A CASE TO ILLUSTRATE THE IMPORTANCE OF IMAGING IN PCI STRATEGY

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Patient History

- 65Yr
- Male
- Recurrent anginal attacks
- Hyperlipidaemia
- Ca score: 38.5
- CT coronary angiogram:
  pLAD - mild to moderate disease
  dLAD - >75% stenosis
  p/m/dRCA - mild disease

CRA 41; RAO 24

Angiographic findings
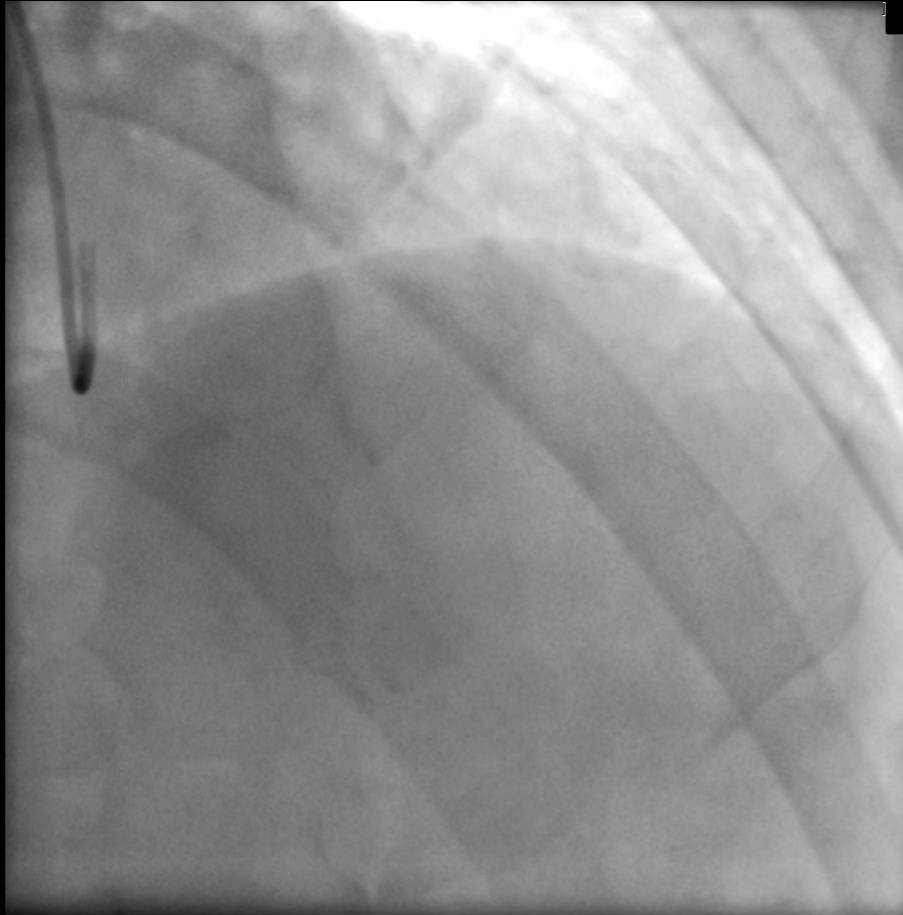
❖ LM: Normal

❖ LAD: mLAD 80%; dLAD 50%

❖ LCx: mLCx 30%

❖ RCA: dRCA 20%

After discussion among our team
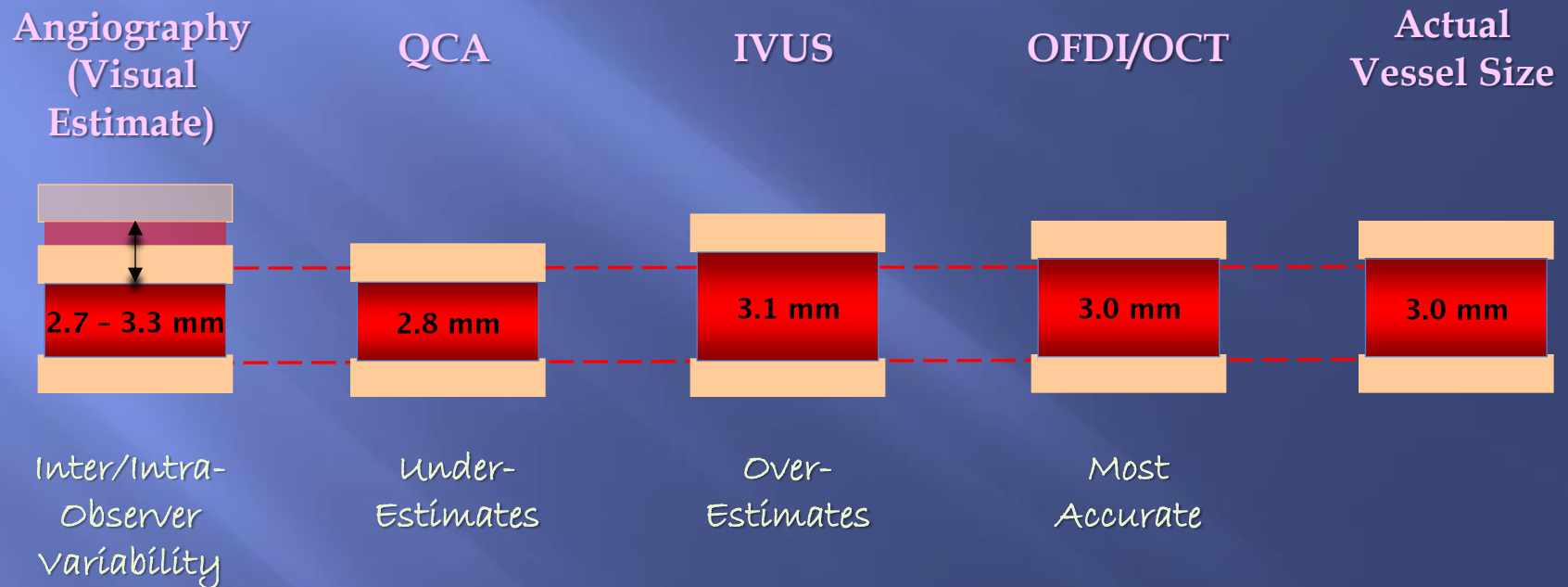→ Go for BVS (bioabsorbable stent)

Recommendation for implantation of BVS

Proper vessel sizing

- ❖ Most common visual estimation of vessel size; could be aided by pre-dilatation balloon size

- ❖ For more accurate measurements, employ imaging tools such as on-line QCA; IVUS; OCT

Vessel Sizing Technique Limitations

❖ Properly size the Vessel :

Angiography (Visual Estimate)	QCA	IVUS	OFDI/OCT	Actual Vessel Size
2.7 – 3.3 mm	2.8 mm	3.1 mm	3.0 mm	3.0 mm
Inter/Intra-Observer Variability	Under-Estimates	Over-Estimates	Most Accurate	

Margin of Error* ↑

*Margin of error estimates based on resolution for each imaging modality:
Resolution of OCT and IVUS: Bezerra, H.G., J Am Coll Cardiol.: Cardiovasc Interv. 2009; 2: 1035.
Resolution of QCA: Dahm, J. and van Buuren, F. Int J Vasc Med. 2012.

Imaging = Next Approach

Pre-sizing vessel

➡ Obtain Best Strategy

➡ OFDI

OFDI = <u>O</u>ptical <u>F</u>requency <u>D</u>omain <u>I</u>maging
(Developed by Terumo)

OFDI (Optical Frequency Domain Imaging)

MIT ——— OCT

MASSACHUSETTS GENERAL HOSPITAL
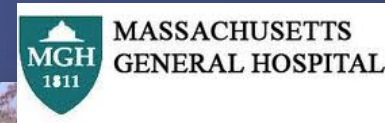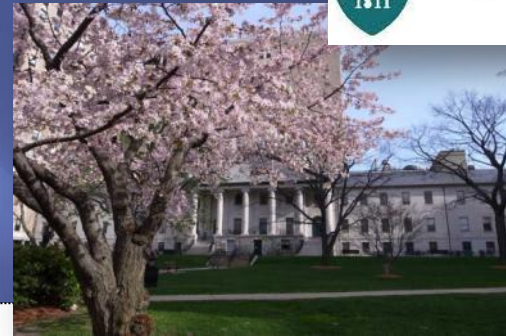
Dr. Tearney & Dr. Bouma
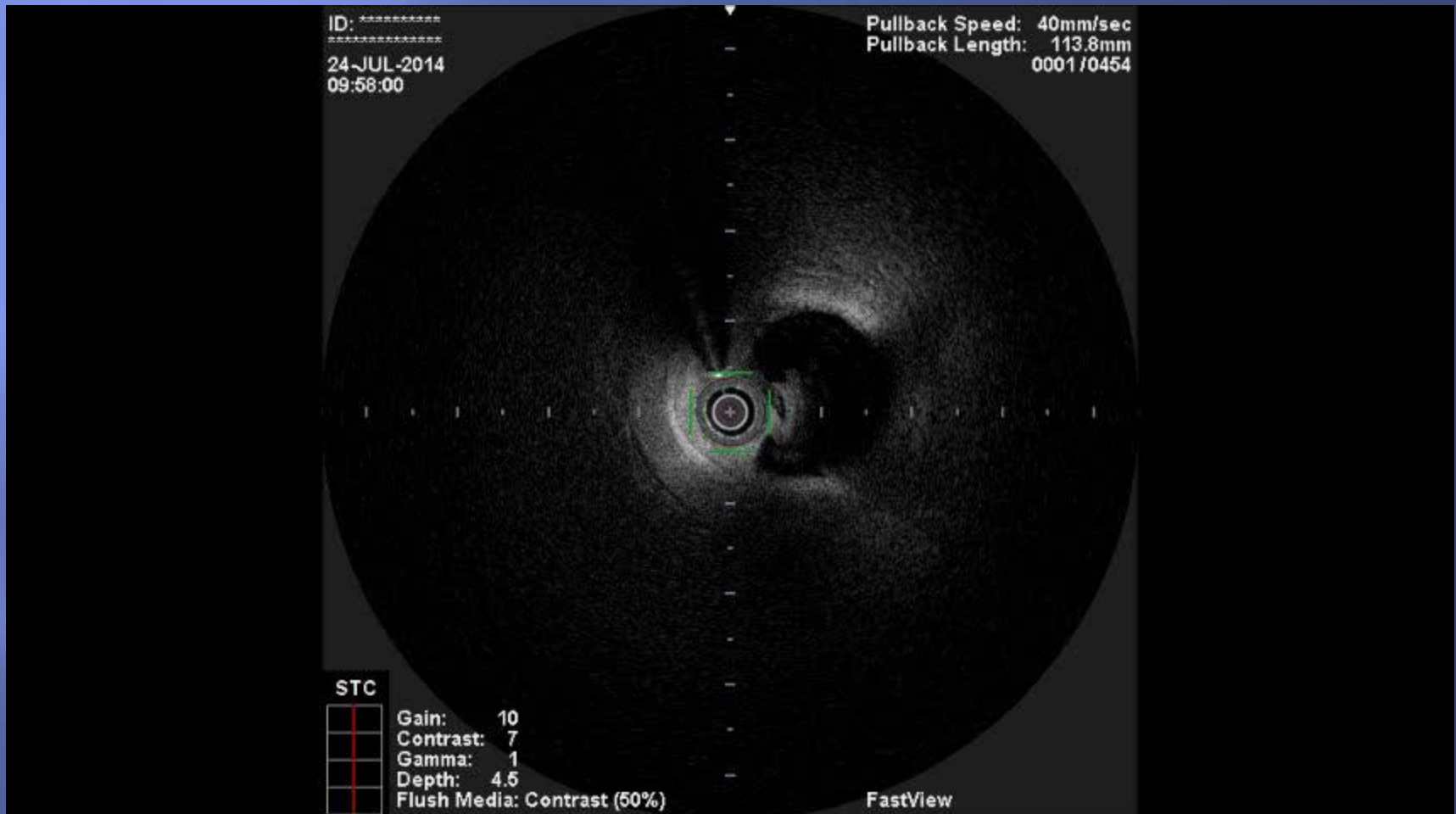started own development in Massachusetts General Hospital

Different light source from "OCT" ——— OFDI

OFDI LAD –– Run 1
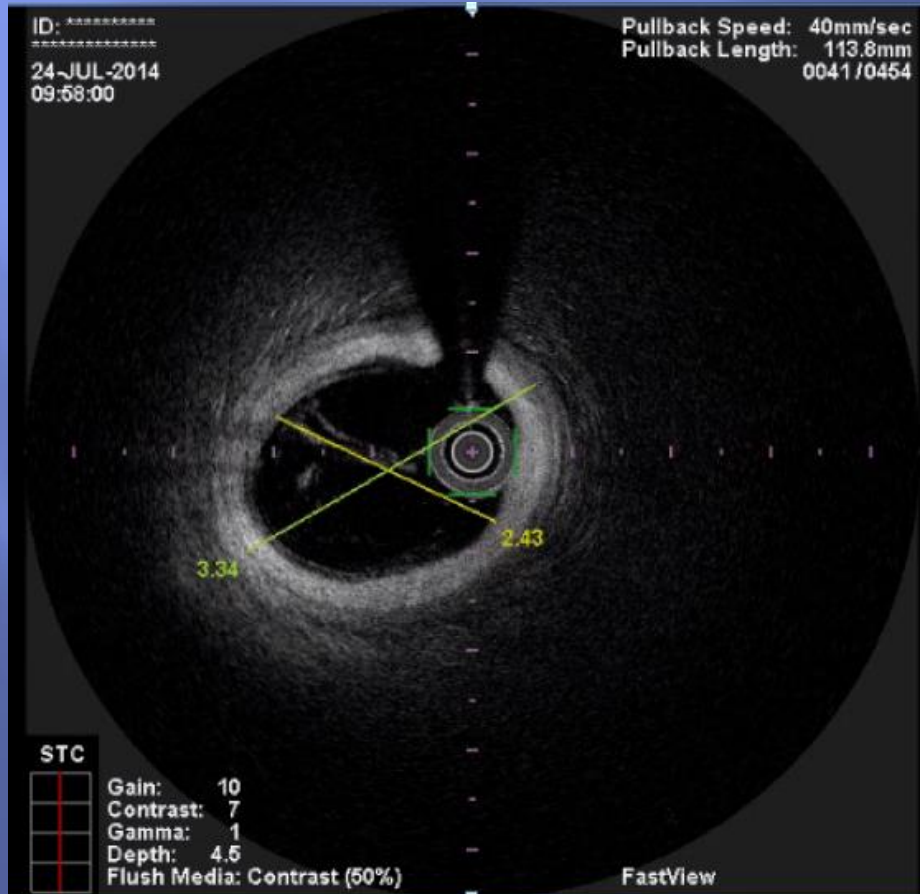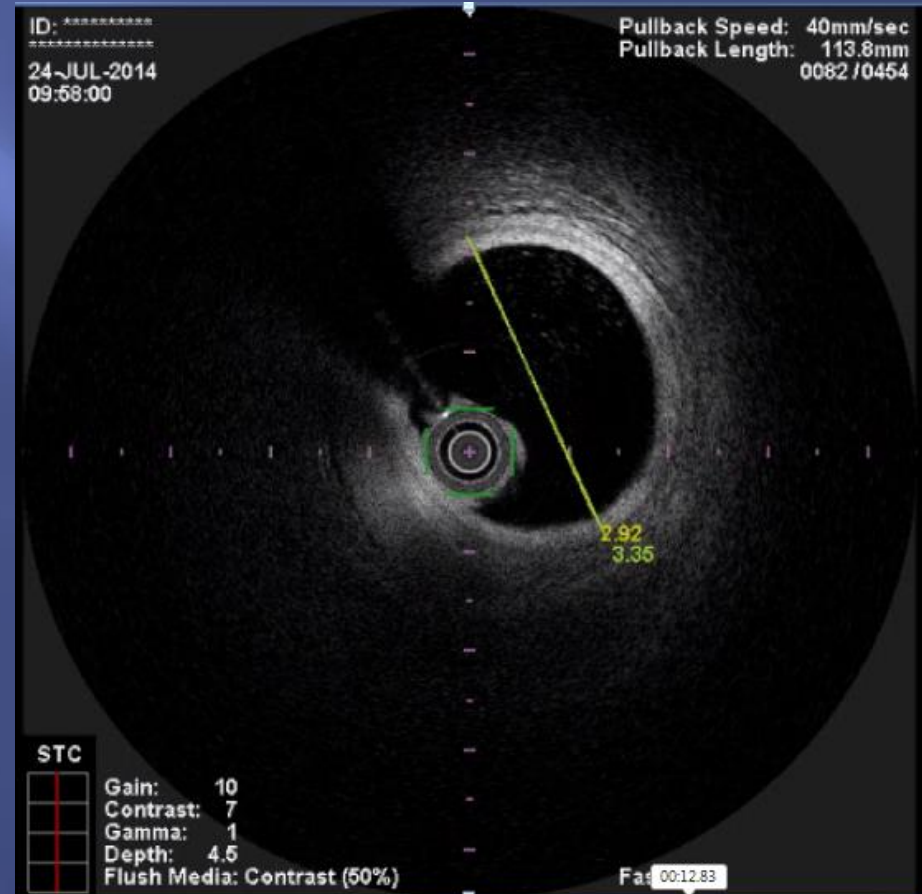
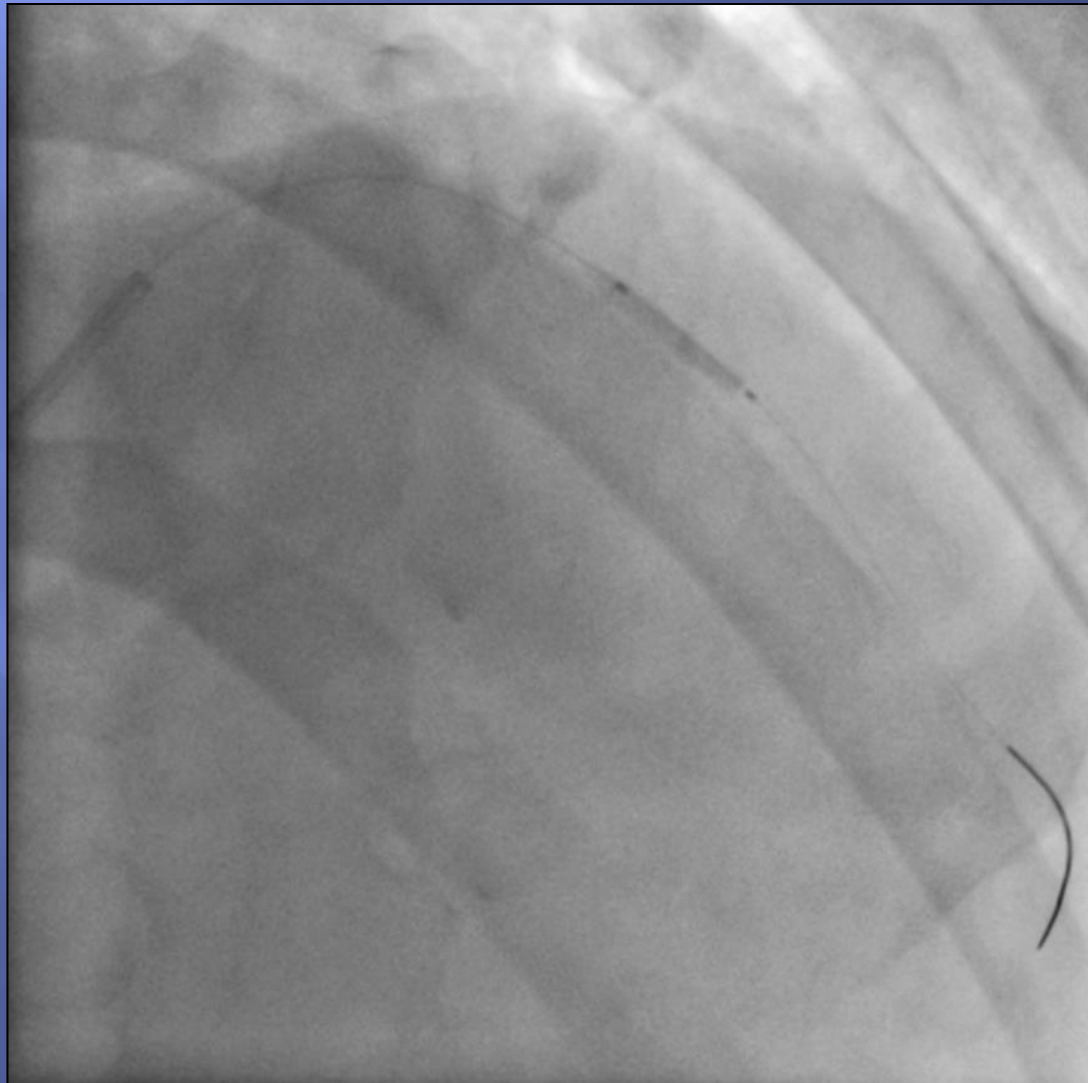- ❖ LAD-Pre1, 40mm/s (0.25x, 17s)

Reference Diameter

Distal Reference   Proximal Reference

POBA – 1

mLAD Dilatation with 2.5/15 balloon

After POBA – 1
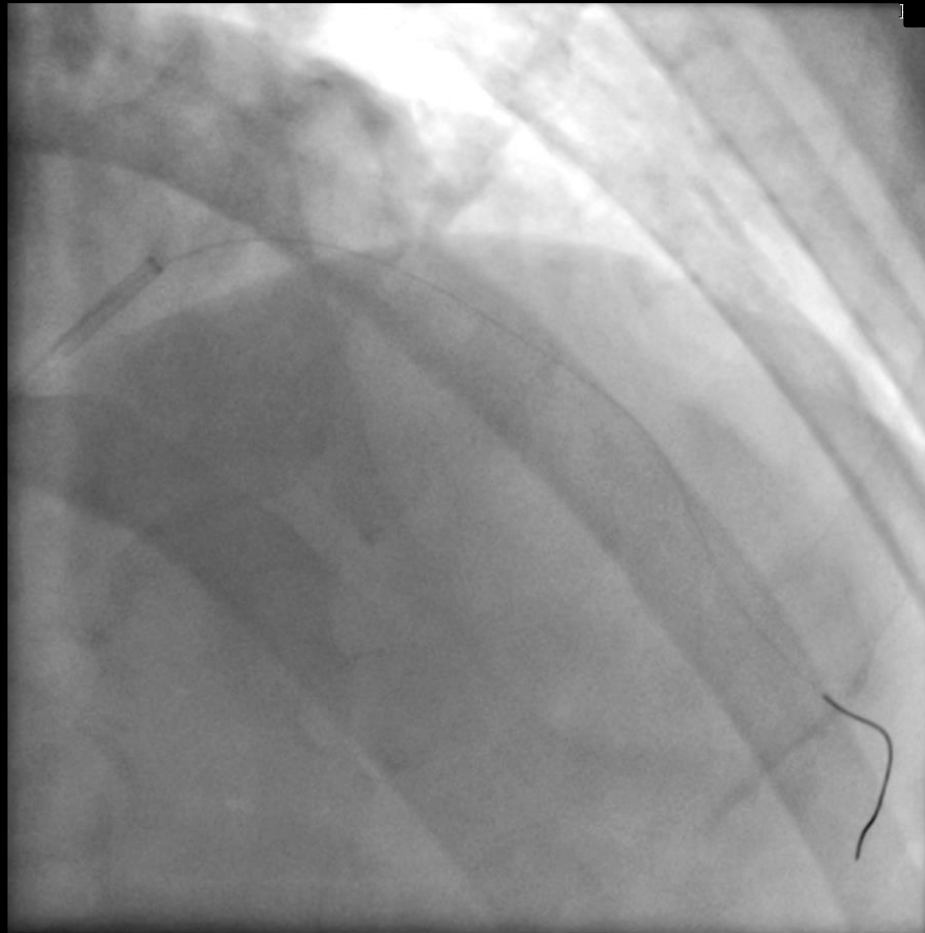
POBA – 2

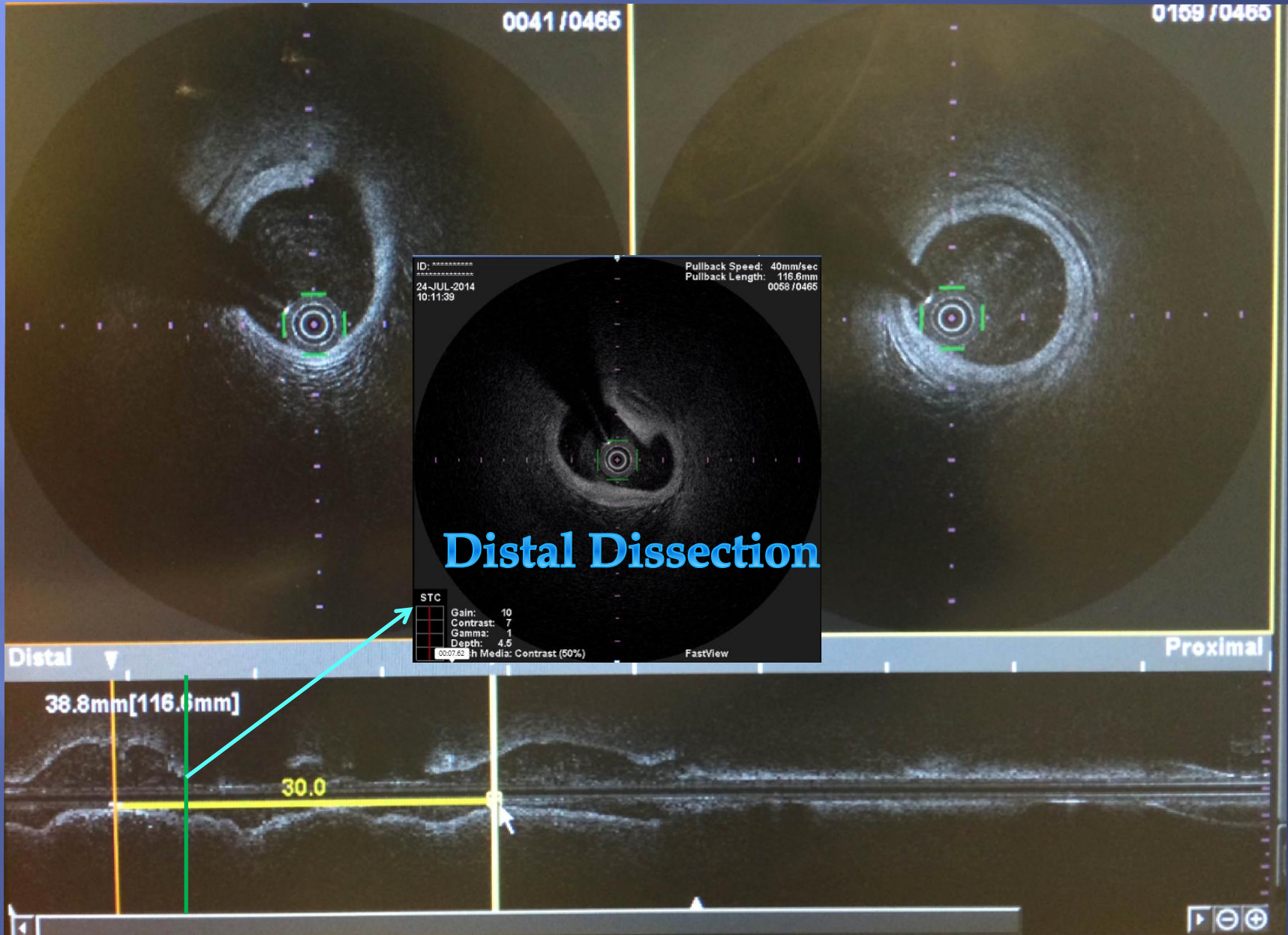mLAD with 2.5/15 Balloon   dLAD with 2.5/15 Balloon
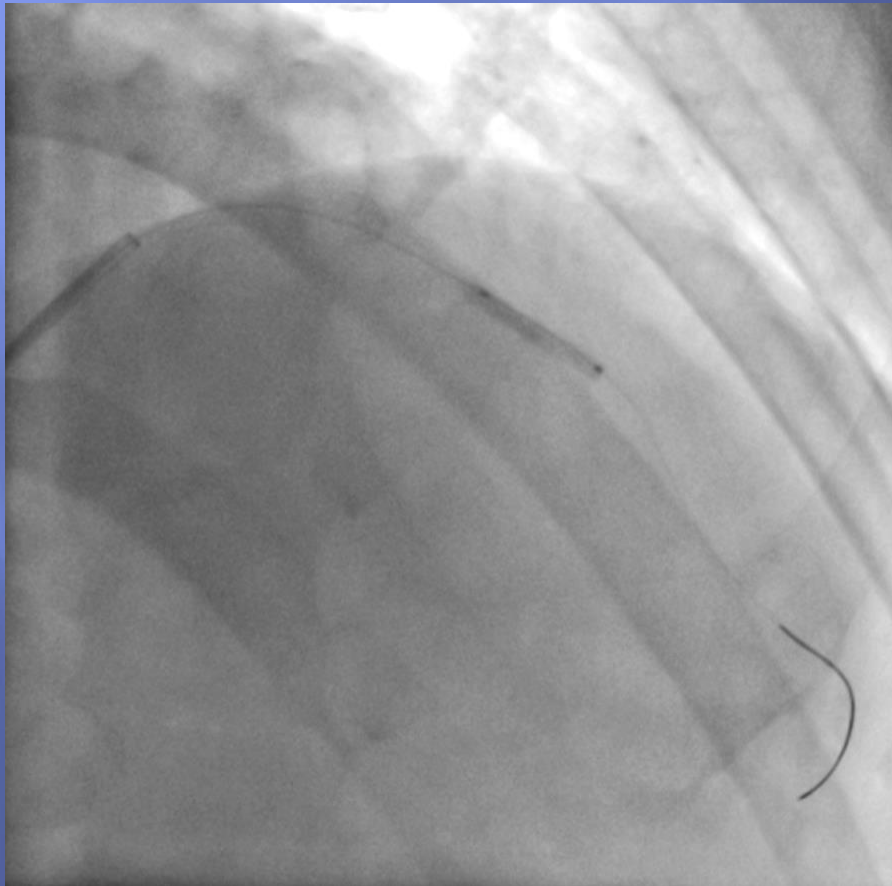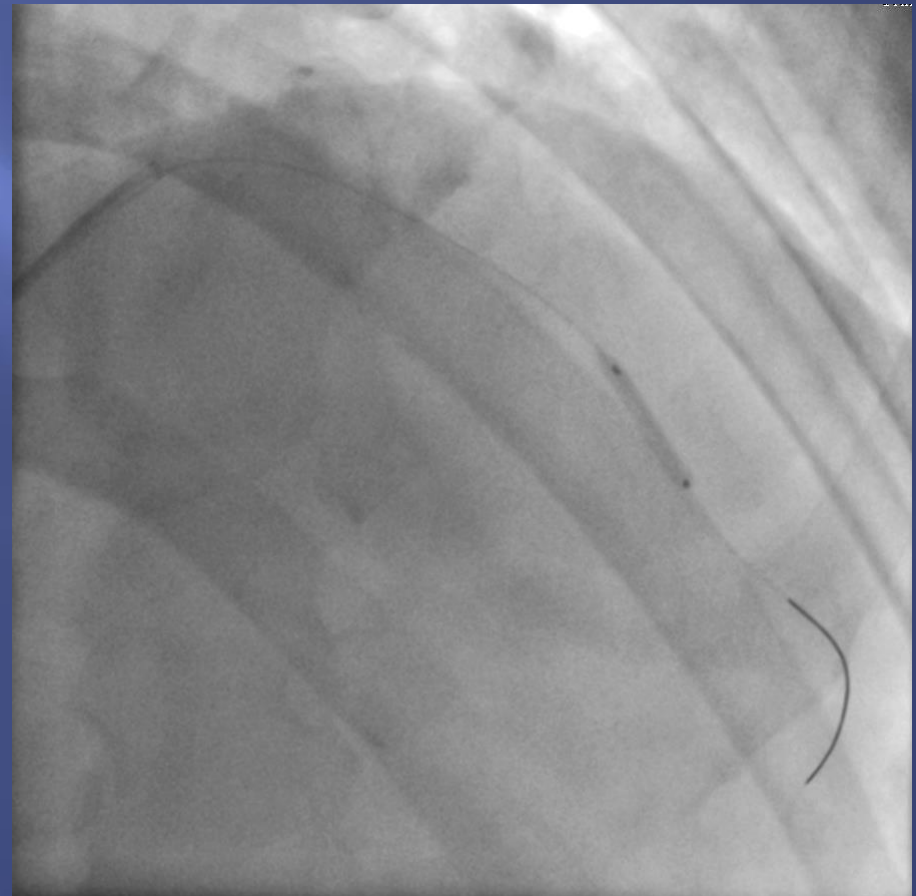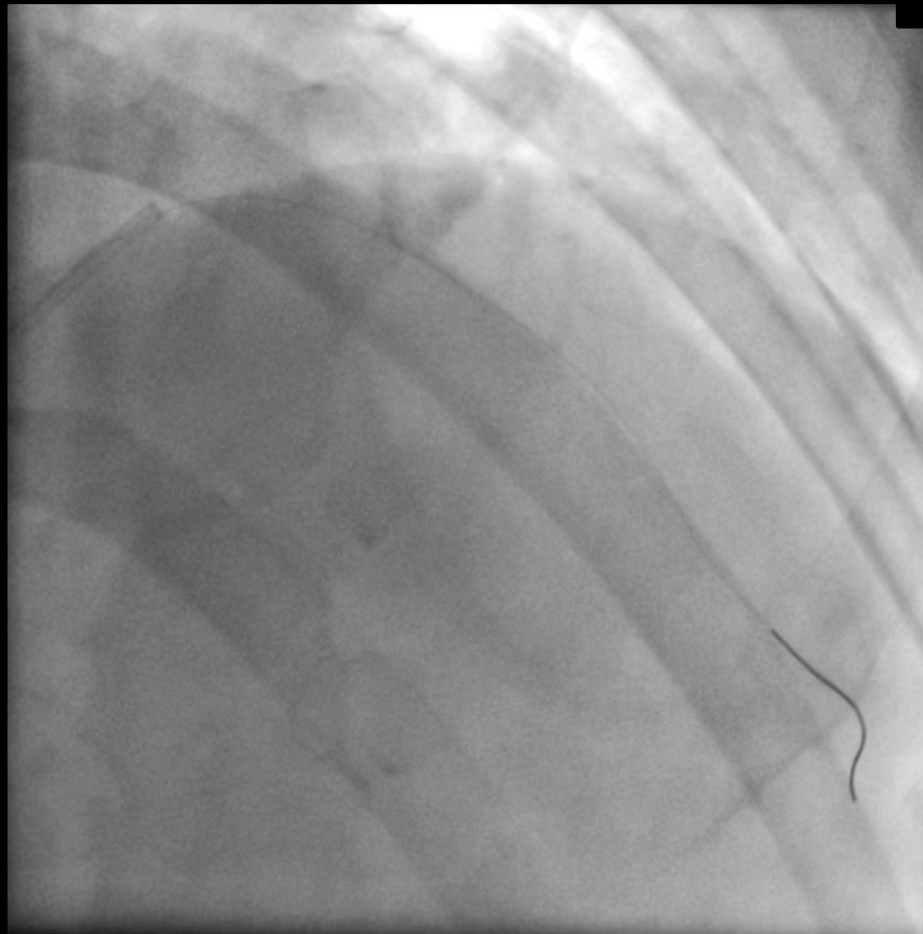
After POBA – 2

OFDI LAD –– Run 2

❖ LAD – Pre2, 40mm/s (0.25x, 28s)
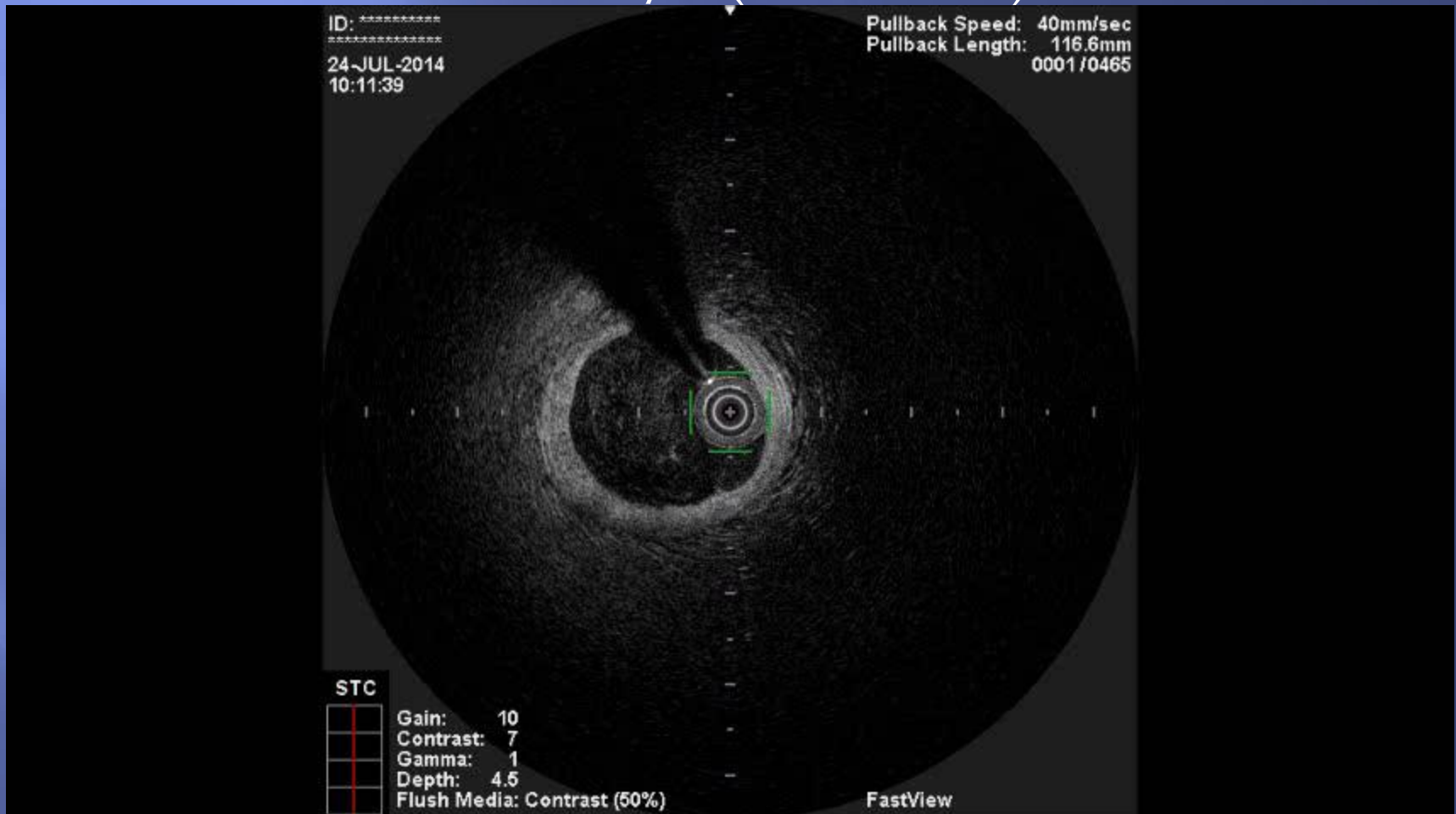
Lesion Length

Findings from OFDI

❖ Long lesion

❖ Not suitable for BVS as to avoid BVS stent overlapping (longest BVS available = 28mm)

❖ Also need to cover dLAD POBA induced dissection

→ Go for long DES

Xience Xpedition 2.75/33 stent

After Stenting

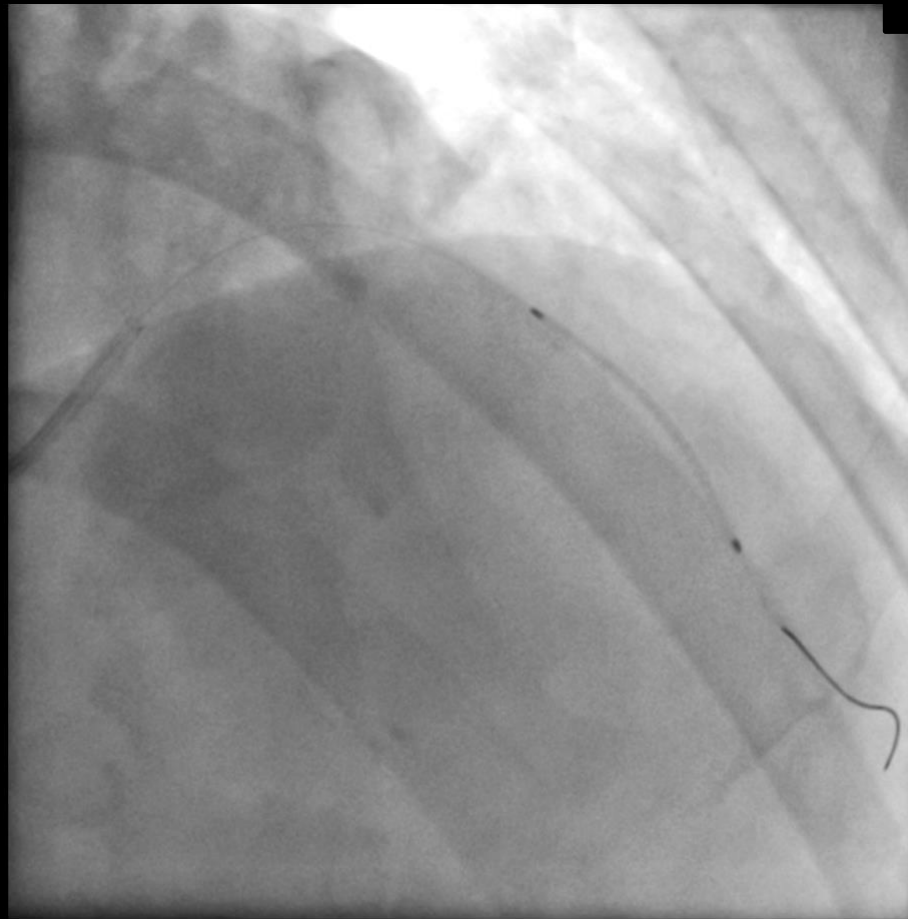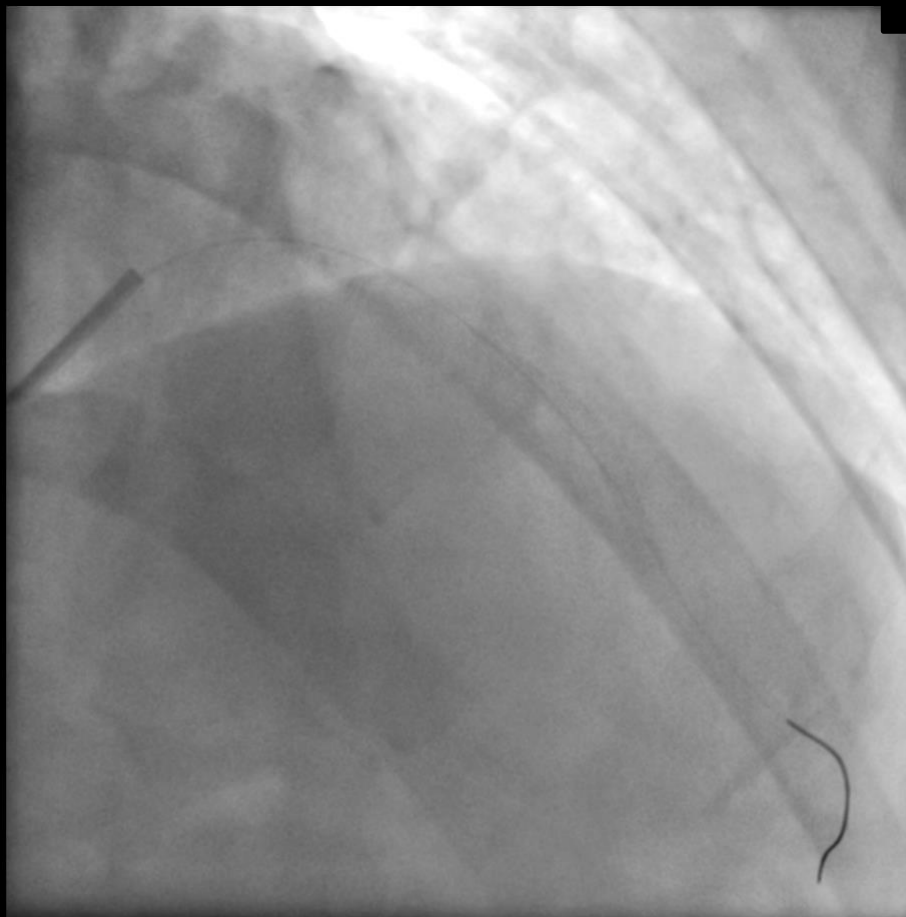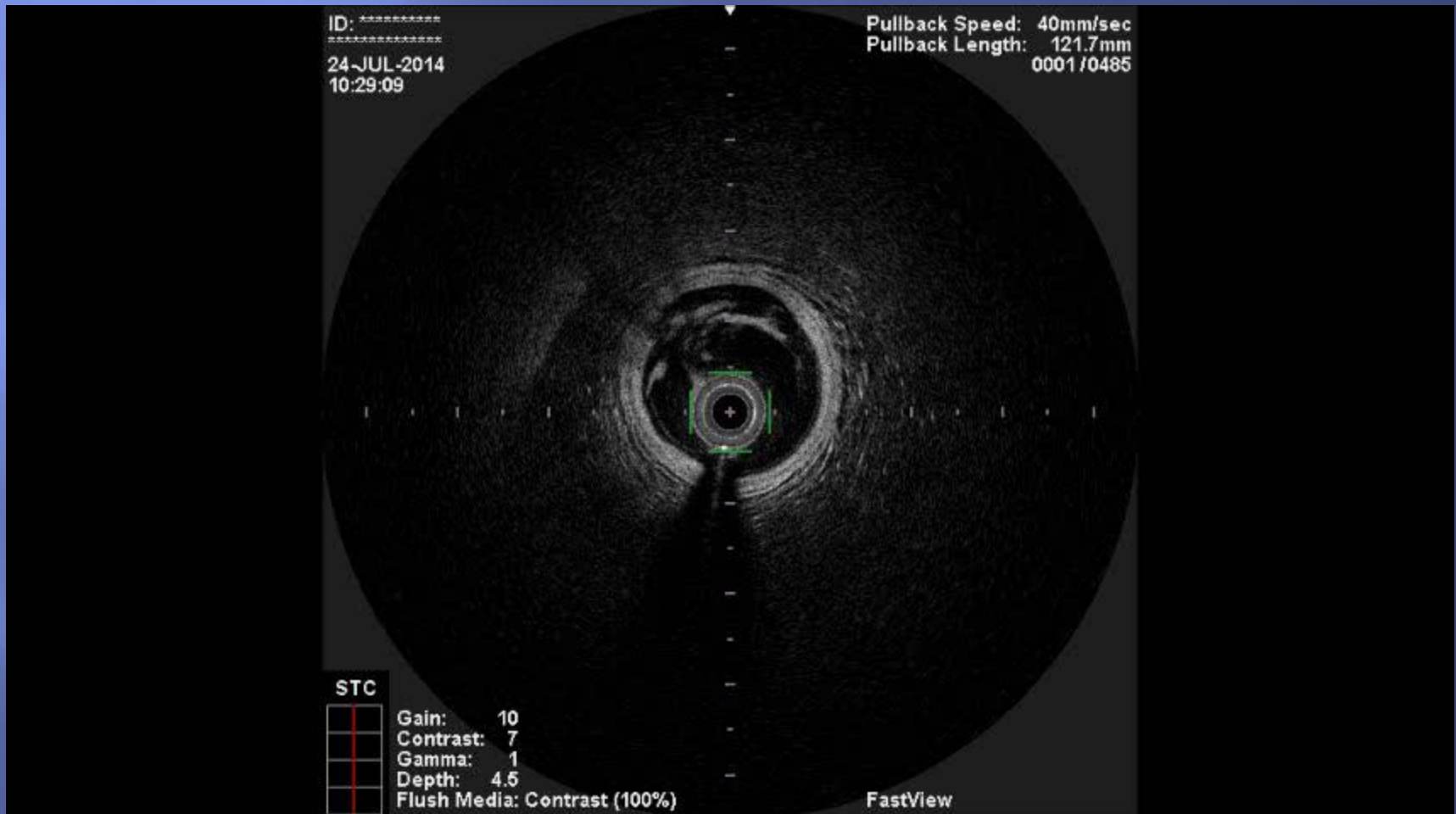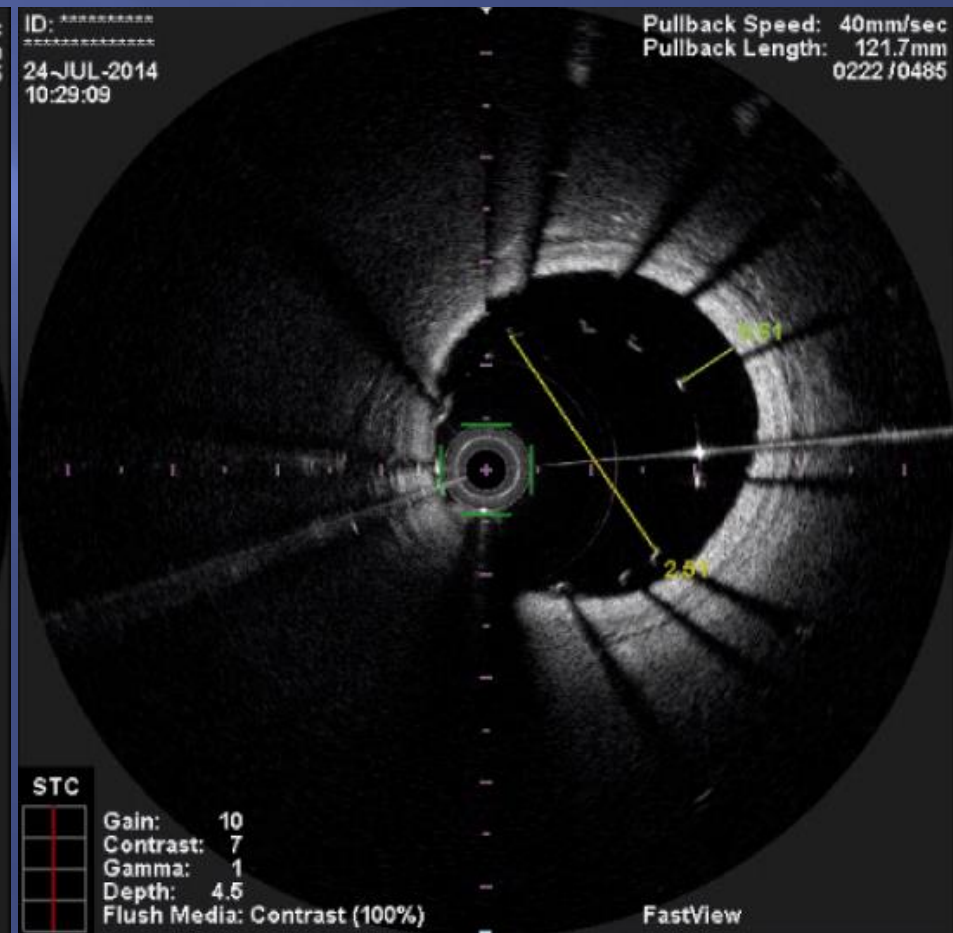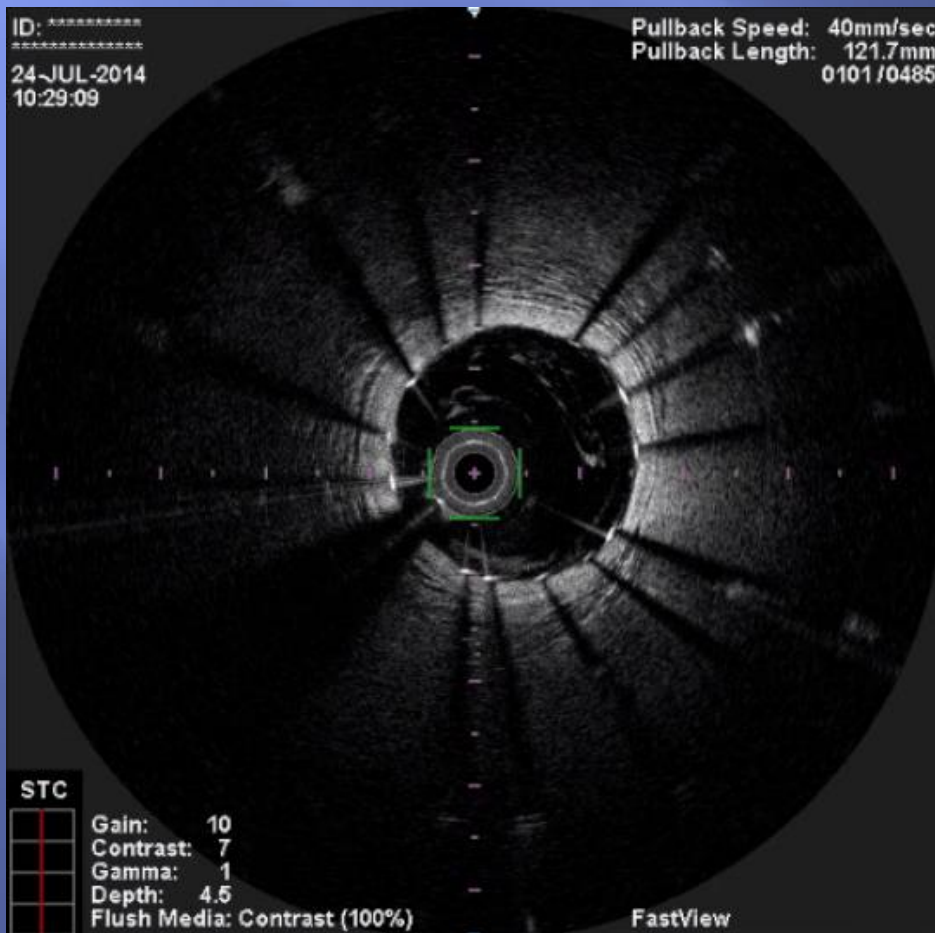# OFDI LAD -- Run 3

- ❖ LAD – Post Stent, 40mm/s (0.25x, 52s)

Stent Apposition

Distal stent well apposed

Prox. Stent Malapposition with 610µm distance
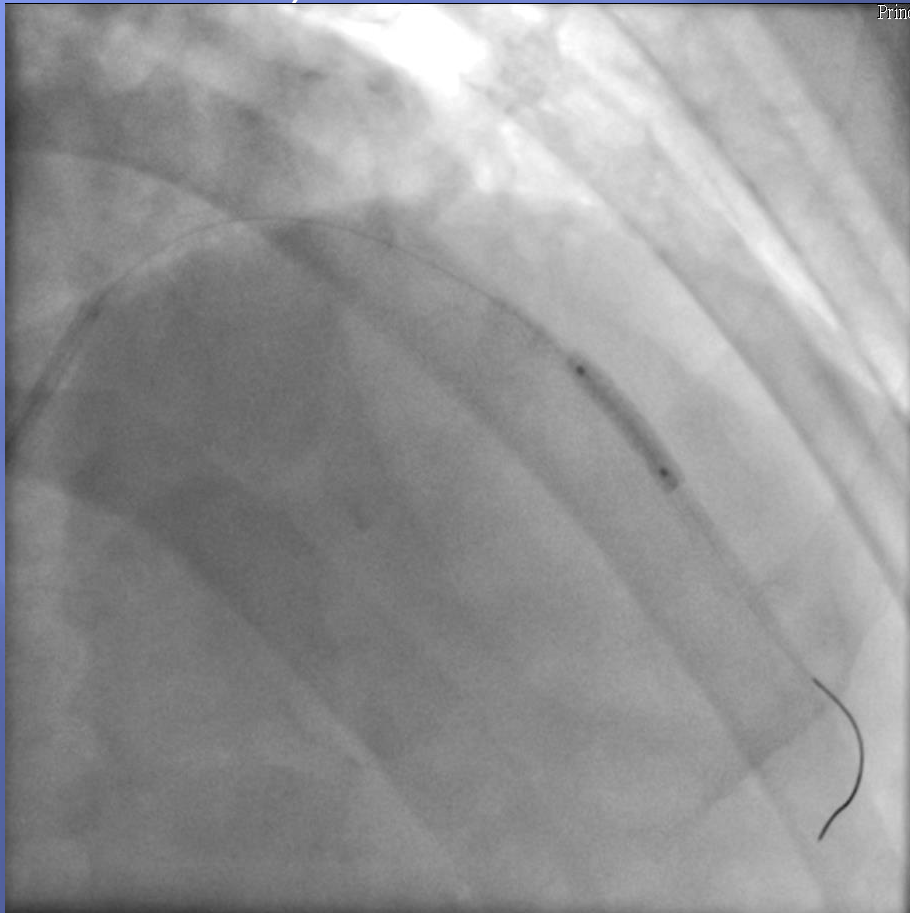
Definition of Stent Malapposition

- Measured distance from the stent surface to the lumen contour > Total strut thickness + polymer*

- An S-V distance <355μm was the corresponding cut-off value for a spontaneous resolution malapposed strut after EES#

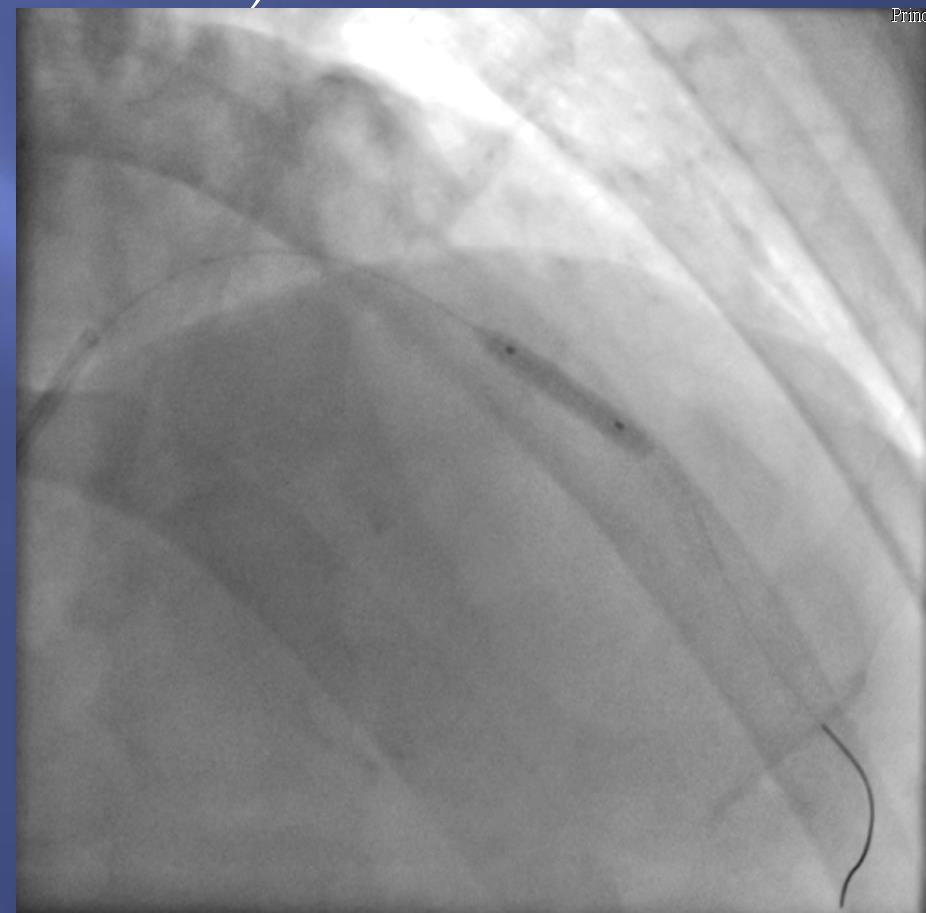*The Topol Solution 4th Textbook.

#RESET Trial OCT subanalysis.

Post Stent Dilatation
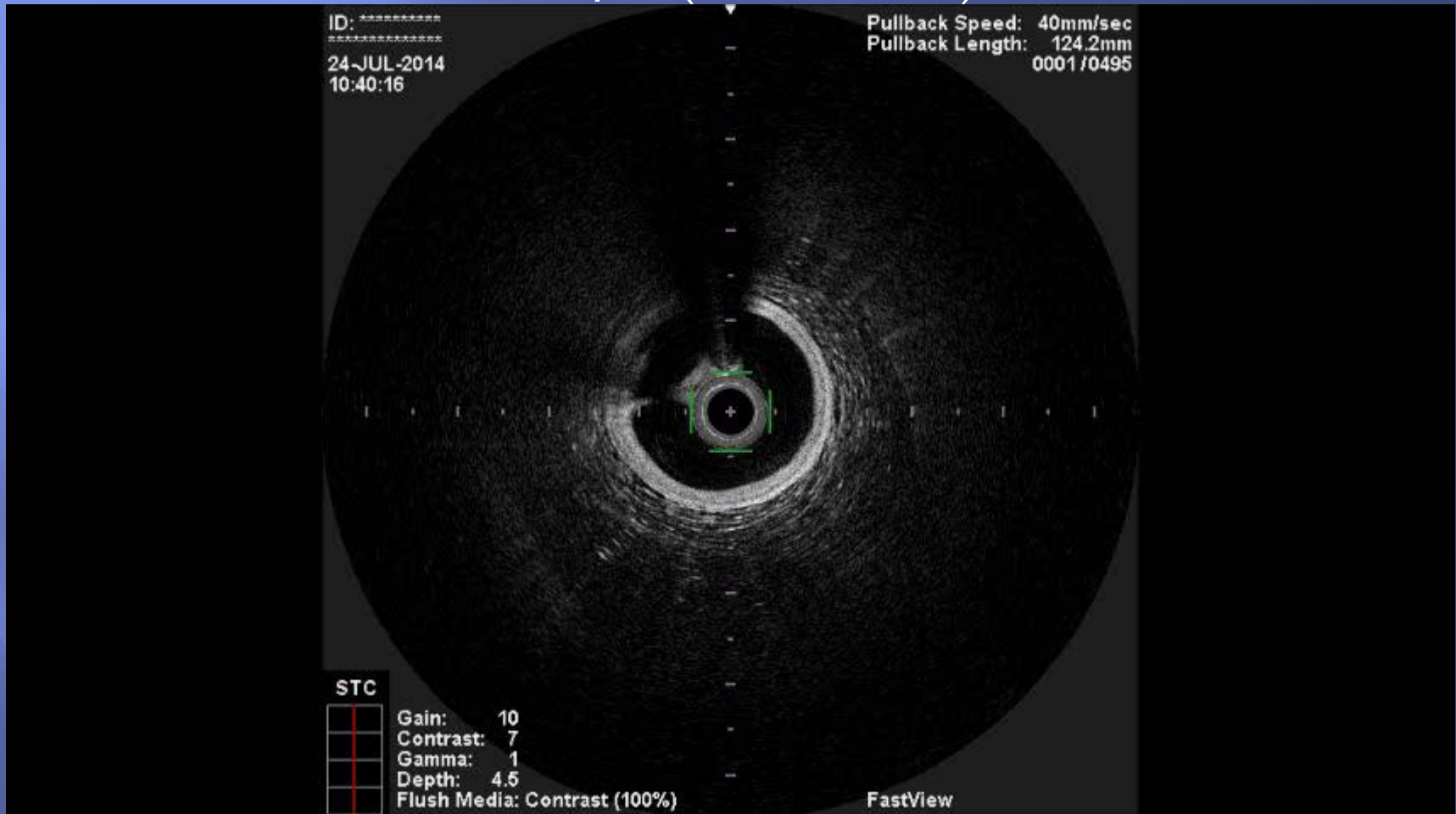
Mid Stent (3.25/15 NC Balloon)

Proximal Stent (3.25/15 NC Balloon)

OFDI LAD –– Run 4

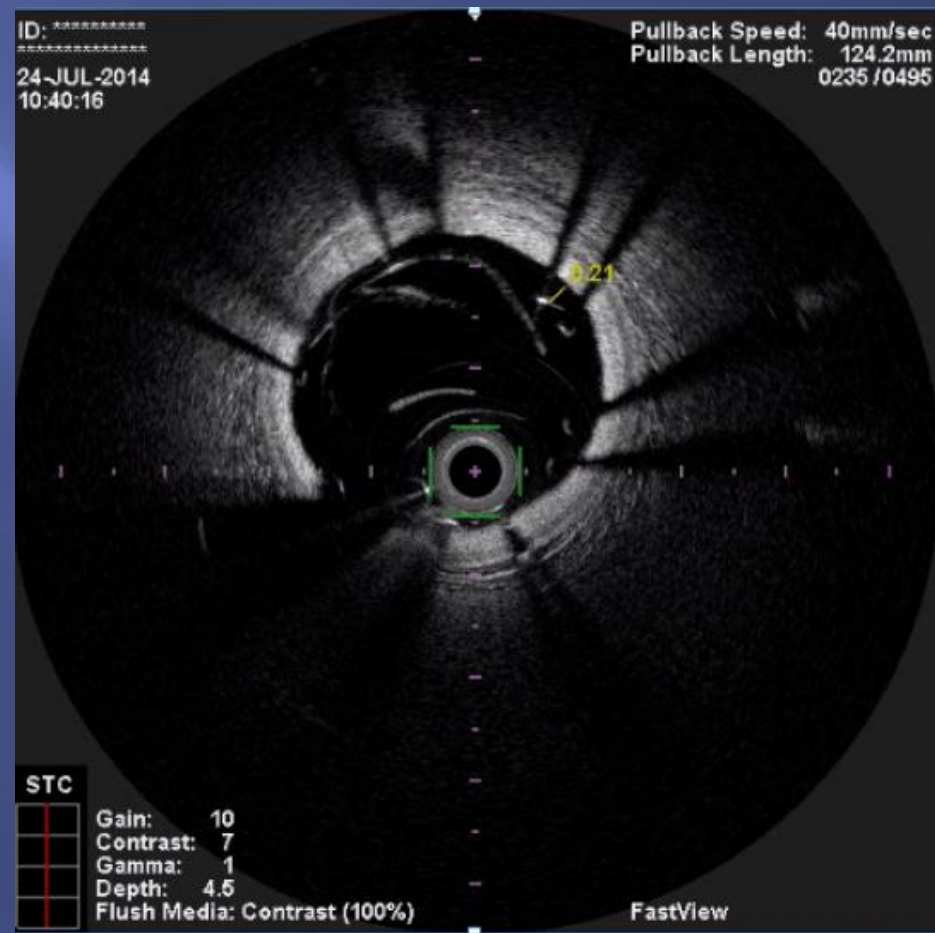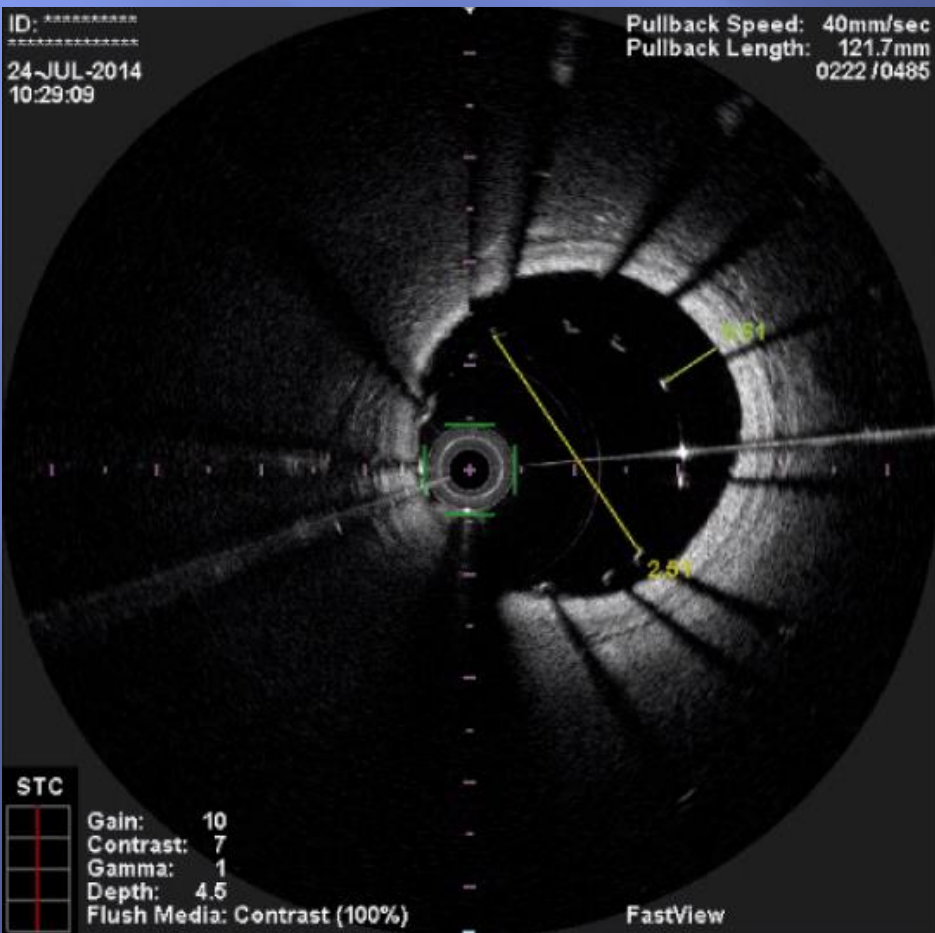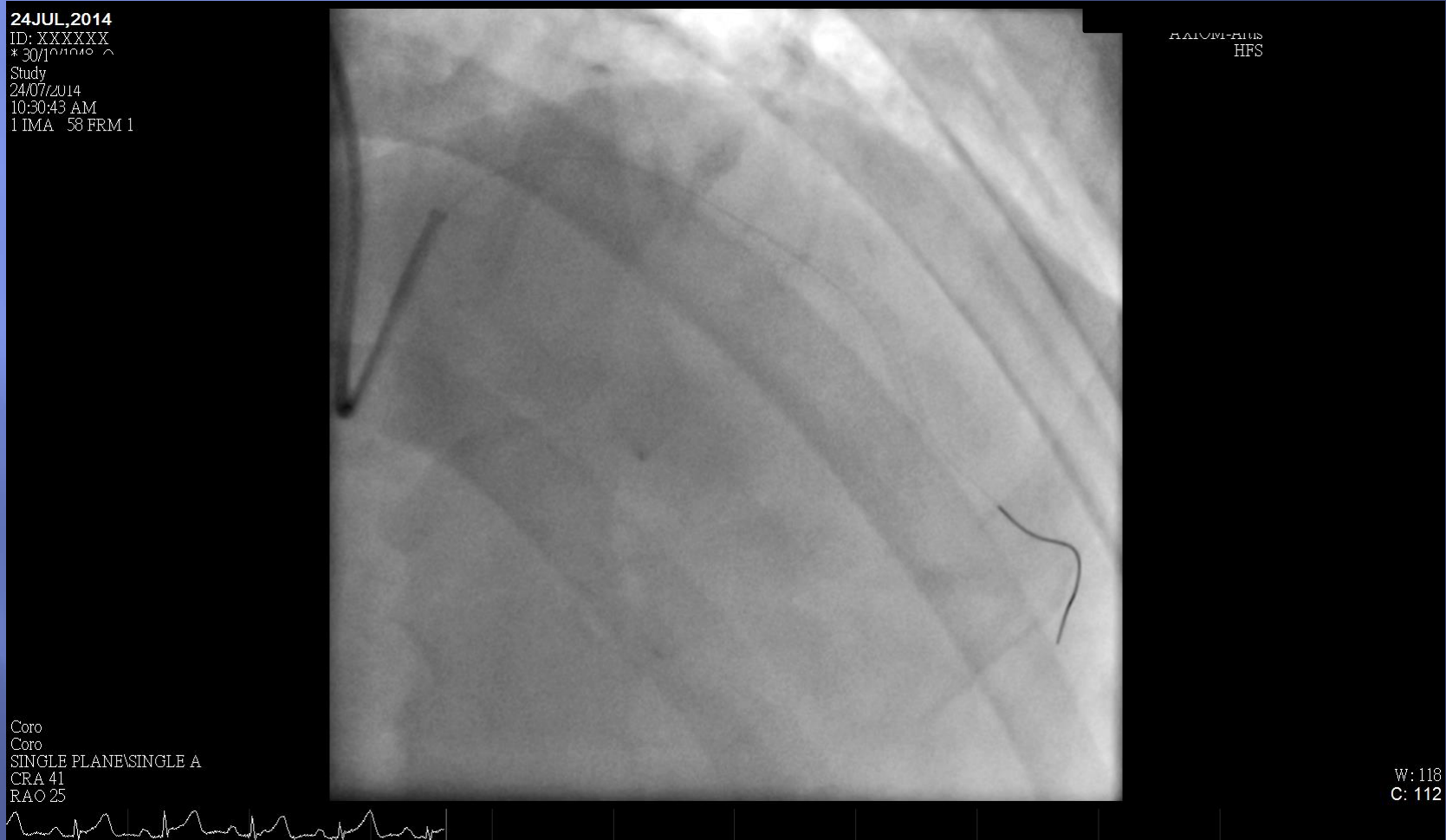LAD – Final, 40mm/s (0.25x, 43s)

NC balloon Post-dilatation Enhancement

Pre NC Post dilatation: 610μm distance

After NC Post Dilatation: 210μm distance

Adequate Stent apposition
TIMI 3 flow

Take Home Message

With Angiogram only, no OFDI

→ Go for BVS

Missed distal lesion

With OFDI, DES used

Obtain Best Strategy,

Enhanced Clinical Benefit 💡