Left main bifurcation PCI:
A Hybrid Intravascular Imaging Strategy

Dinkar Bhasin

Anunay Gupta

H.S. Isser

Sandeep Bansal

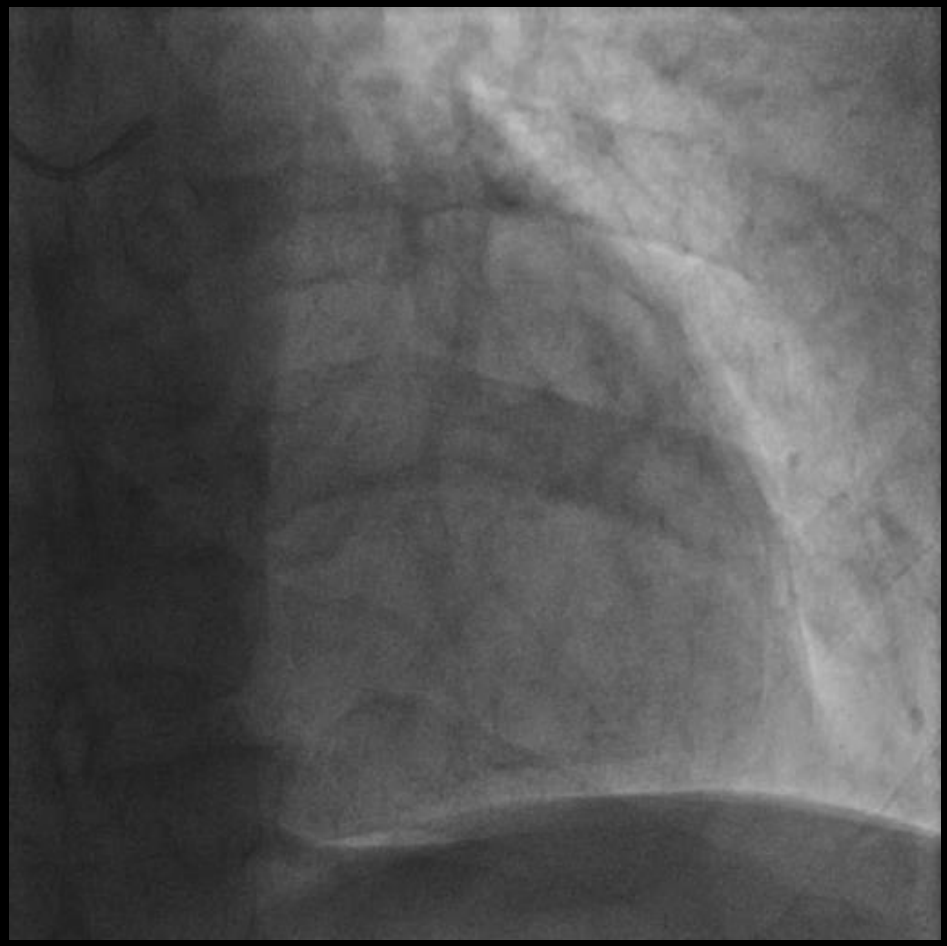
Department of Cardiology,
Vardhman Mahavir Medical College and Safdarjung Hospital,
New Delhi

Case Vignette

- 54-year-old man with hypertension
- Coronary artery disease
  - Chronic stable angina class II x 2 years
- Presented with NSTEMI
- **ECG:** Wellen's pattern
- **Echocardiography:** LVEF =40-45%; RWMA in anterior territory
- **Coronary angiography:** Right radial route

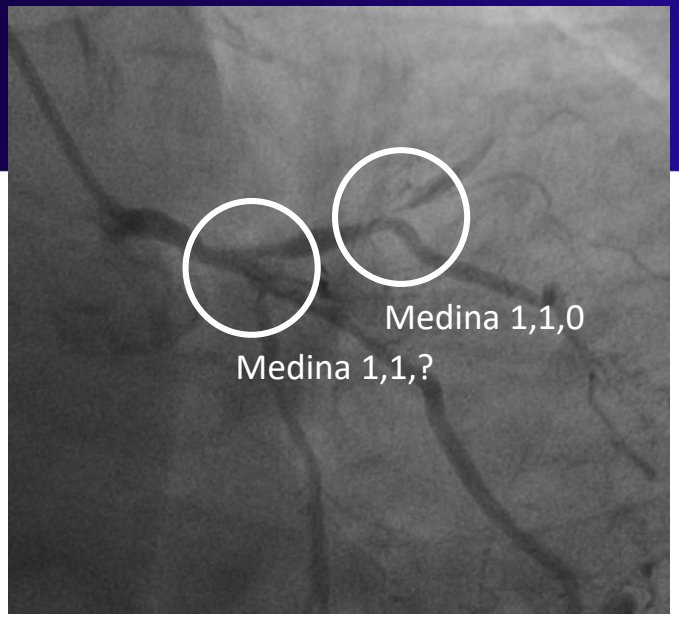
Coronary Angiogram

AP caudal



RAO cranial

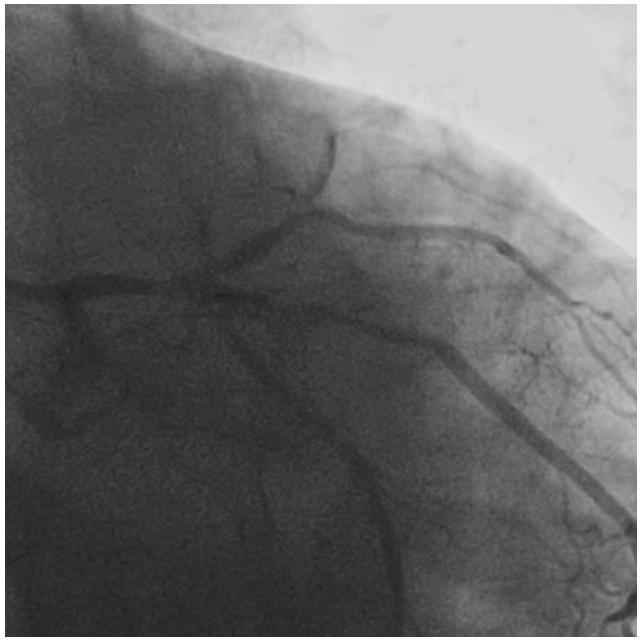
RAO caudal



AP caudal

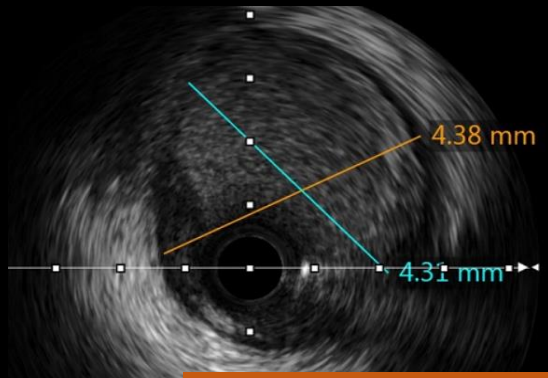
Left main (d): 50 % disease
Left anterior descending (op): 70 % tubular disease,
Left anterior descending-D1 bifurcation: Medina 1,1,0
Left circumflex (o): 30-40 % disease
Early obtuse marginal (p): 70% tubular disease
Right coronary artery: Normal (Dominant)

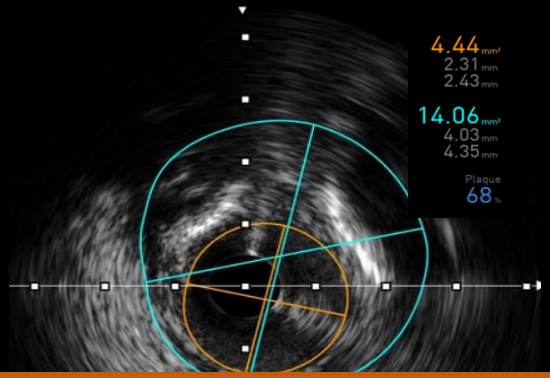
? Circumflex ostium disease
? Bifurcation angle
? Proximal LM or aorto-ostial stent landing

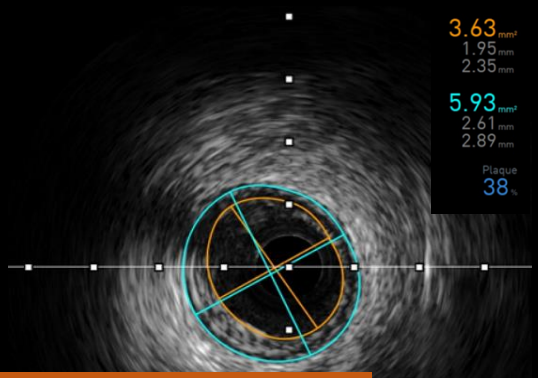


LAO caudal

Intravascular Ultrasound





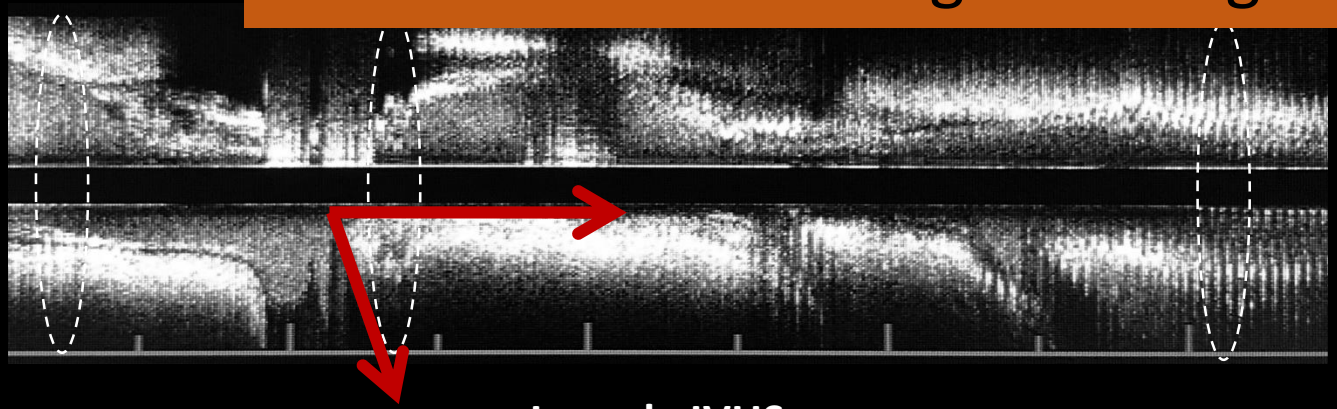


Pro

Utility of IVUS:

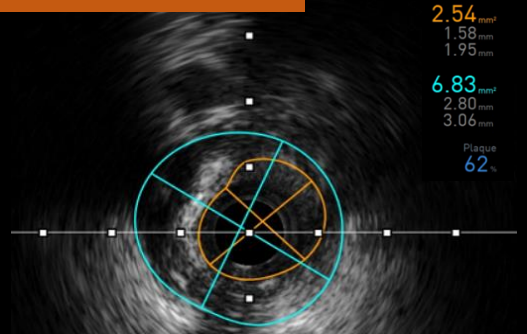
Medina 1,1,1 with involvement of both ostia

Bifurcation angle: 80 degrees



L-mode IVUS

Bifurcation angle around 80 degrees

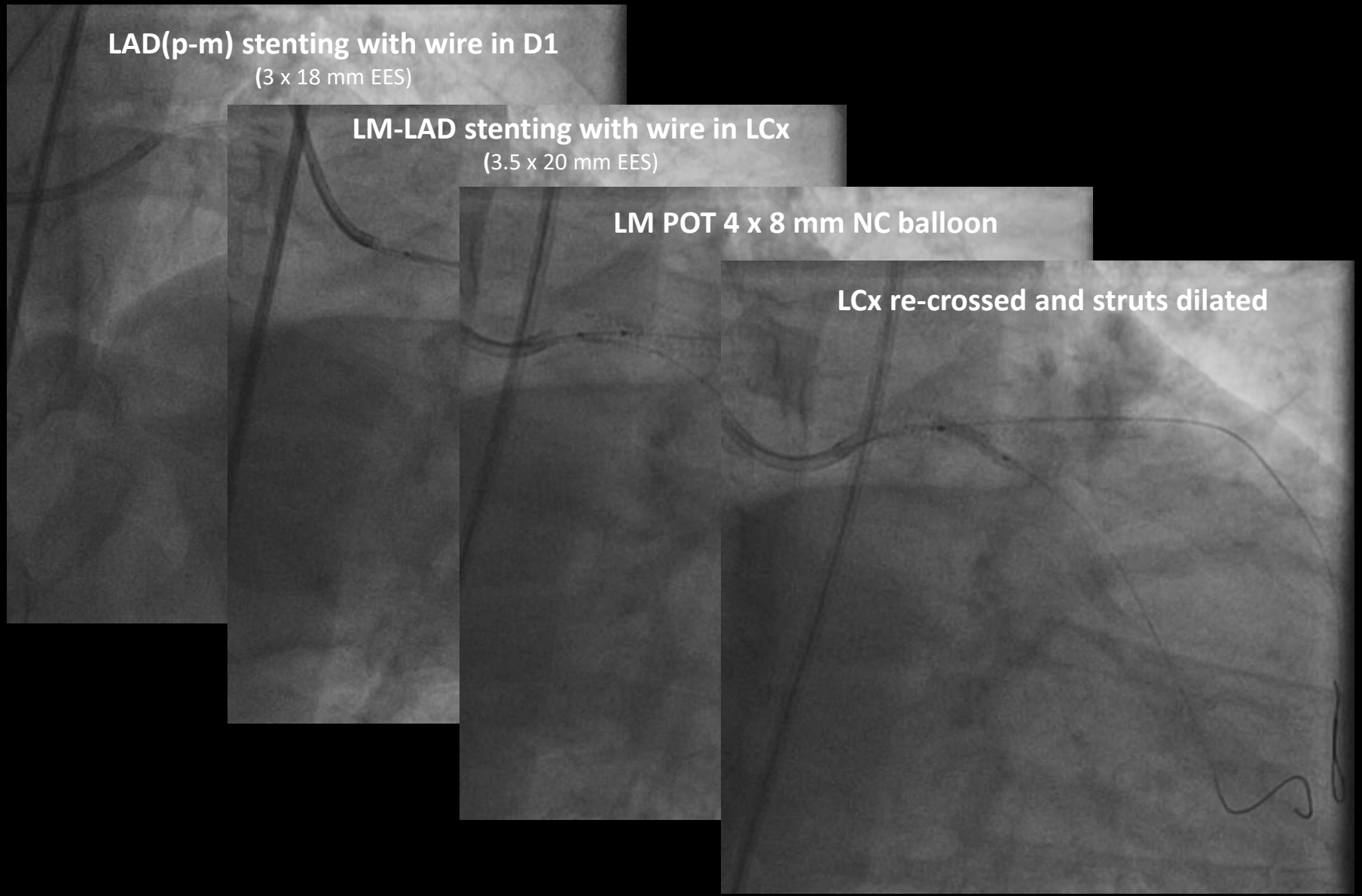


Circumflex ostium

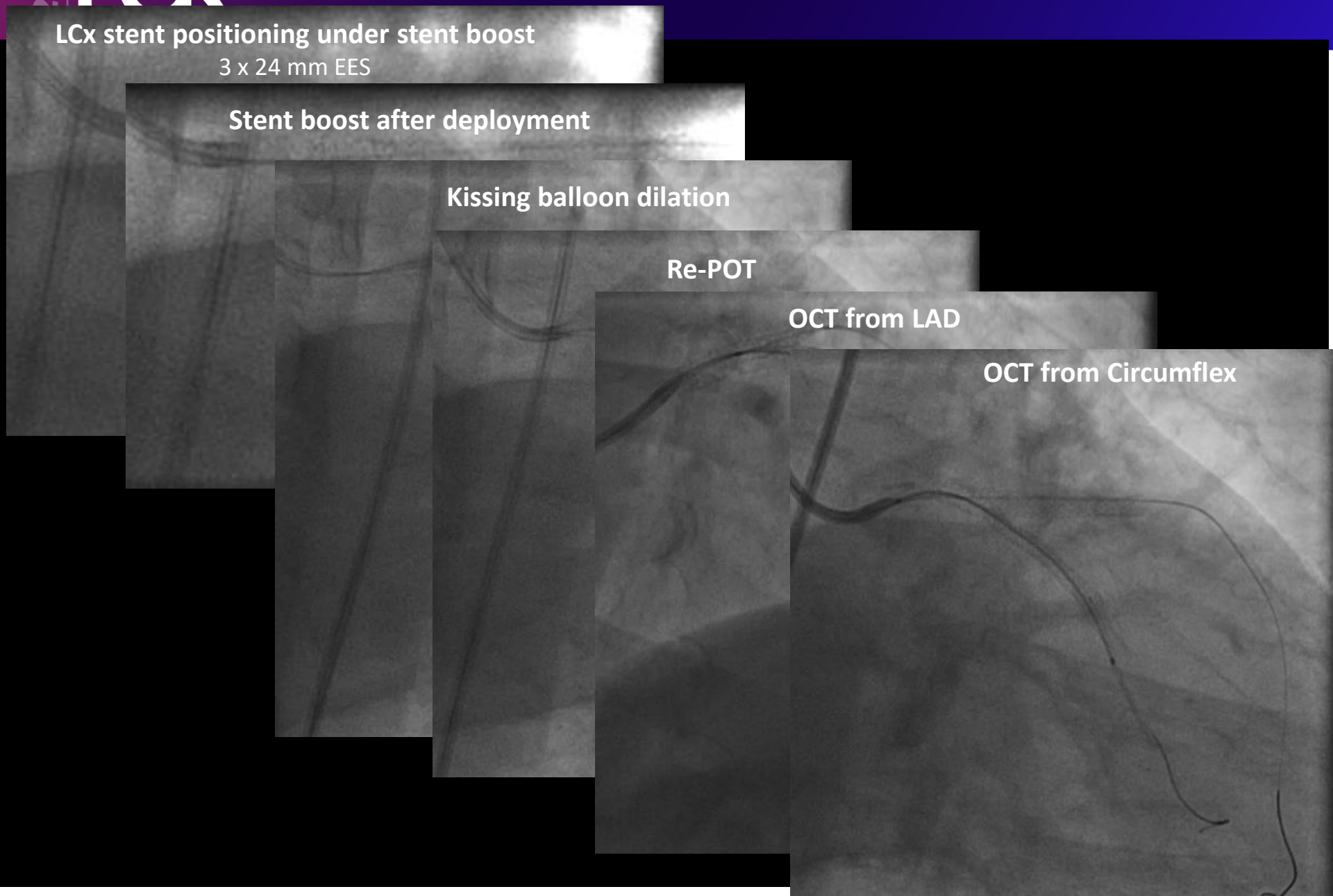
MLA 2.54 mm²

Bifurcation PCI: Two-stent strategy

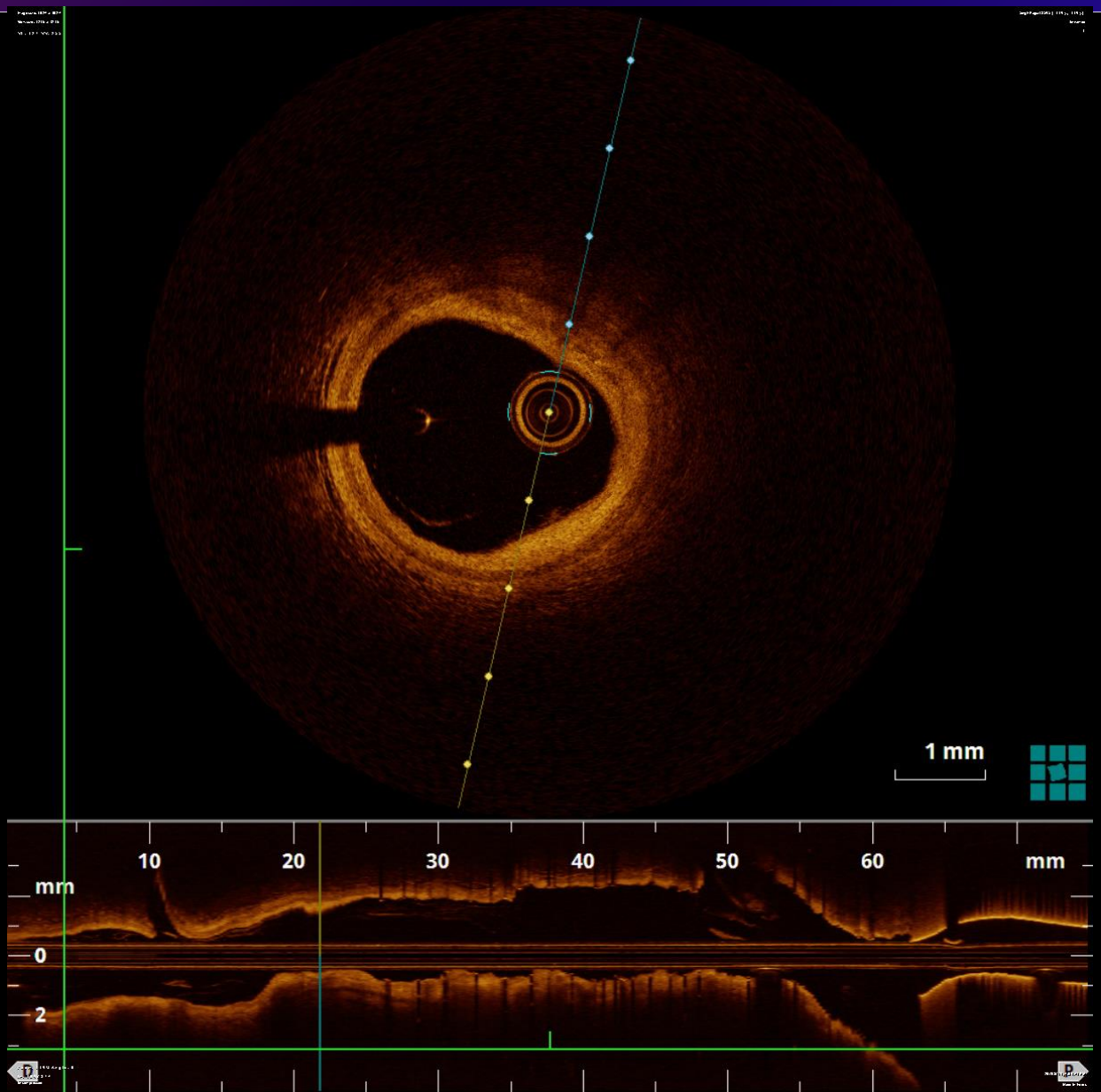
T and small protrusion



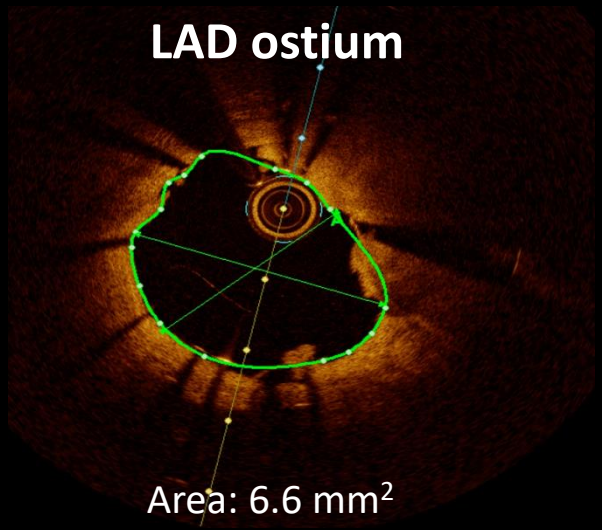
Bifurcation PCI

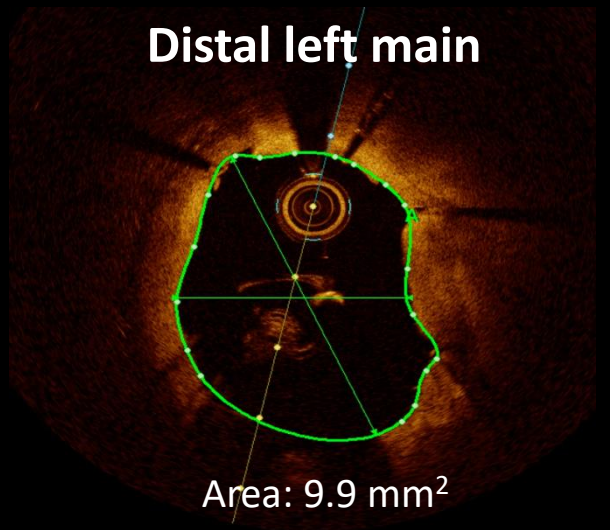


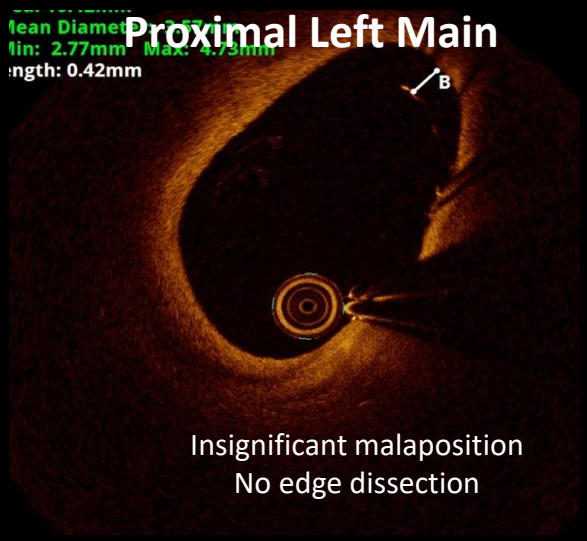
OCT Pullback from LAD

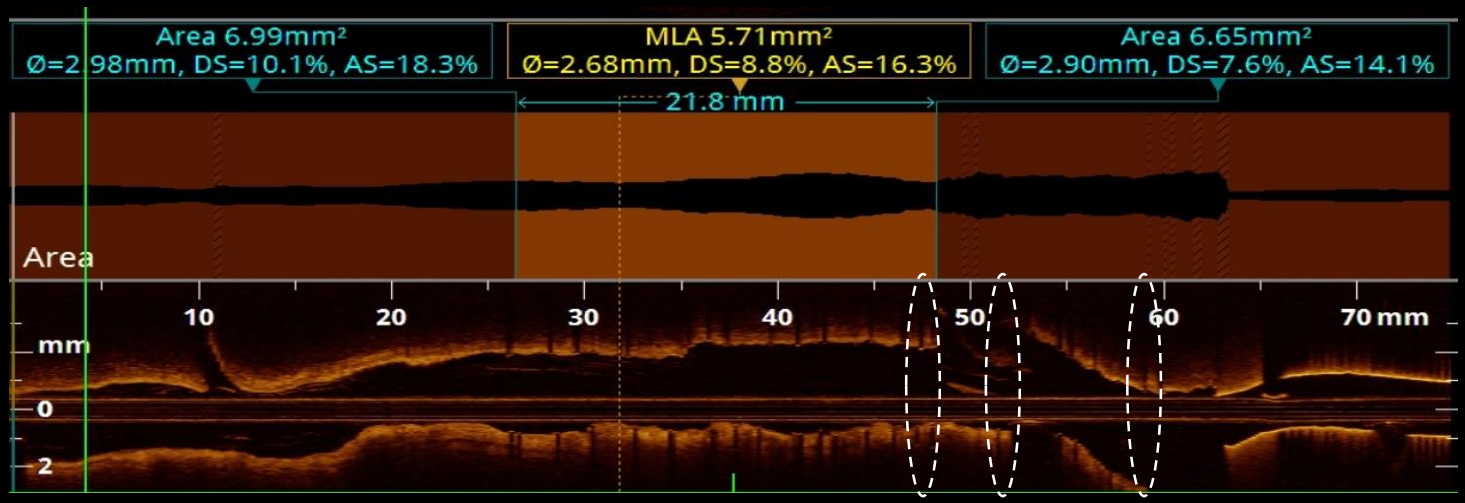


OCT of LAD and LM



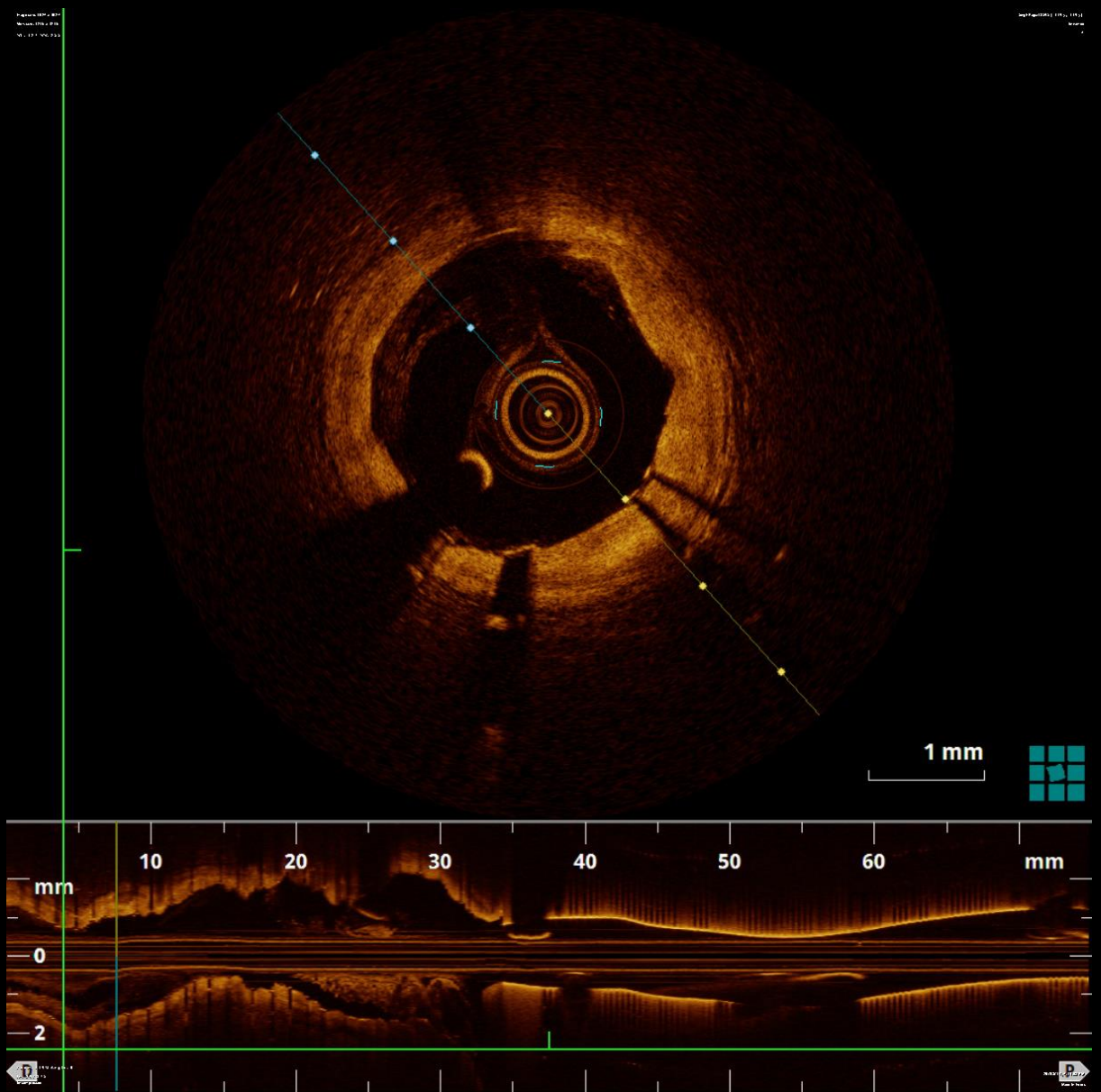




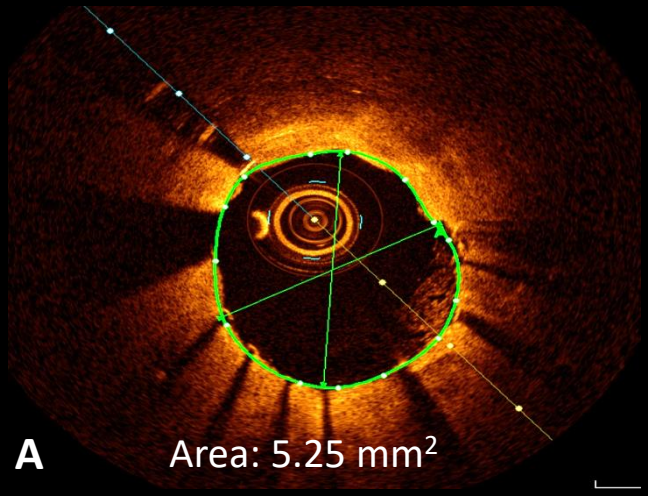


Lumen-profile: area stenosis < 20%

OCT of Circumflex Ostium



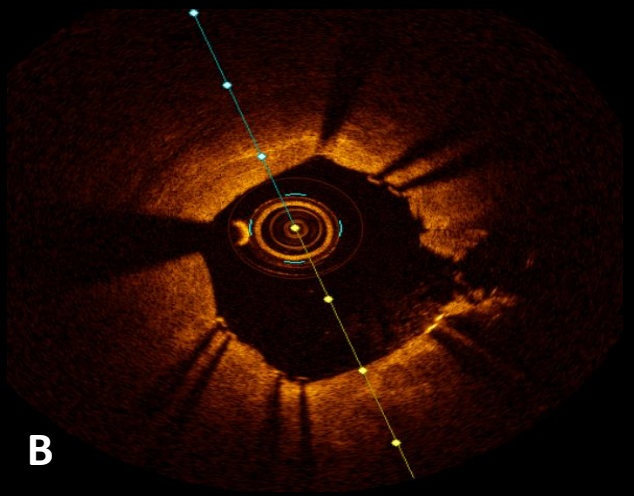
OCT of Circumflex Ostium



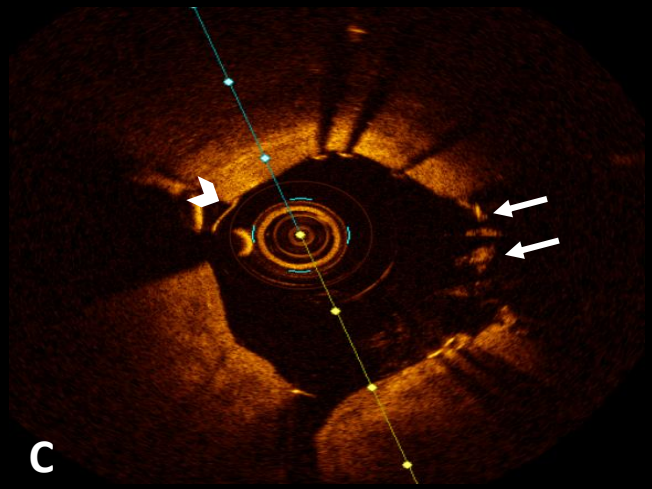
A

Area: 5.25 mm^2

Optimal MLA

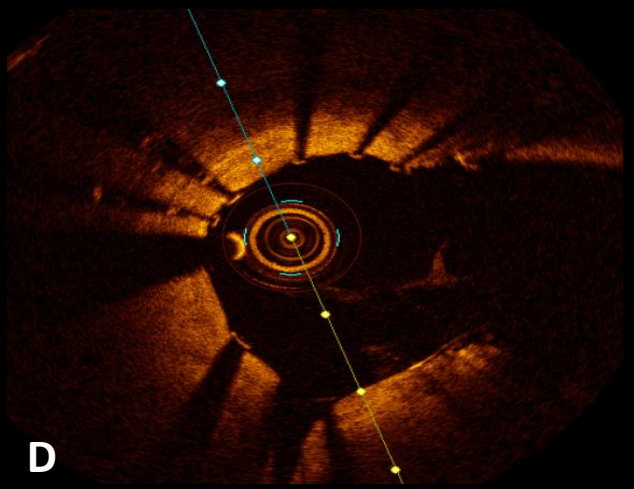


B



C

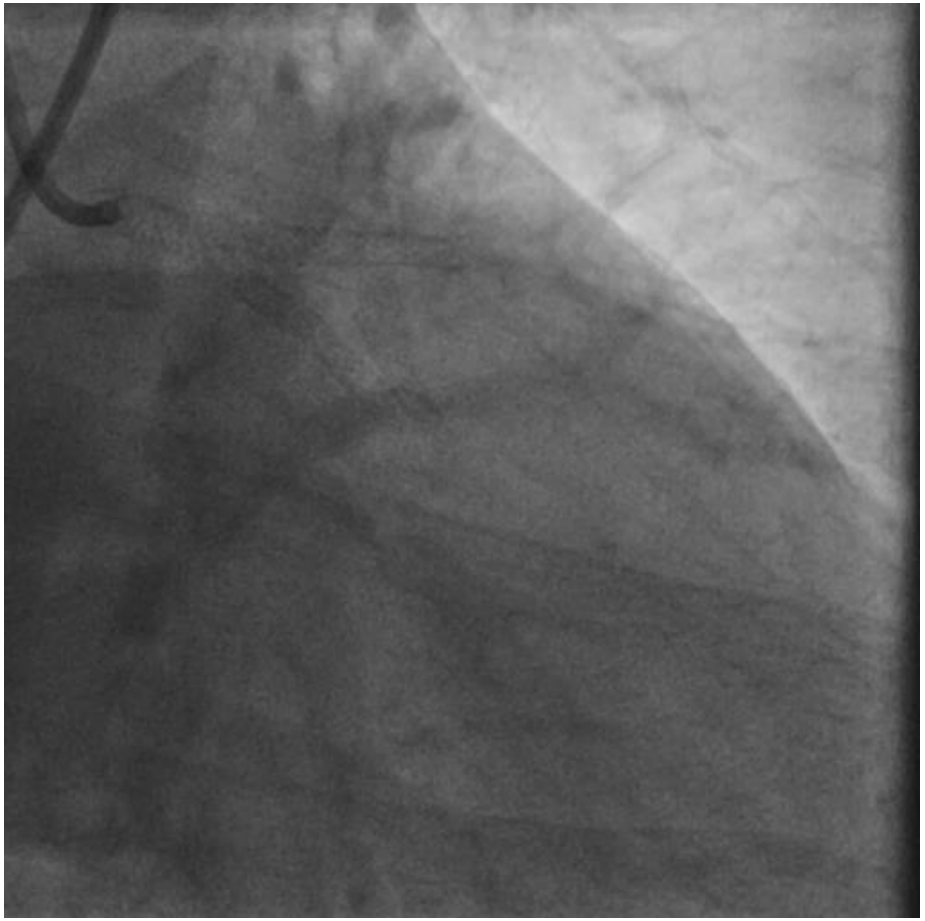
Neocarina with optimal scaffolding of opposite wall



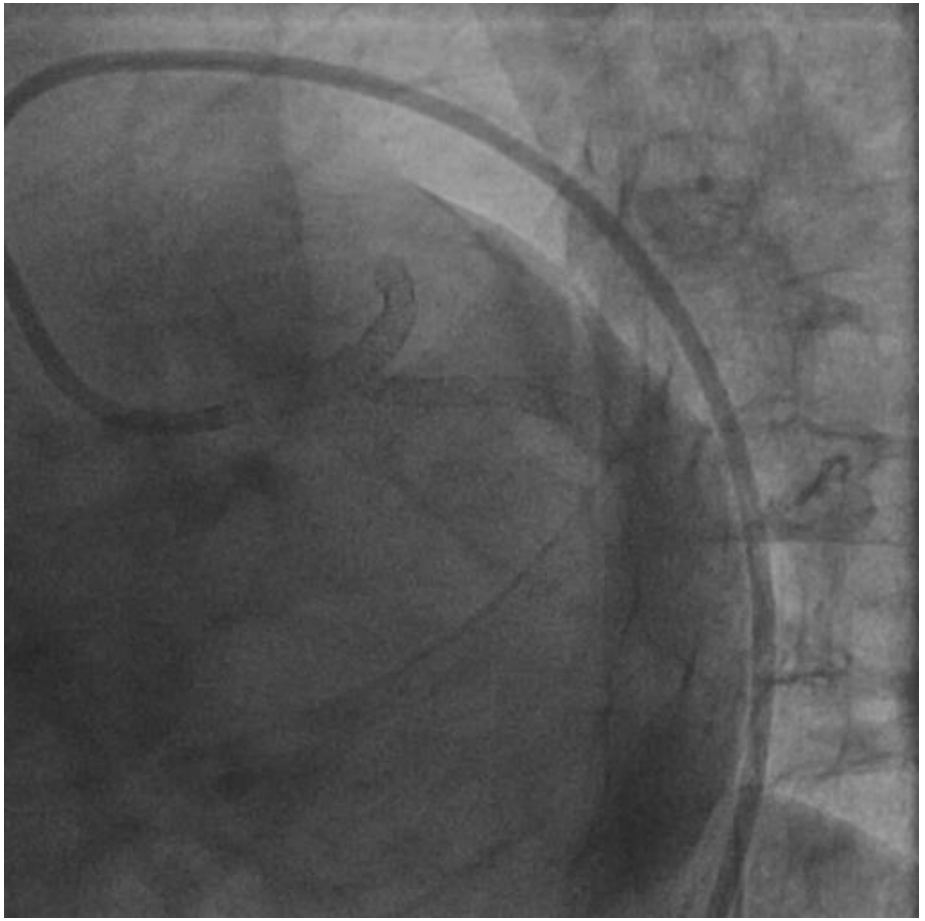
D

Protrusion of single strut into LM

Final Angiogram



RAO caudal



LAD caudal

Learning points
Optimal use of imaging in left main bifurcation PCI

- **IVUS and OCT can be complementary in complex PCI**
- **Pre-PCI imaging: benefits of IVUS**
  - LM reference size and landing zone
  - Planning strategy: provisional vs two-stent
  - Carinal angle and choice of two stent strategy
- **During procedure:** guidewire crossing
- **Post-PCI imaging: benefits of OCT**
  - Stent coverage of carina and ostial LCx
  - Mal-apposition and edge dissections in LM