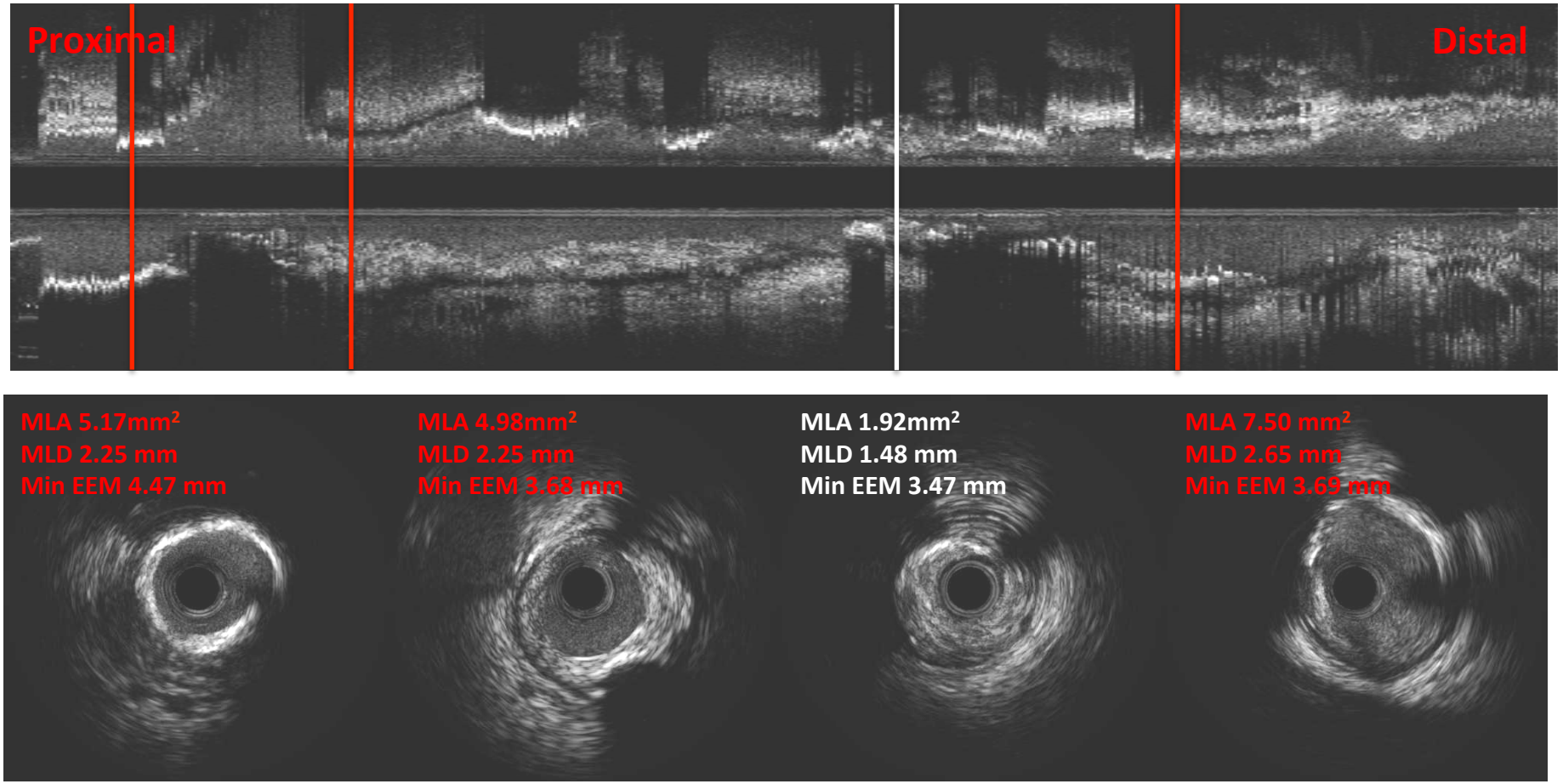
RCA chronic total occlusion



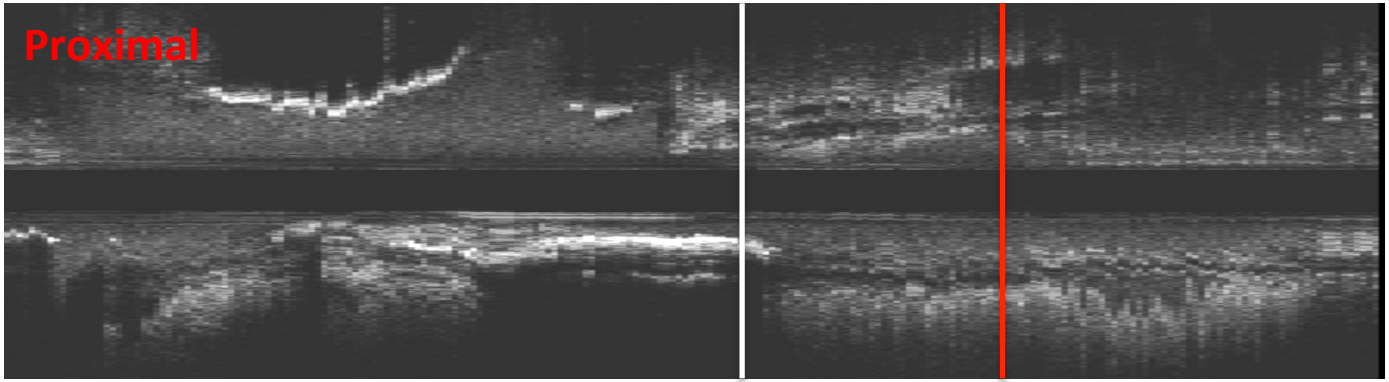


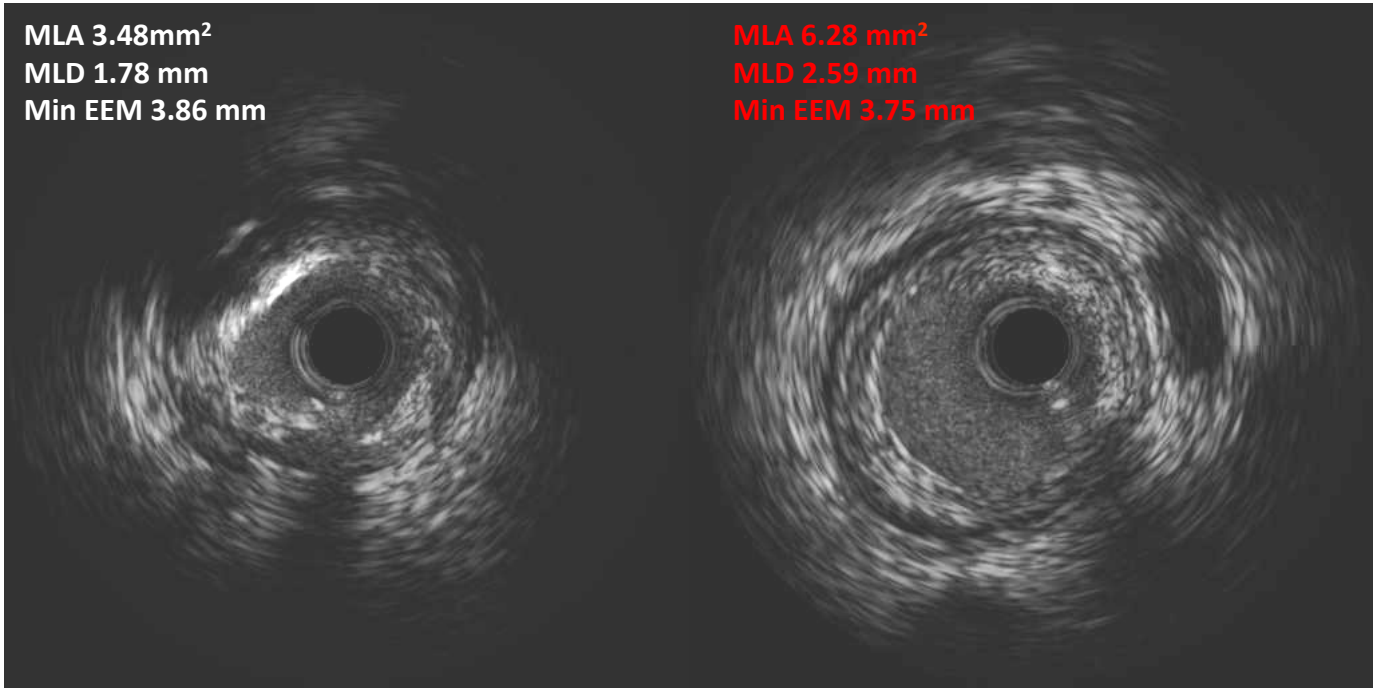
1. LM-Cutting balloon + DES
2. LCX-Cutting balloon + Bioabsorbable scaffold
3. LAD-Cutting balloon + DES

Preintervention IVUS LAD



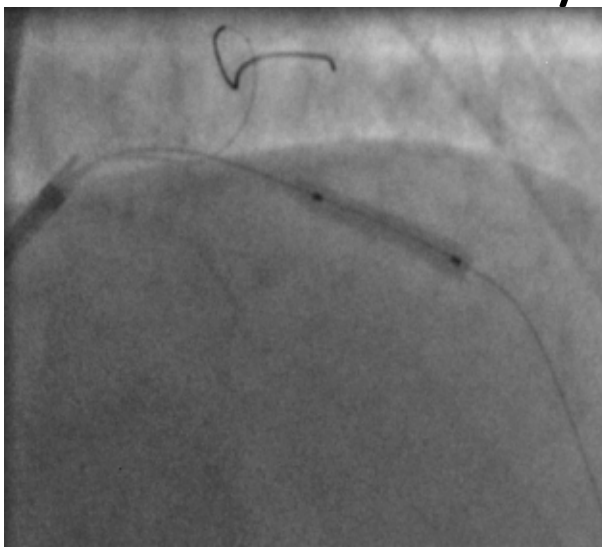
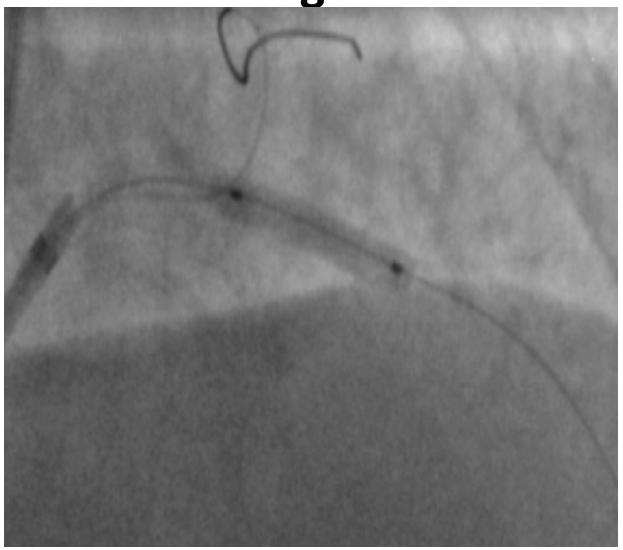
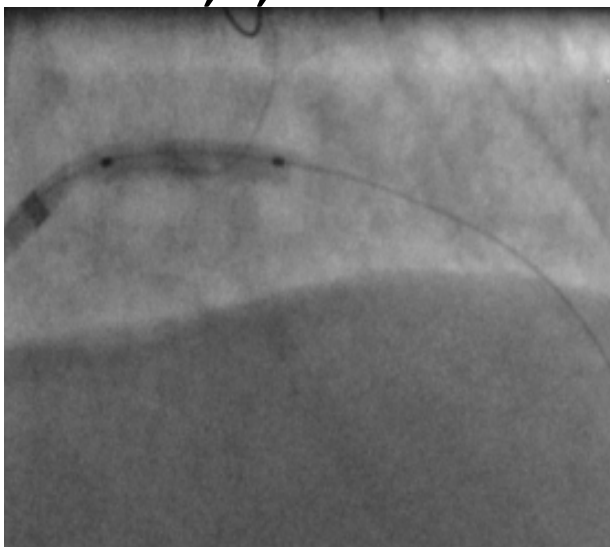
Preintervention IVUS LCX



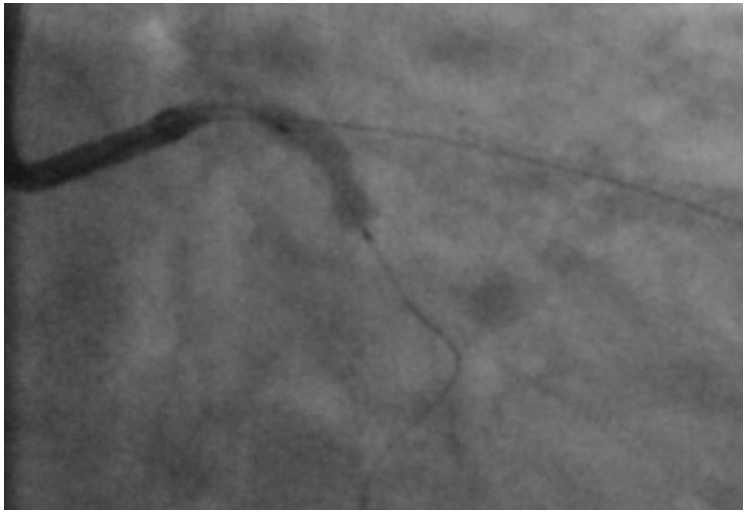
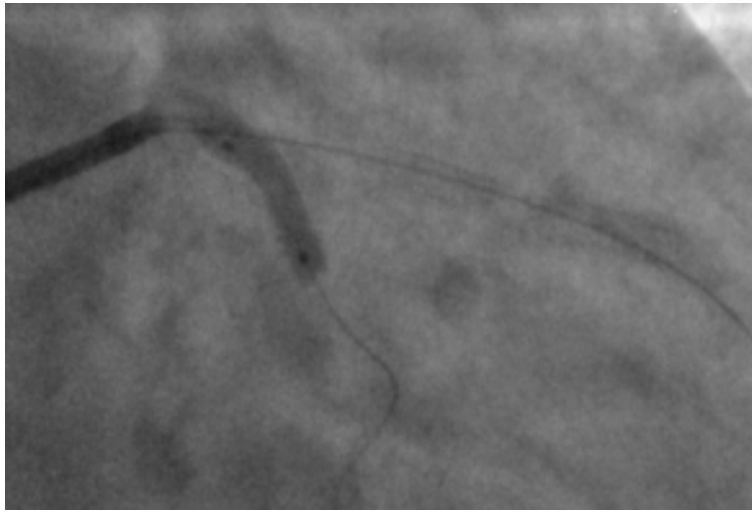


Plaque pretreatment

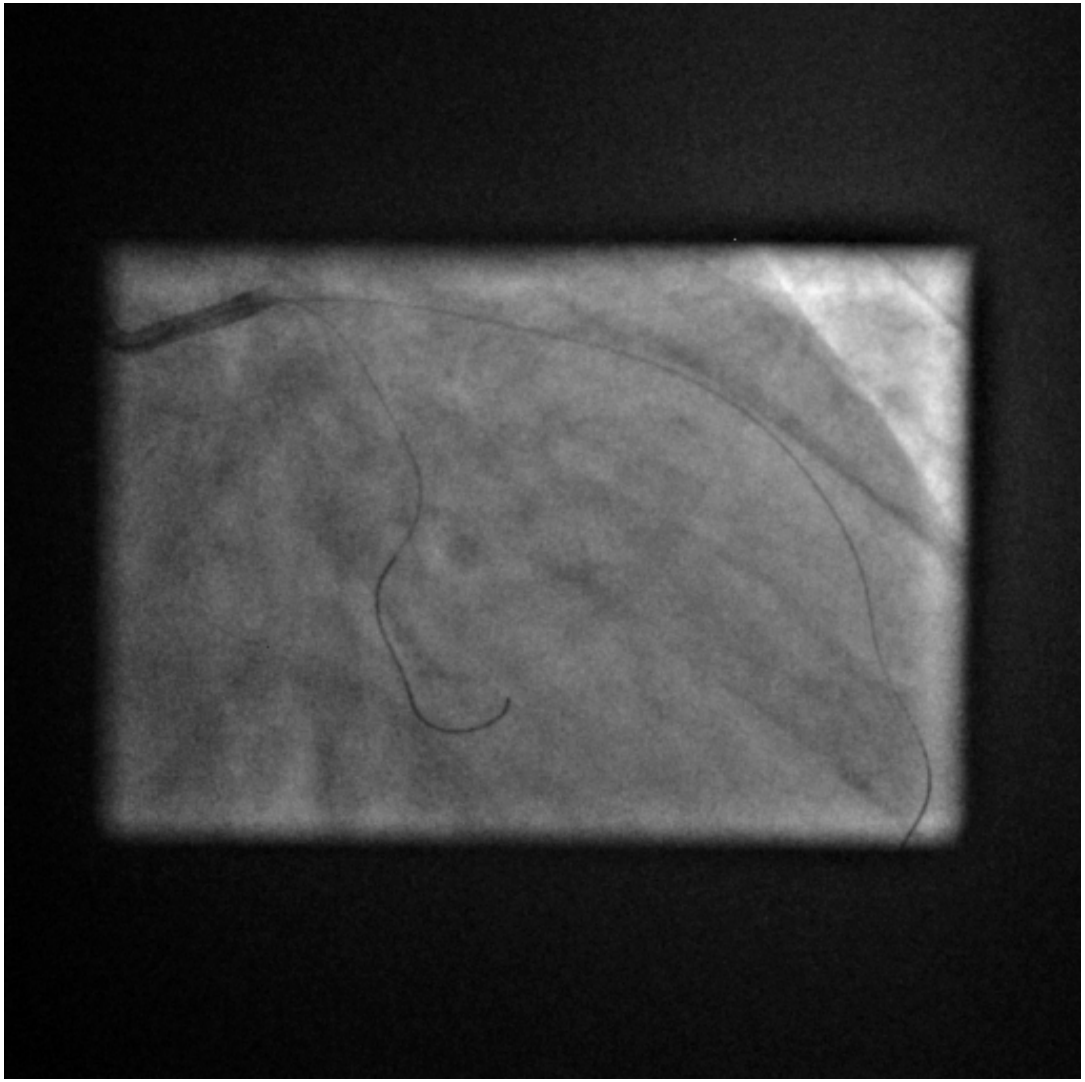
Predilatation of LM/LAD with cutting balloon 3.5 x 15 mm 5, 6, 7 bar

Predilatation of LCX with Regular balloon 3.0 x 12 mm 6, 7 bar

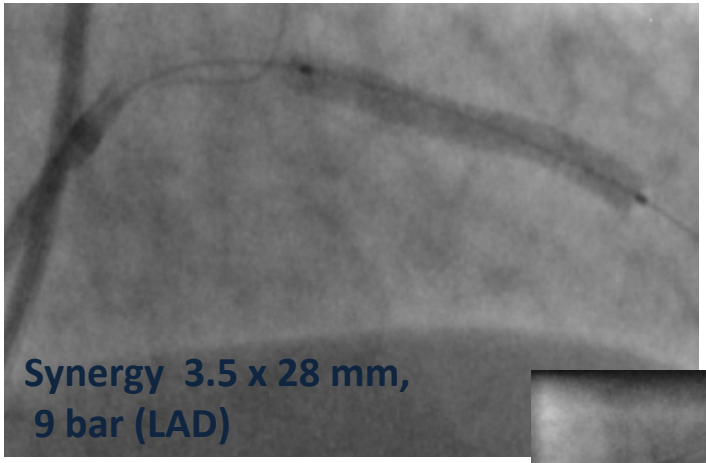



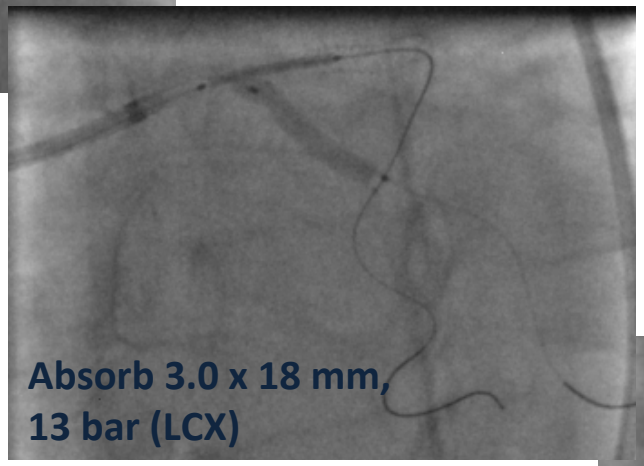
After predilatation

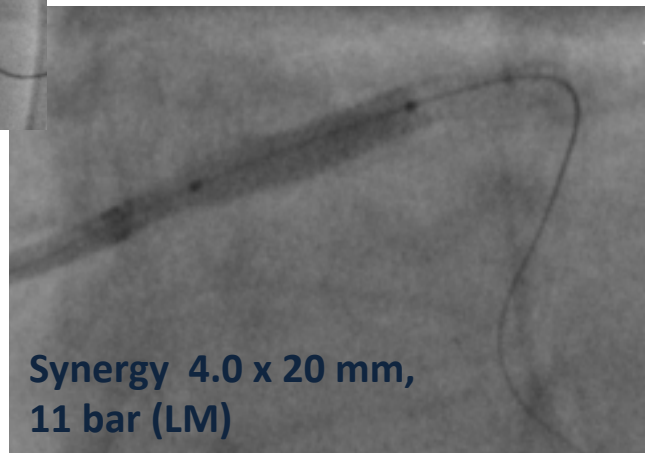


Achieved good plaque modification with cutting balloon

Stenting (minicrush)

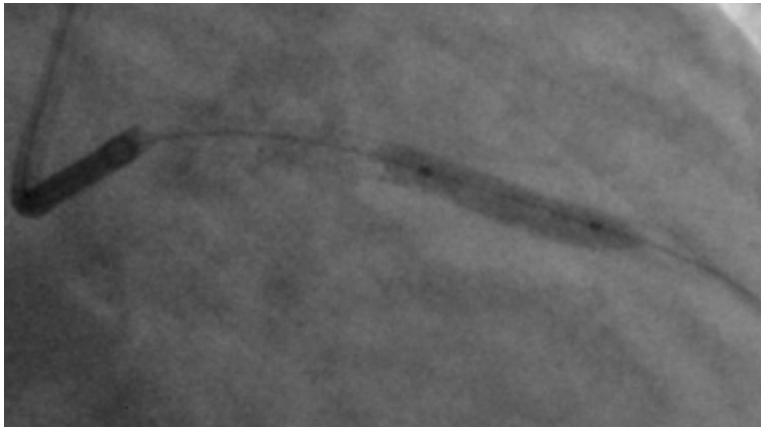




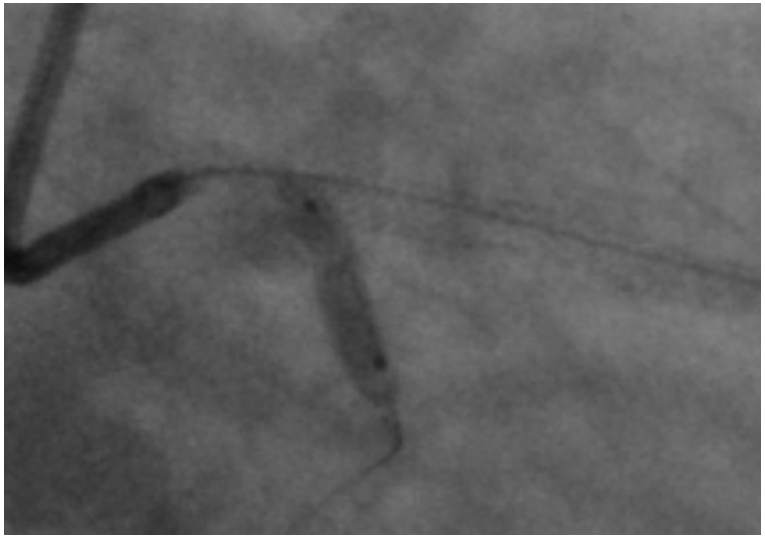


Postdilatation

1. LAD – NC Balloon 3.5 x 15 mm, 17 bar



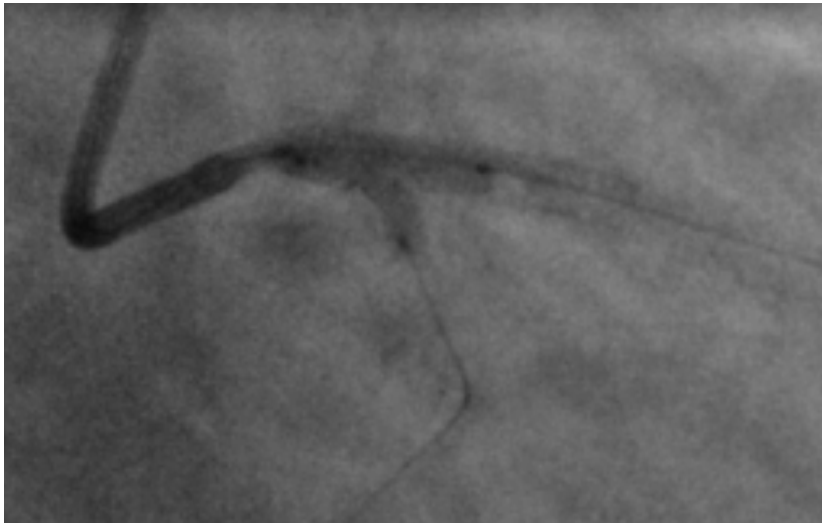
2. LCX – NC Balloon 3.5 x 15 mm, 15 bar



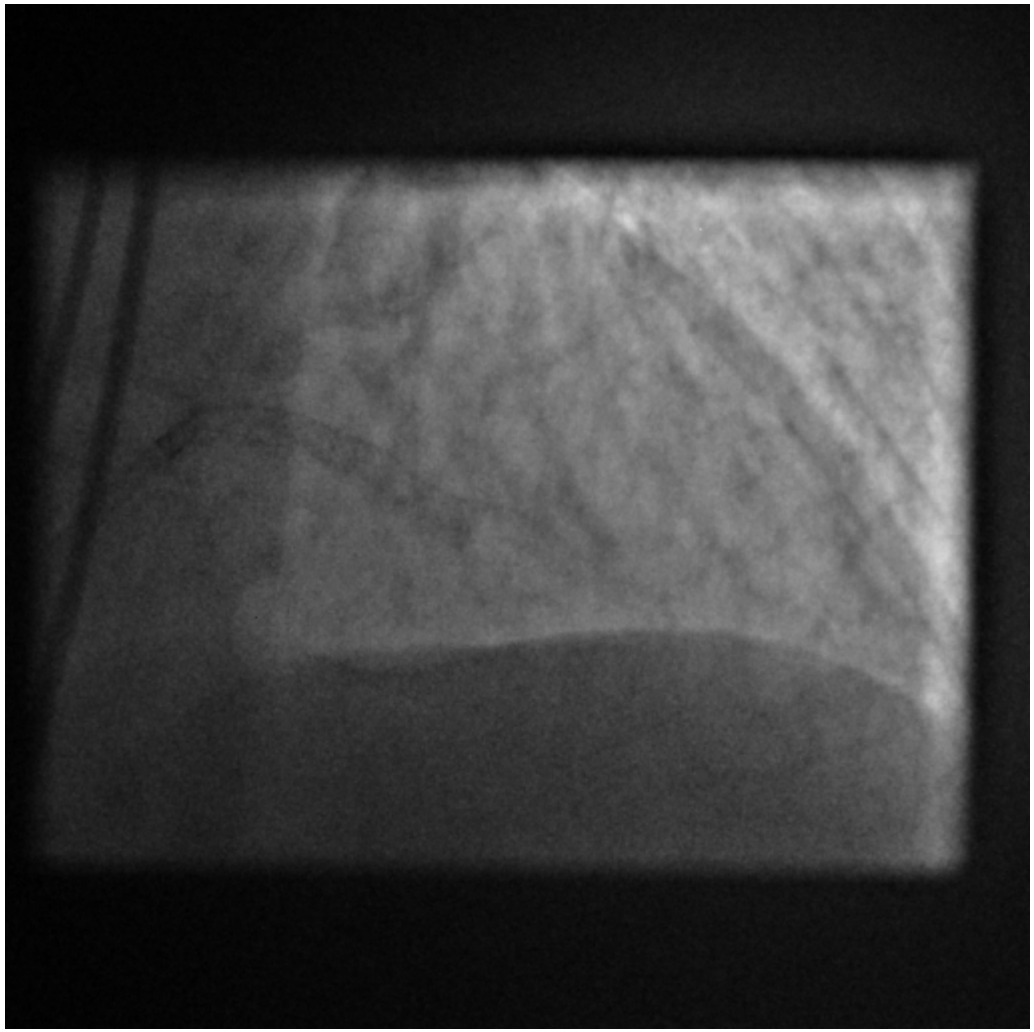
3. Kissing:

LAD 3.5 x 15 mm, 10 bar

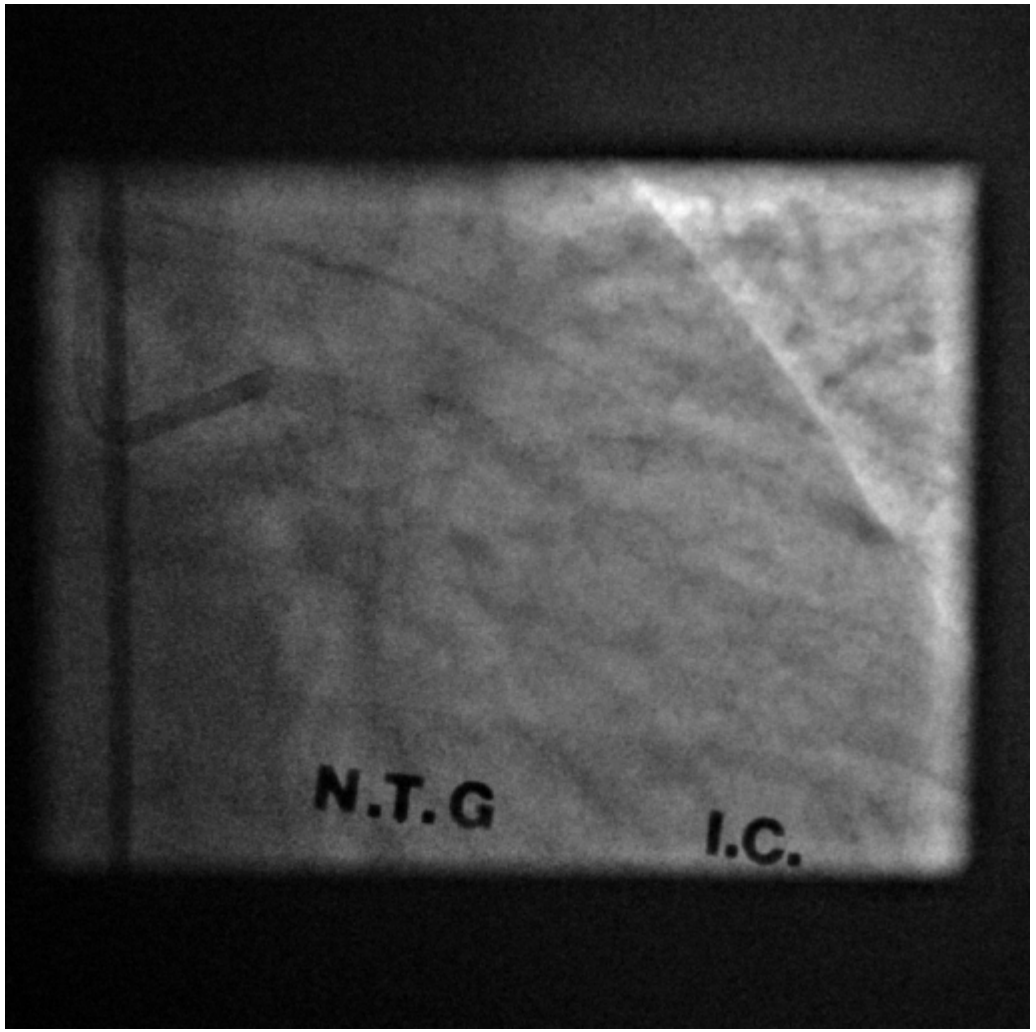
LCX 3.0 x 15 mm , 10 bar



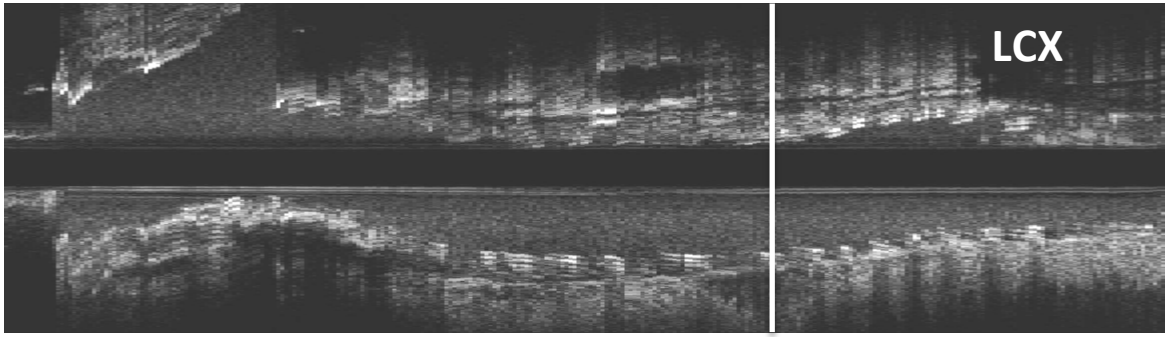
Final result

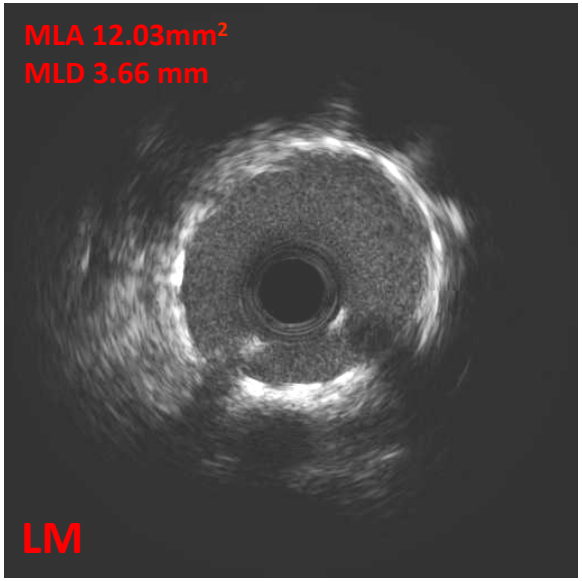


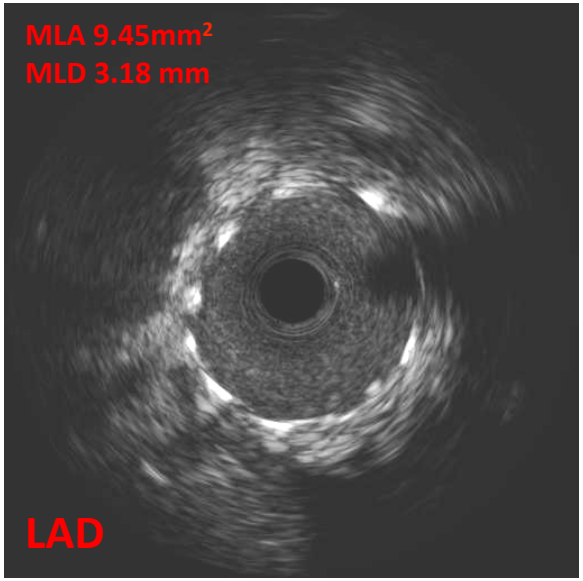
Final result

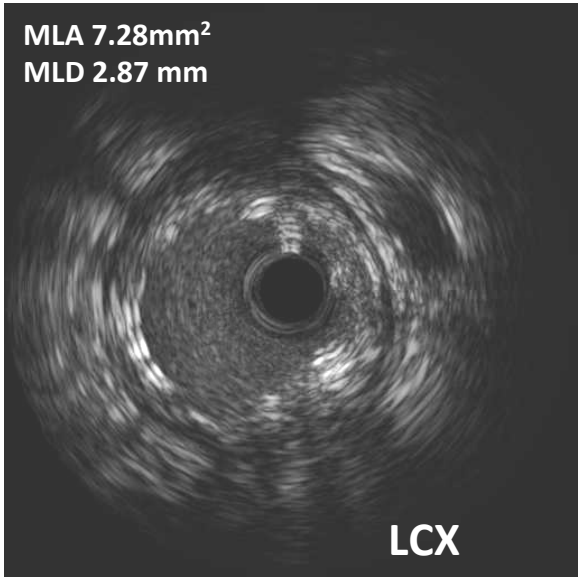


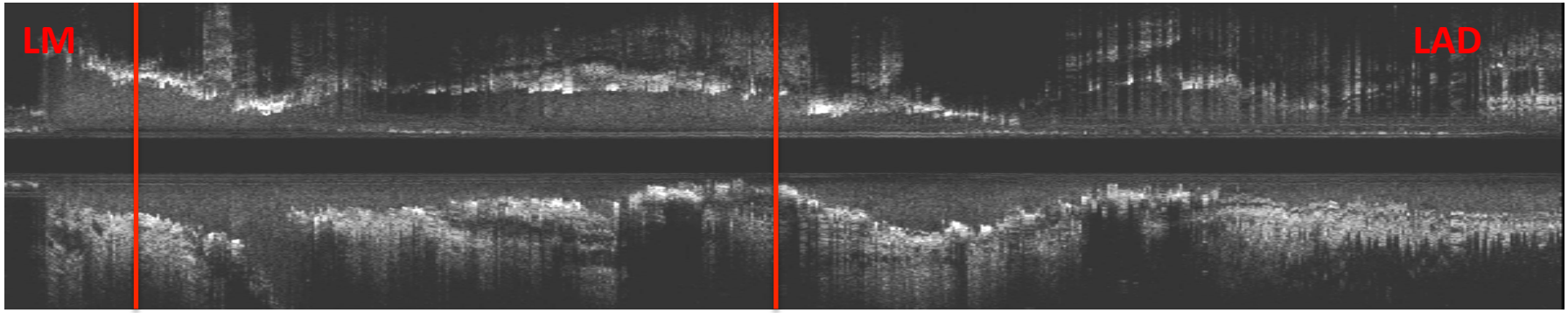
Final IVUS


LCX

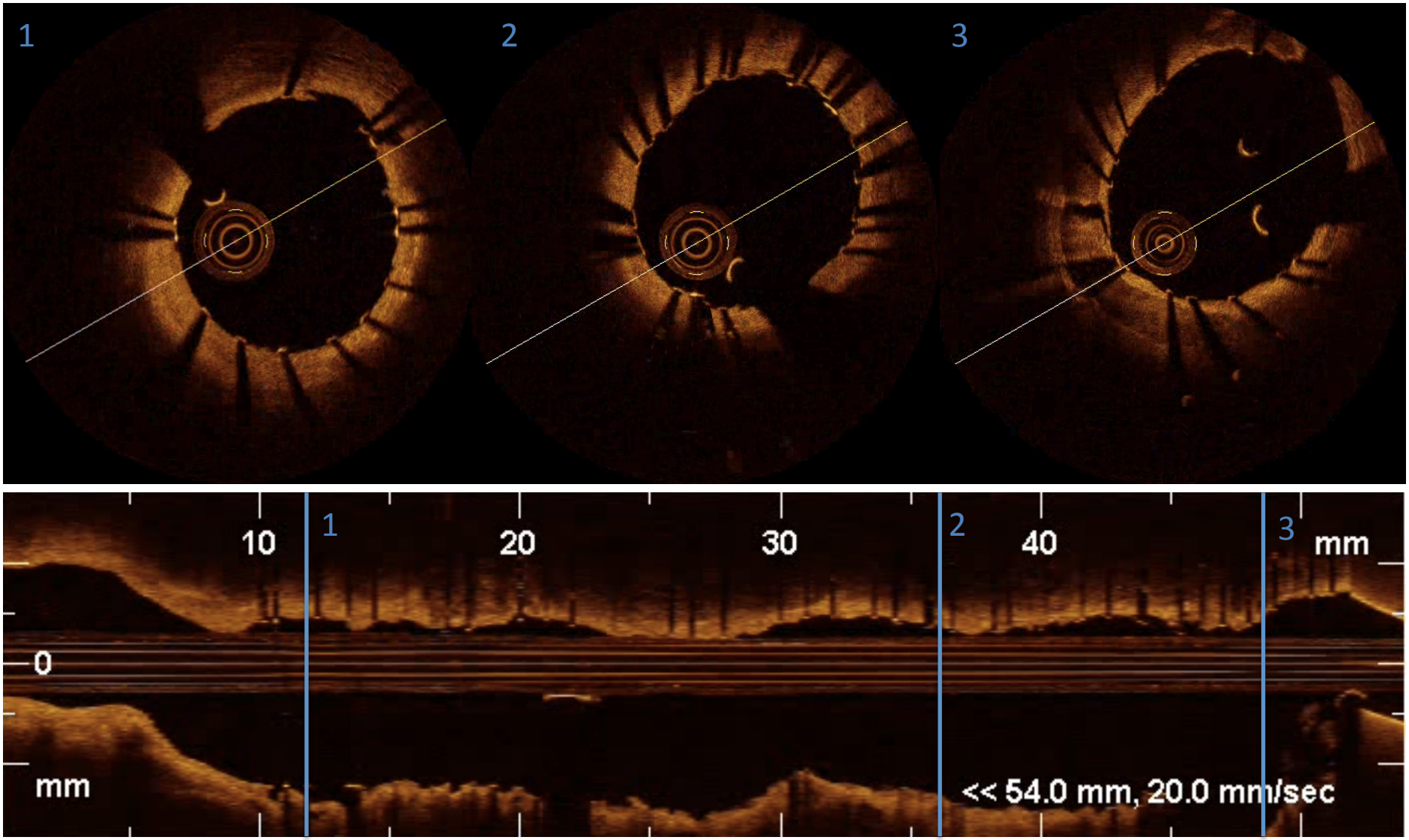

MLA 12.03mm²
MLD 3.66 mm
LM


MLA 9.45mm²
MLD 3.18 mm
LAD

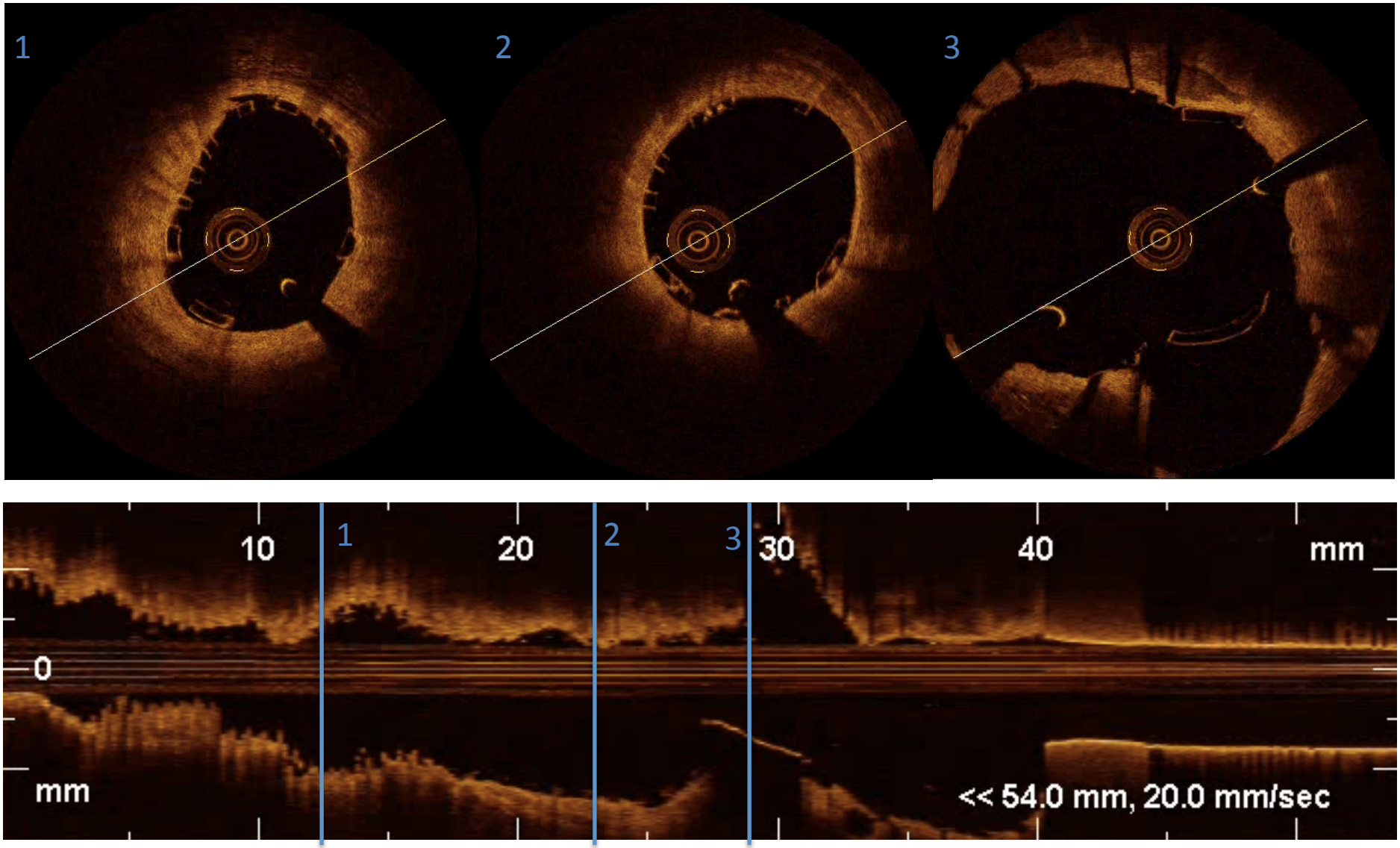

MLA 7.28mm²
MLD 2.87 mm
LCX


LM
LAD

Final OCT: LAD- LM

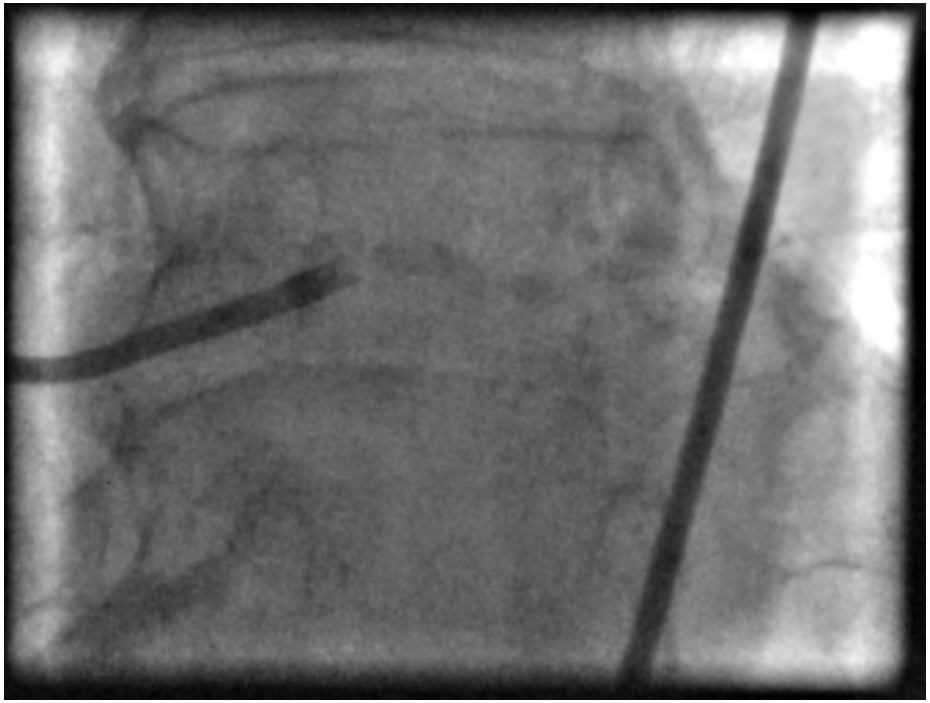


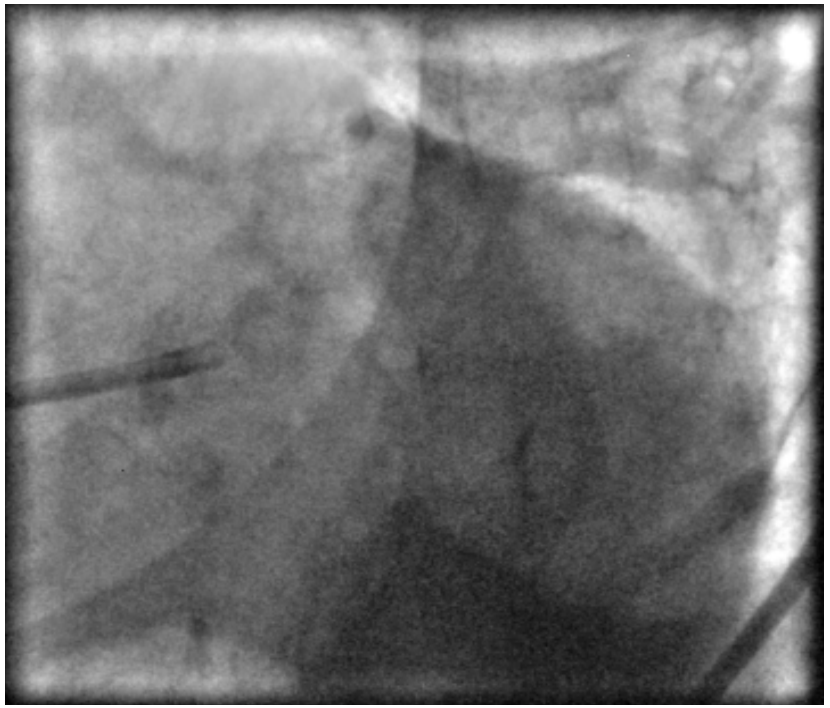
Final OCT: LCX- LM



Case Example #2

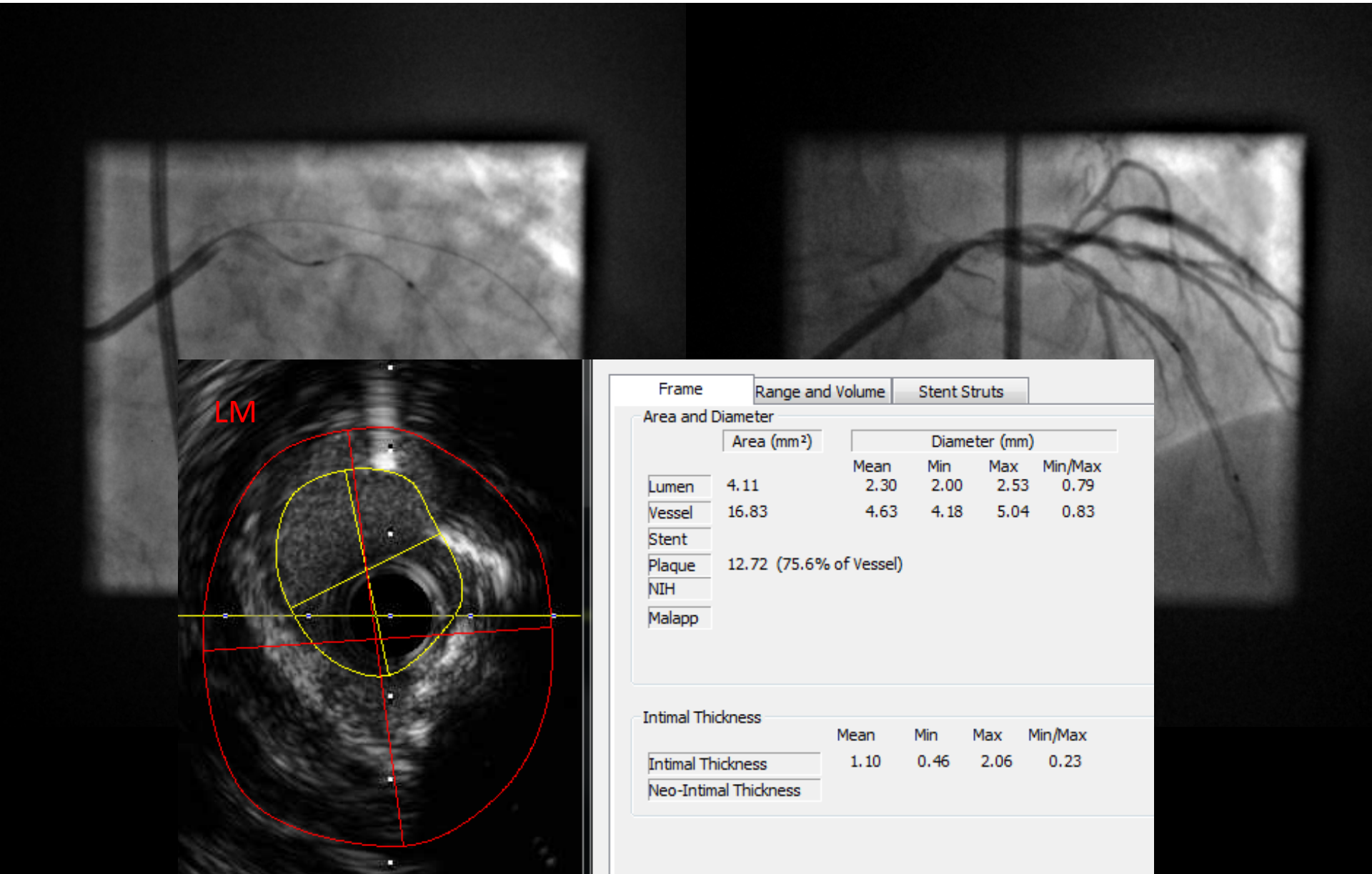
Male 68 years old with stable angina CCS III, risk factors: dyslipidemia, hypertension
Comorbidities: Previous stroke (two years ago without notable neurological deficit)
PTA - ACI dxt (1 year ago)
COPD
Echocardiography: Normal left ventricle function, no signs of valve disfunction



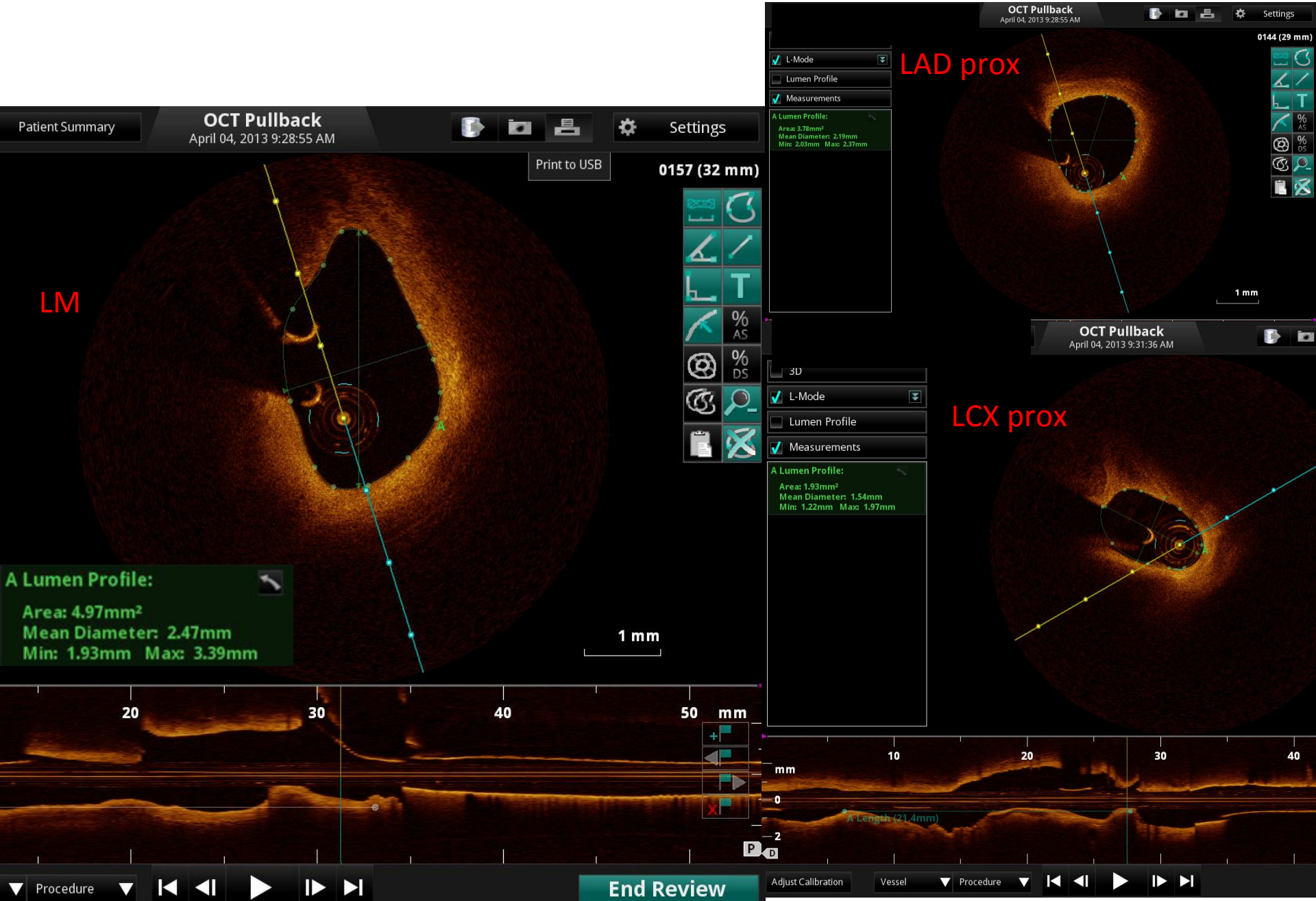


Diffuse, severe coronarosclerosis on the left side, LM/LAD/LCX bifurcation stenosis > 75%, bifurcation stenosis in LAD mid 1/3 stenosis 50%, SYNTAX score 31

IVUS before intervention



OCT– LM/LAD/LCX before Cutting balloon

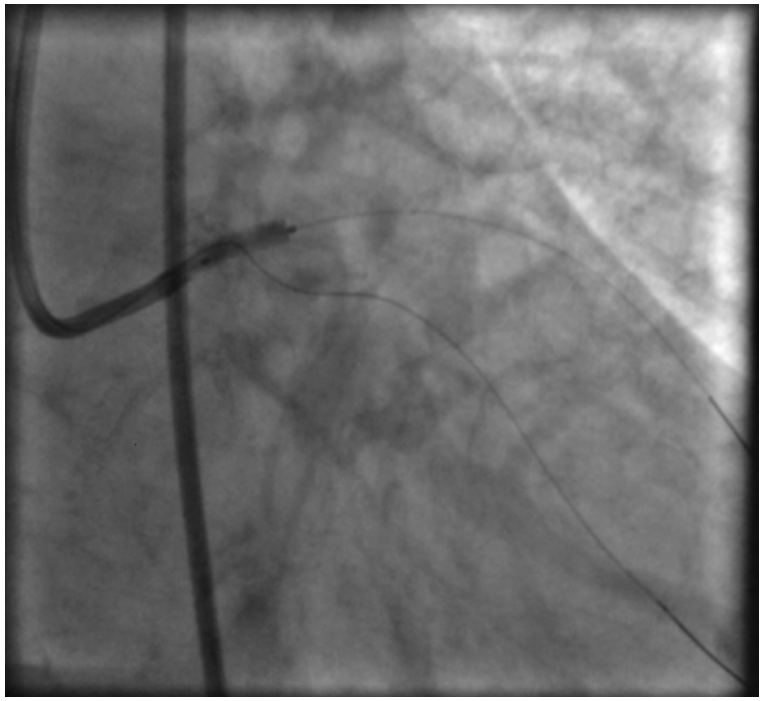


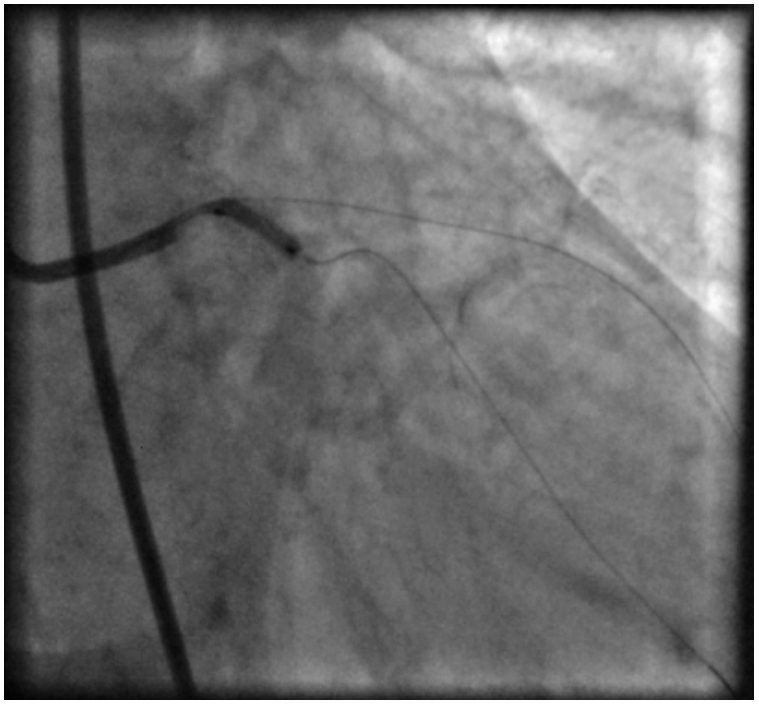
Pretreatment with Cutting balloon

Femoral approach – 7 F EBU 3.75

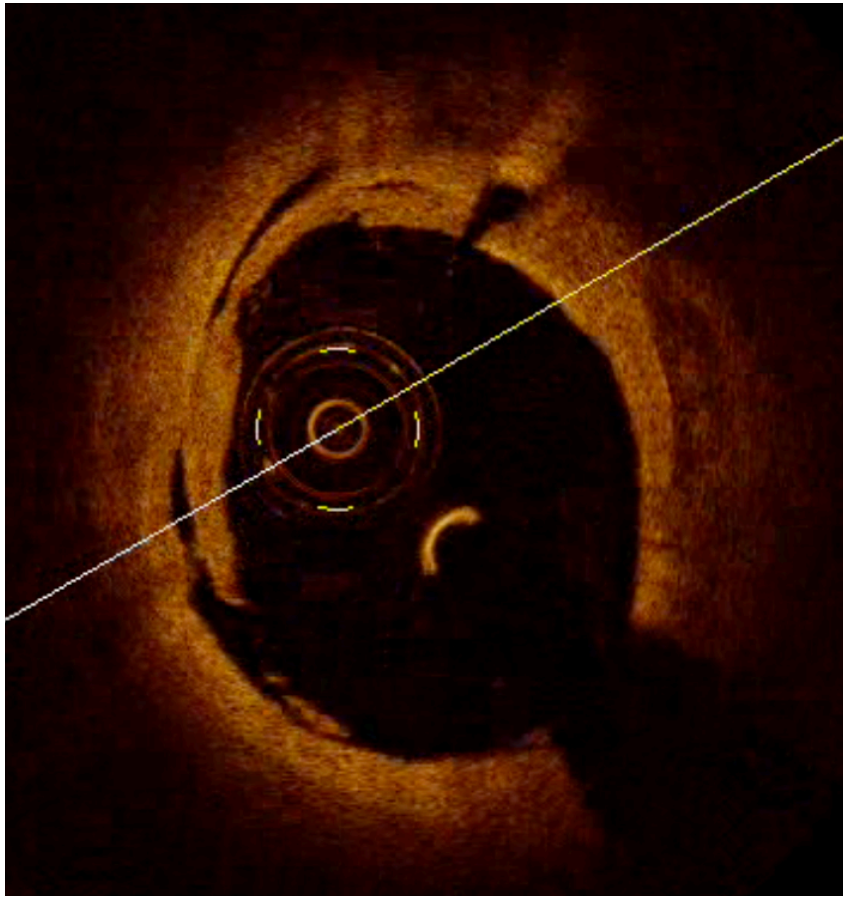
- Ch.Floppy wire in LM/LAD
- Predilatation of LM/ LAD with Cutting balloon 3.0 x 10 mm 9 bar

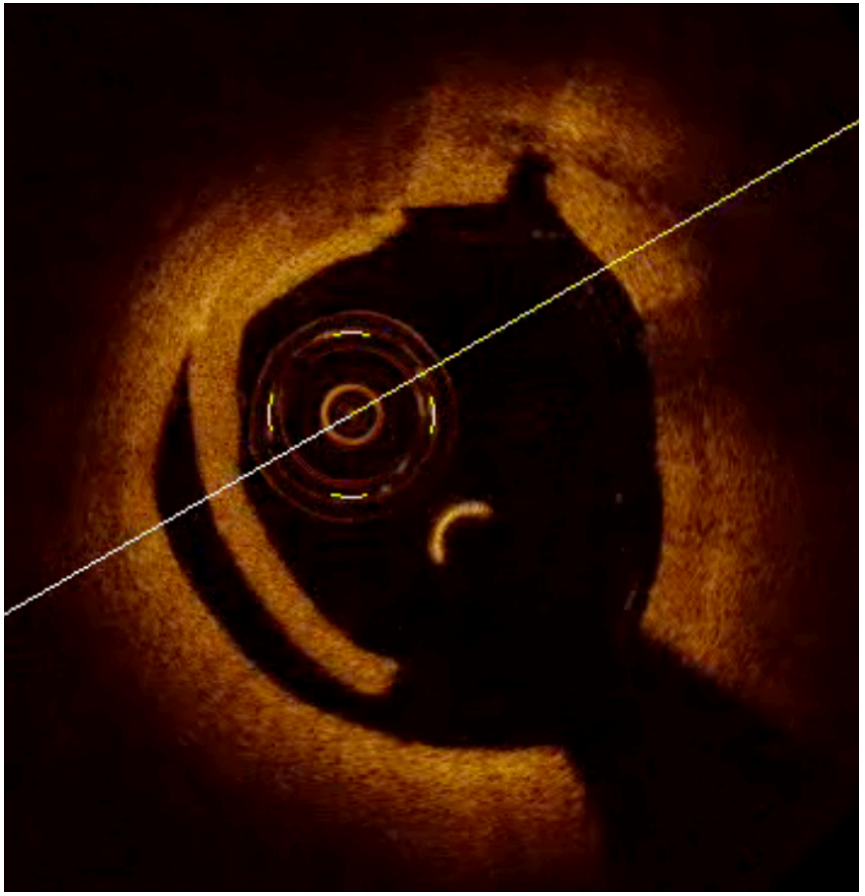
- Asahi Soft wire in LCX
- Predilatation of LCX with Cutting balloon 2.5 x 10 mm, 9 bar



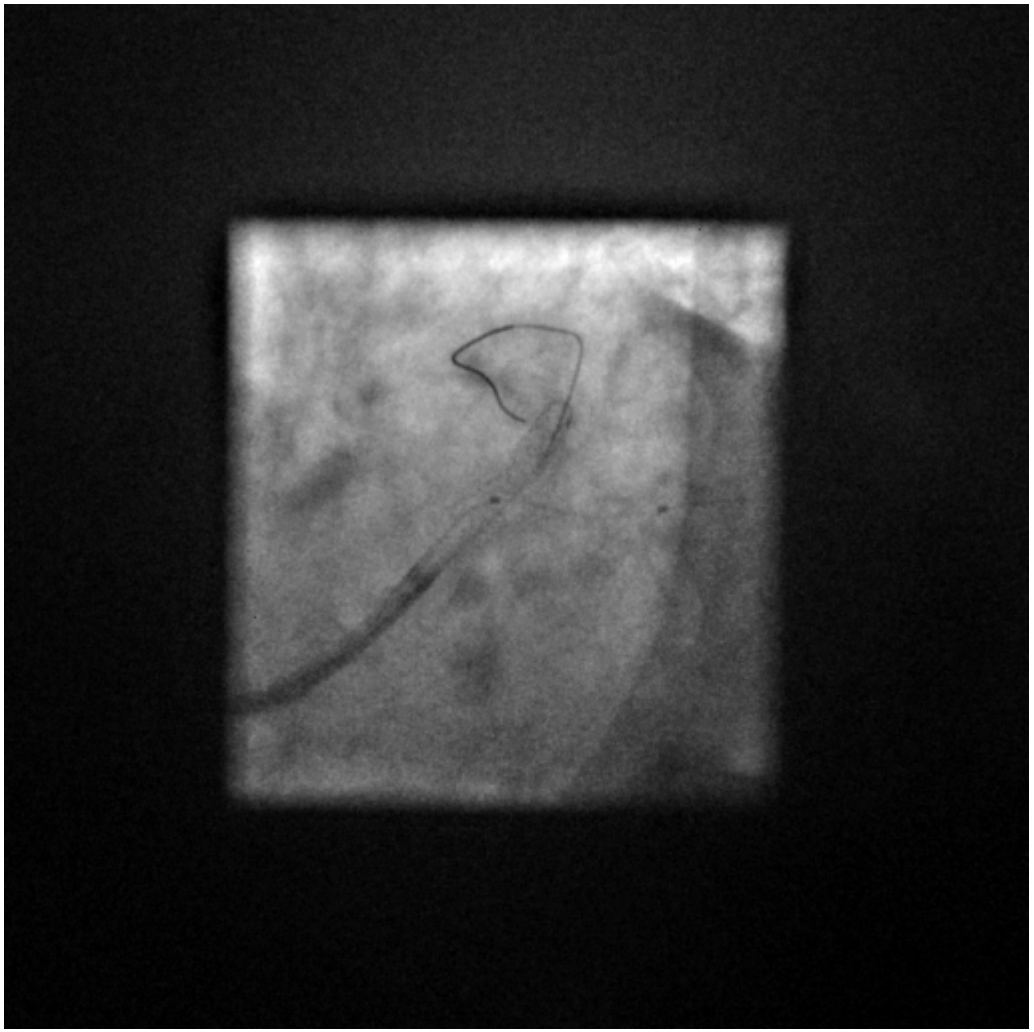


OCT– LM/LAD after Cutting balloon





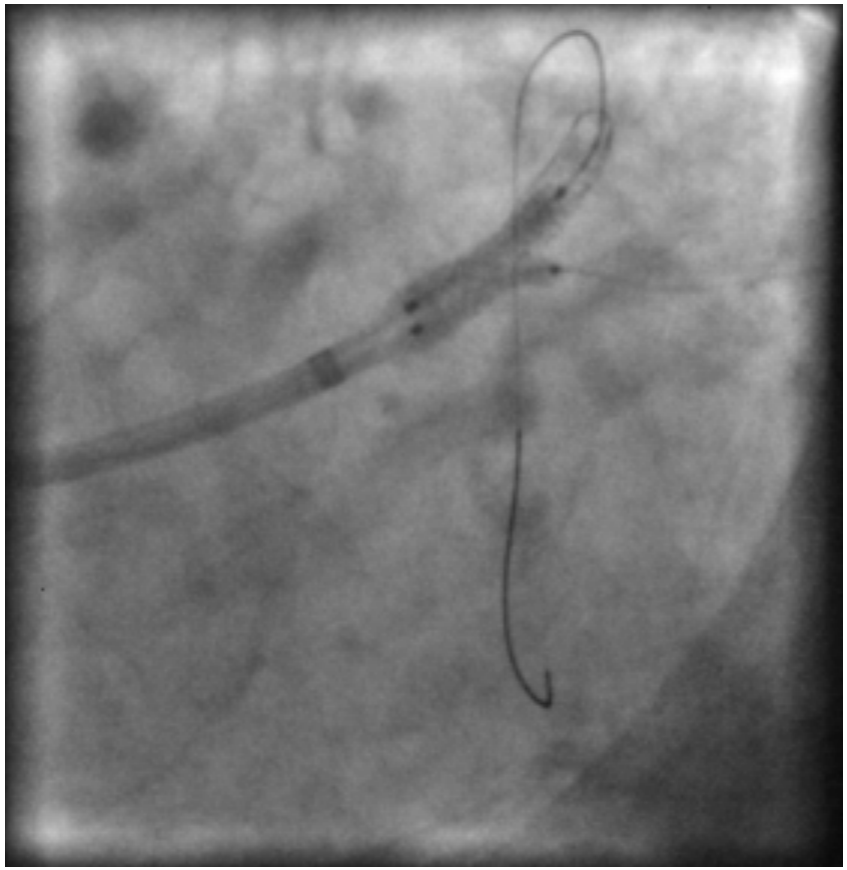
BVS positioning after SYNERGY implantation in LM/LAD (T-stenting)



- Stents:

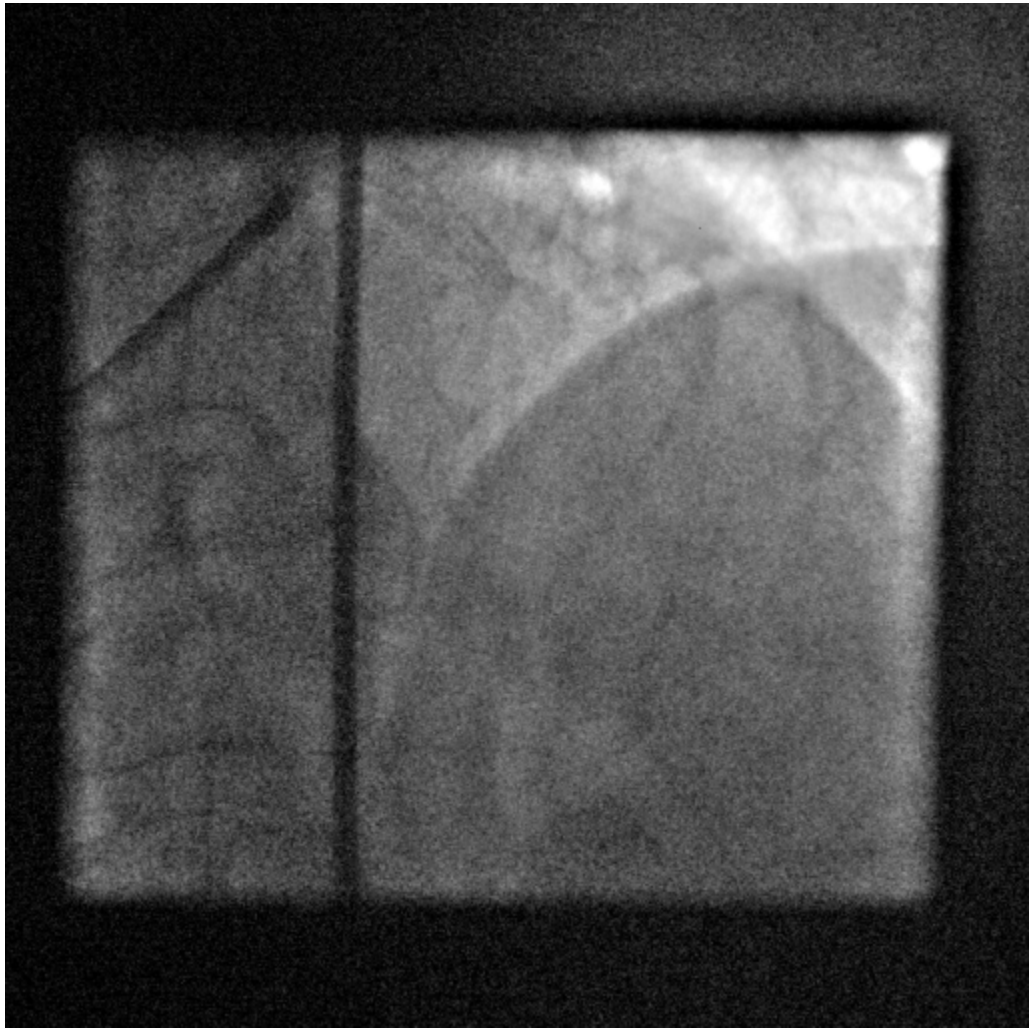
- DES (Synergy) 3.5 x 28 mm (LM/LAD)
- BVS (Absorb) 2.5 x 18 mm (LCX)

BVS implantation and final Kissing balloons

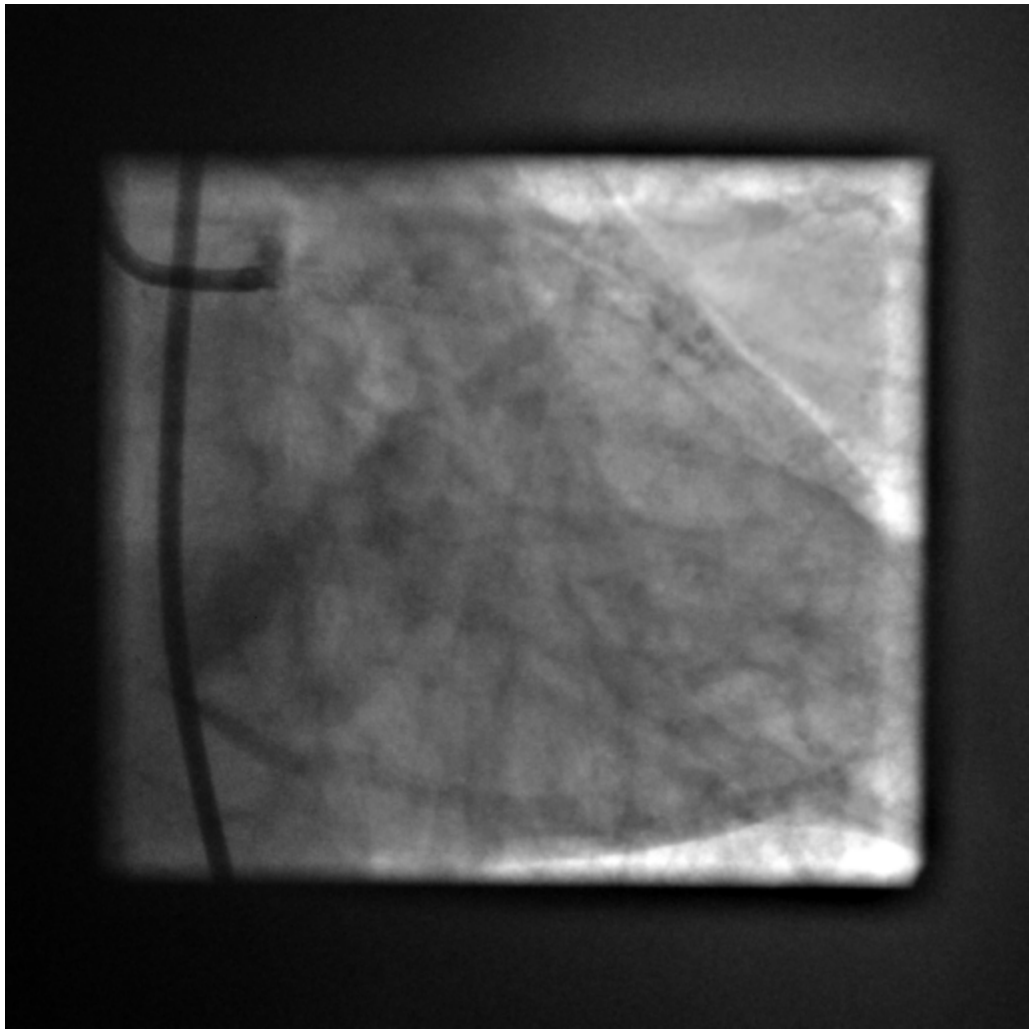


- Postdilatation
  - NC balloon 3.5 x 15 mm (LM/LAD), 2.75 x 12 mm (LCX)
  - Kissing balloons 3.0 x 15 mm, 2.75 x12 mm

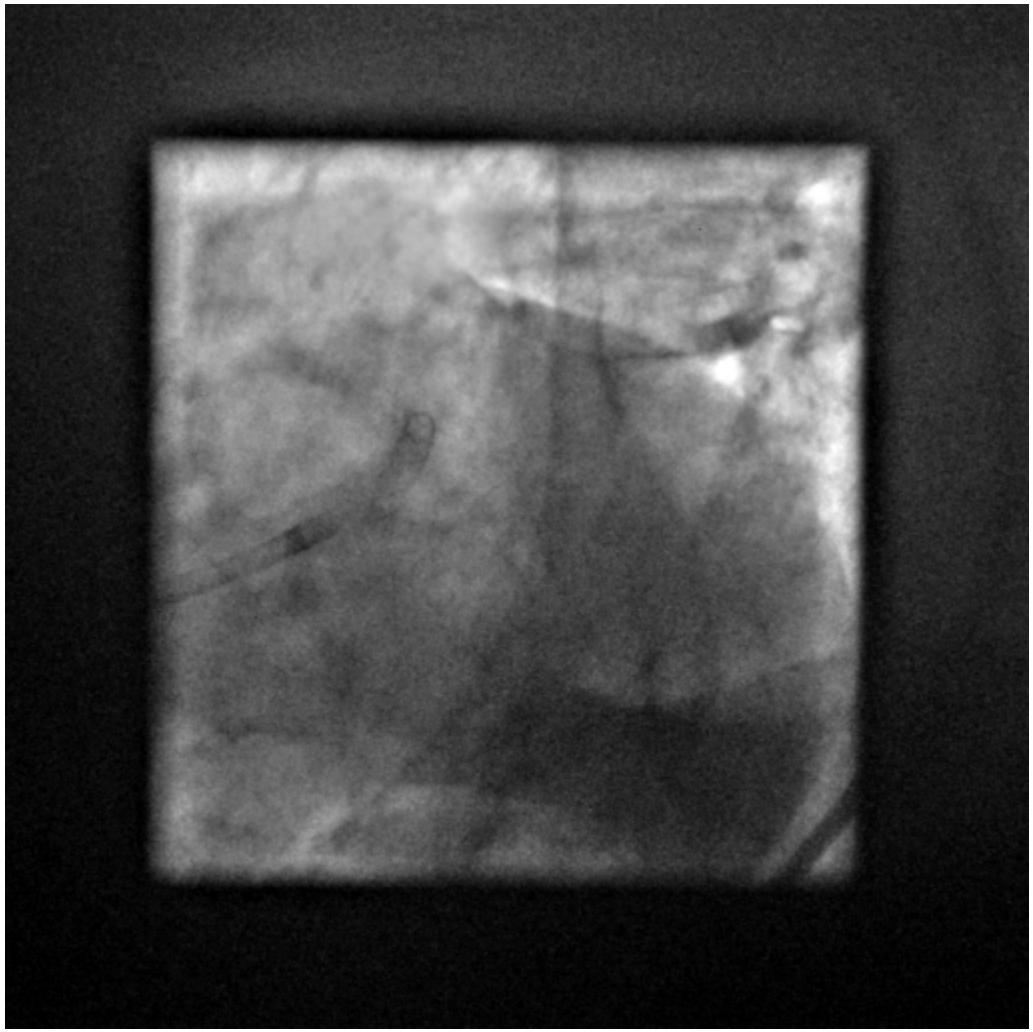
Final result



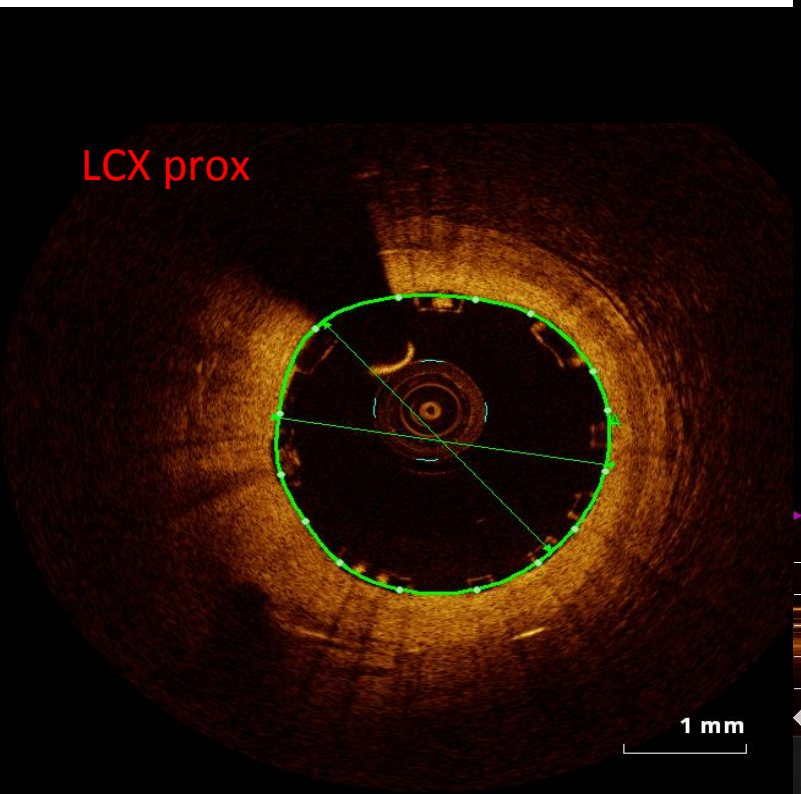
Final result

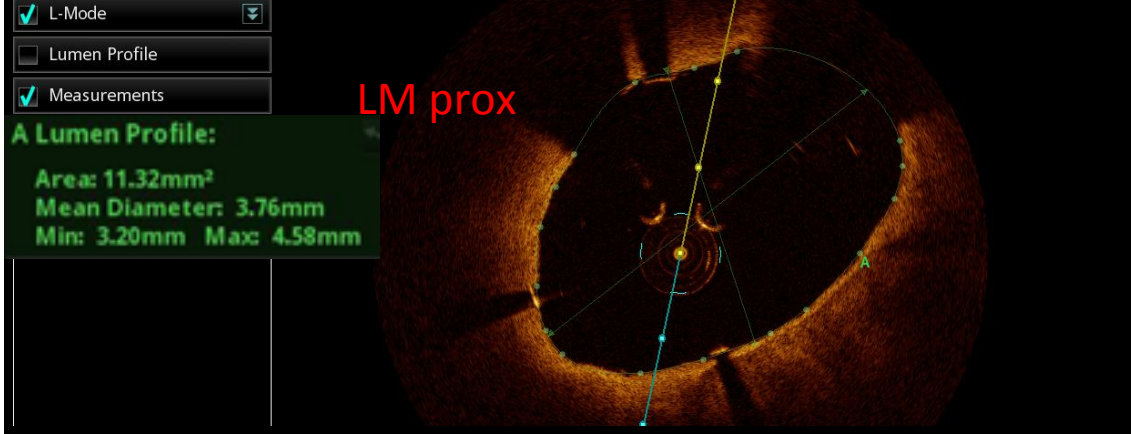


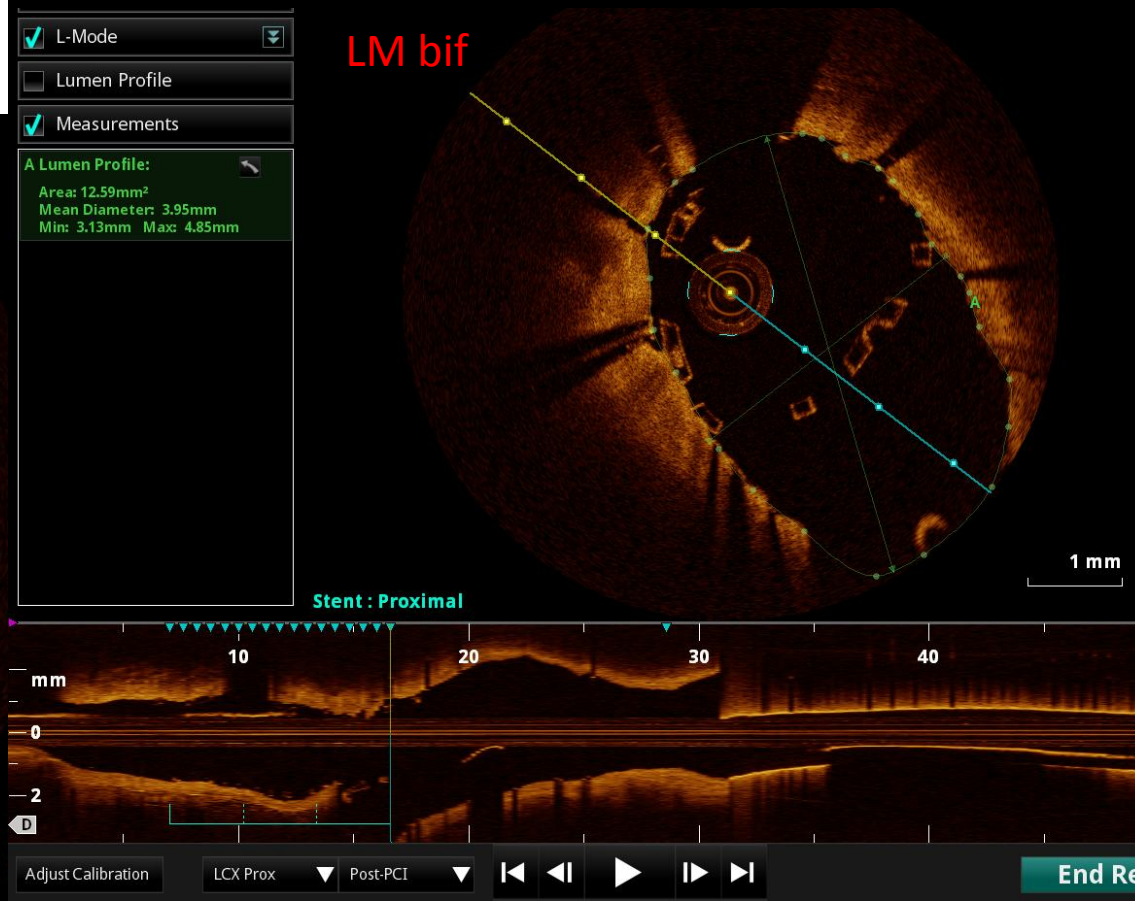
Final result



Final result by OCT







Conclusions

- The current study demonstrates that novel ULMCA stenting technique using SYNERGY stent and ABSORB scaffold is safe and feasible
- No serious procedure-related complications were observed, hospital and 30 day clinical outcomes appeared to be good
- However, further evaluation is needed