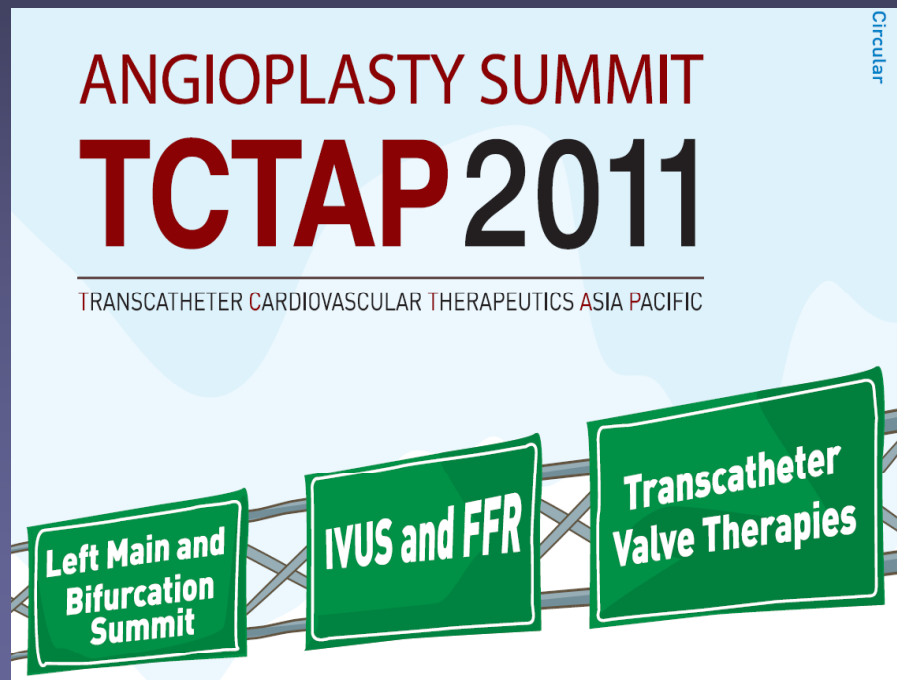


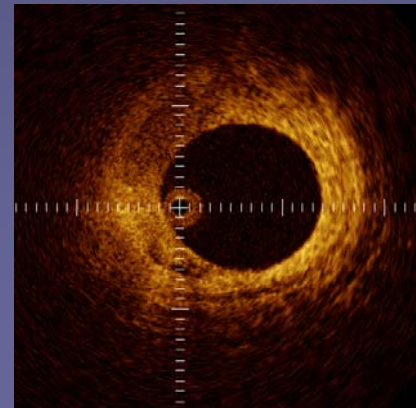
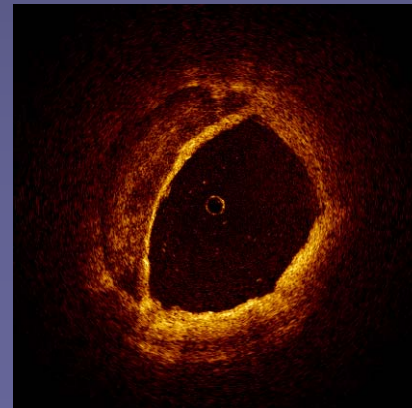
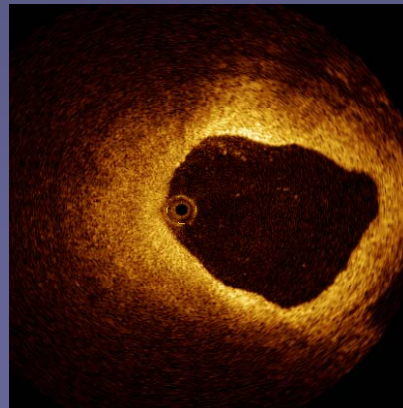
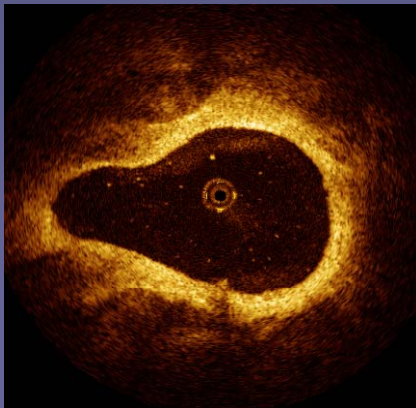
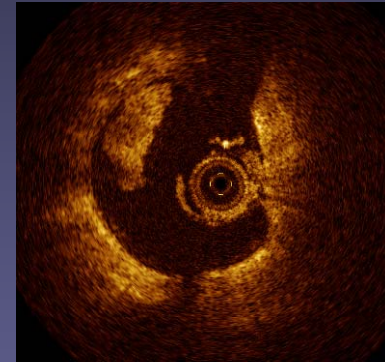
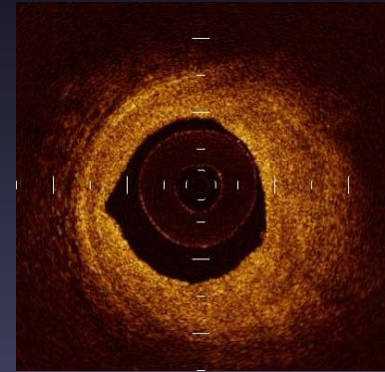
Experience of C7 OCT during 4M



Severance Hospital
Cardiac Intervention Room
BAIK, SUNG IL

Intravascular OCT Imaging

- **Plaques**
 - Calcification
 - Fibrosis
 - Lipid (TCFA, ruptures)
- **Stent Imaging**
 - Apposition, stent coverage, stenosis
- **Thrombus**
- **Others**
 - Dissections, intimal tears
 - Cholesterol crystals



Platform Comparison

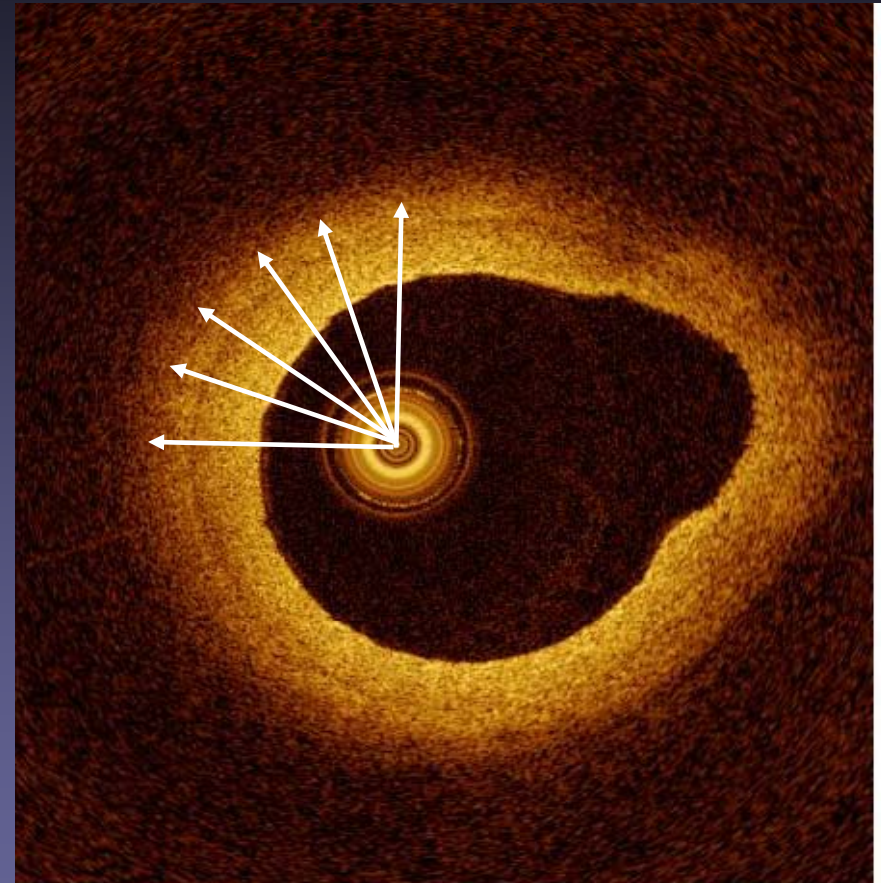
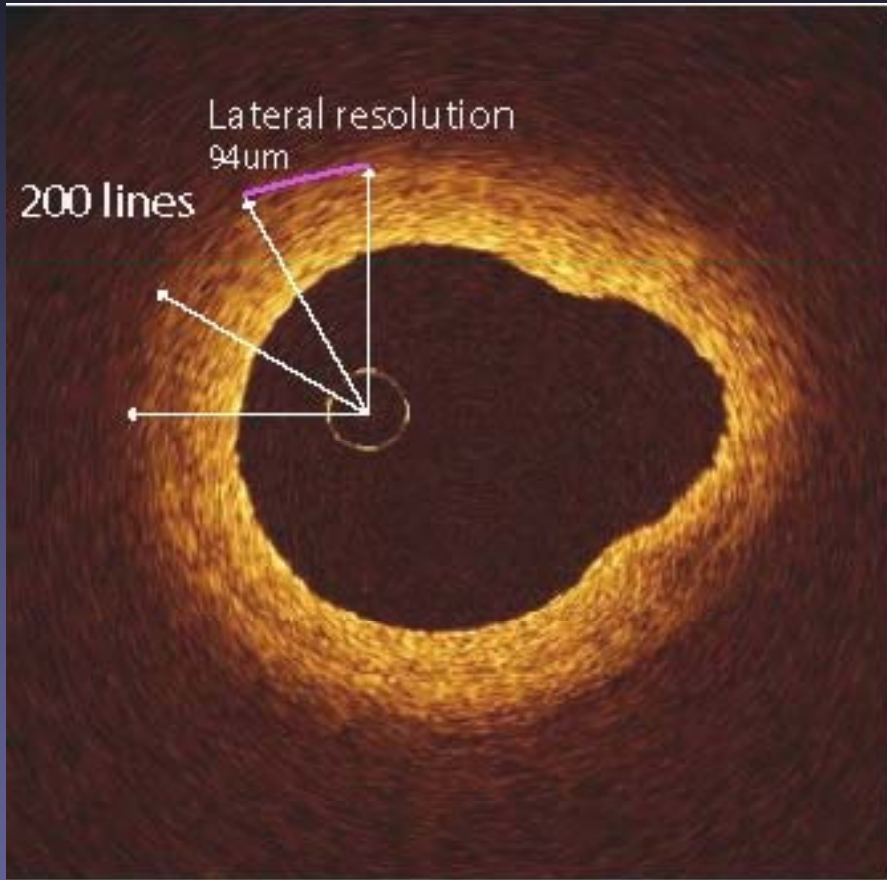
Platform Comparison

	C7-XR (2009)	M3/M2X (2007)	M2 (2004)	IVUS (current)
Frame rate Frames/sec (fps)	100	20	15.6	30
Pullback speed (default/max)	20/25 mm/sec	1.5/3.0 mm/sec	1.0/2.0 mm/sec	0.5 or 1.0 mm/sec
Lines per frame	500	240	200	256
Lateral sampling (3 mm artery)	19 μm	39 μm	47 μm	225 μm
Axial resolution	15 μm	15 μm	15 μm	150 μm
Scan diameter (in saline)	10 mm	6.8 mm	6.8 mm	10-15 mm

OCT Image M3 vs C7

M2

M4/C7



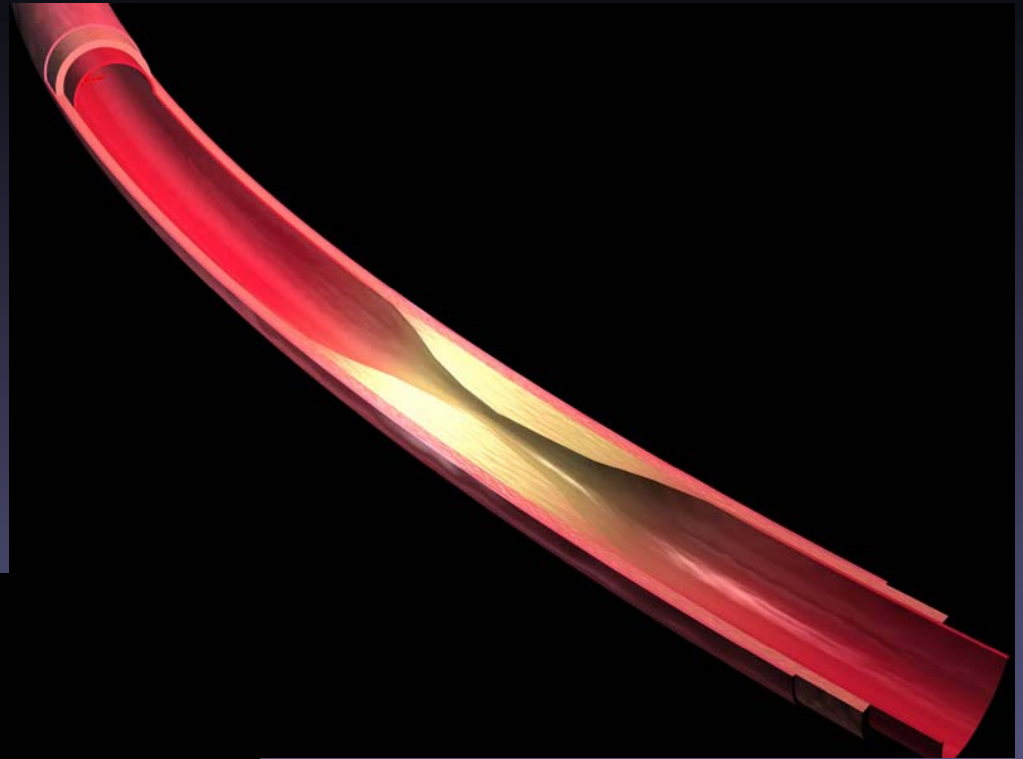
15 f/s, 200 lines/frame

80 f/s, 562 lines/frame

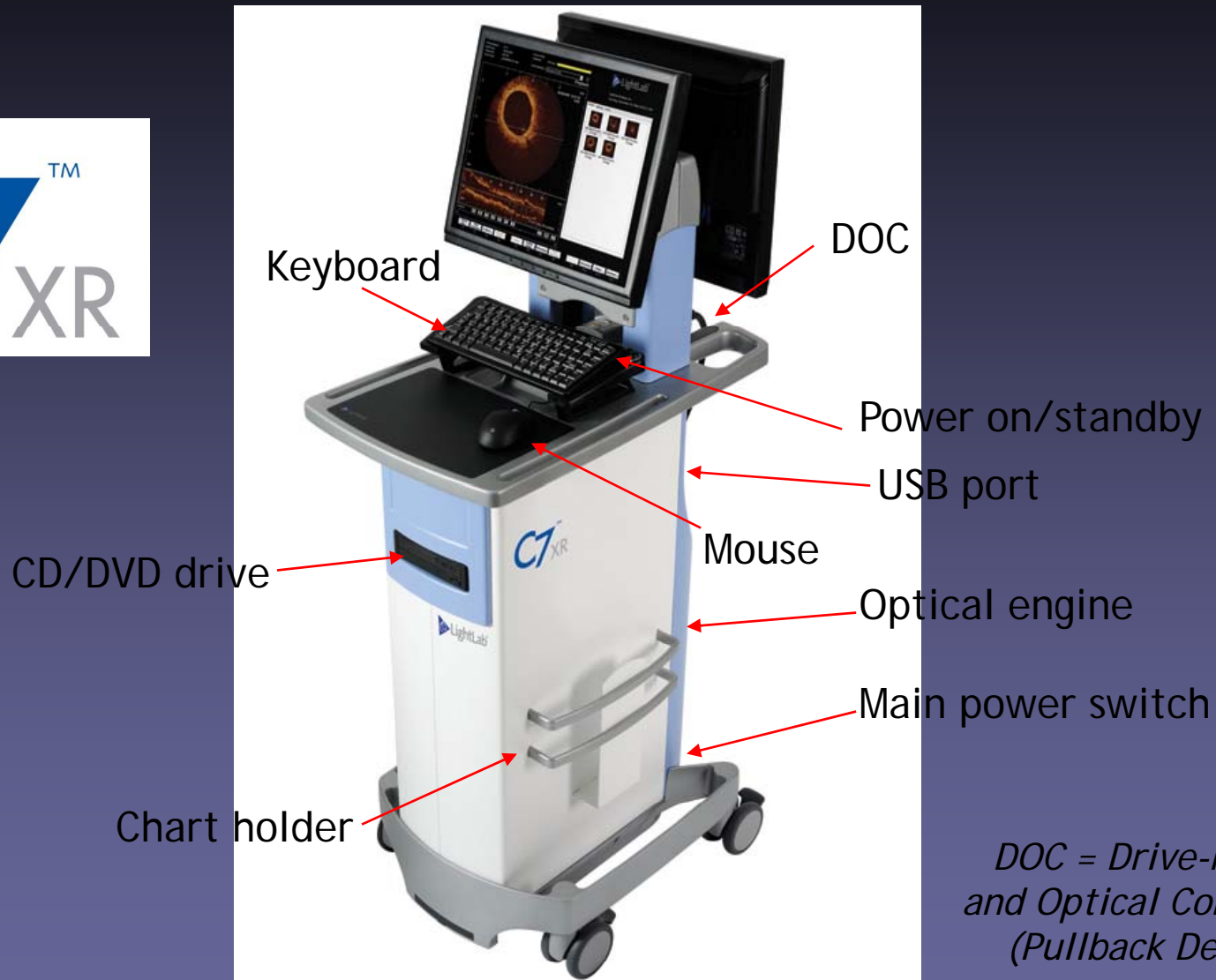
Formalin-fixed coronary artery (pig)

I. Introduction of C7 OCT System

Compare C7 & M3



C7-XR System



*DOC = Drive-motor
and Optical Controller
(Pullback Device)*

C7-XR Dragonfly Imaging Catheter

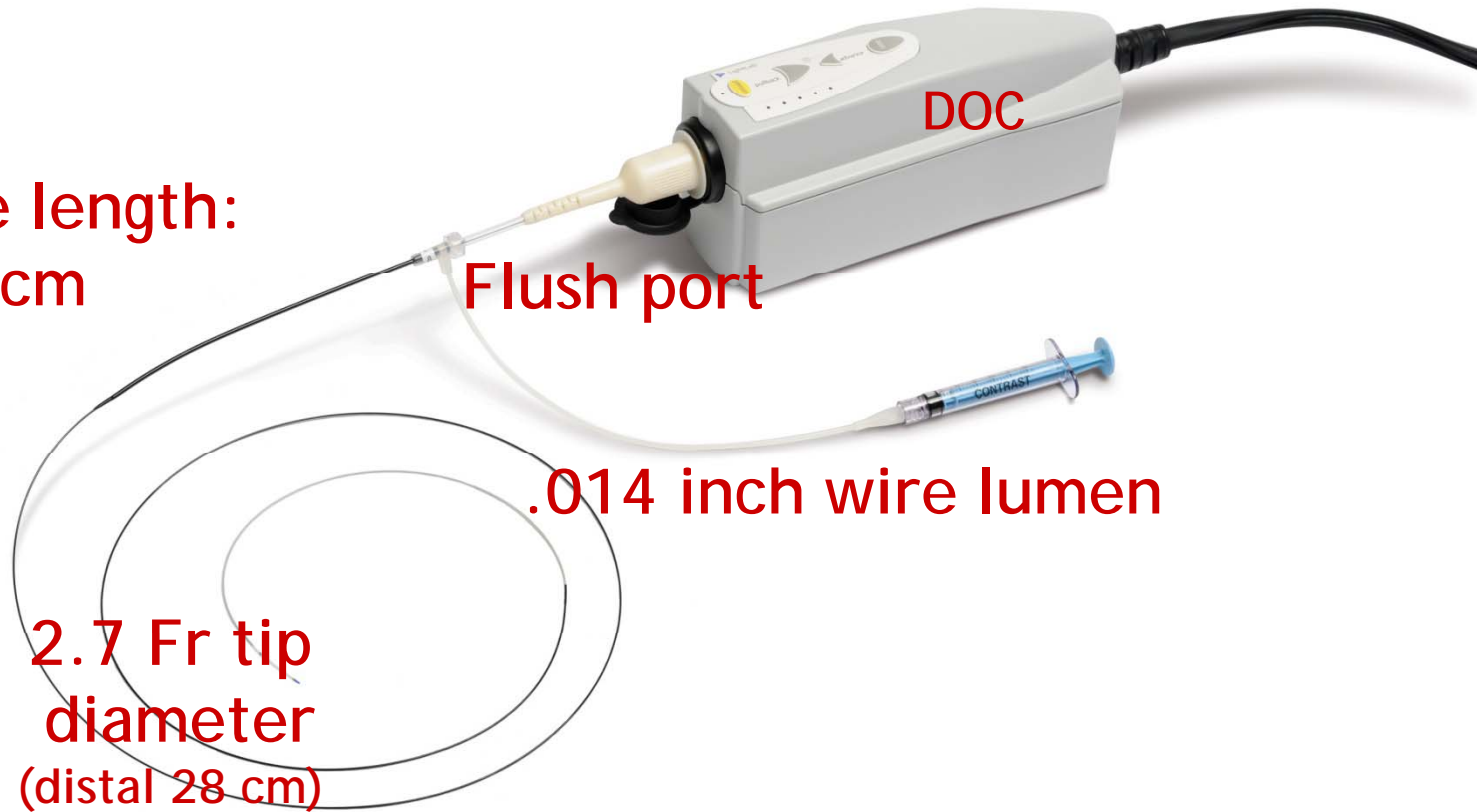
Insertable length:
135 cm

Flush port

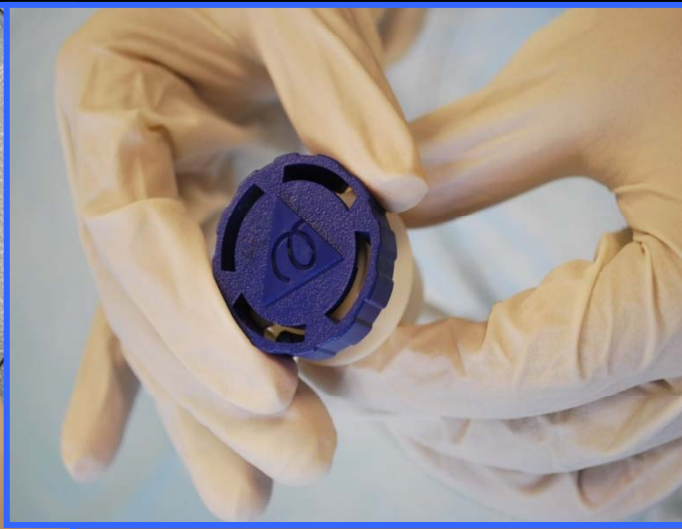
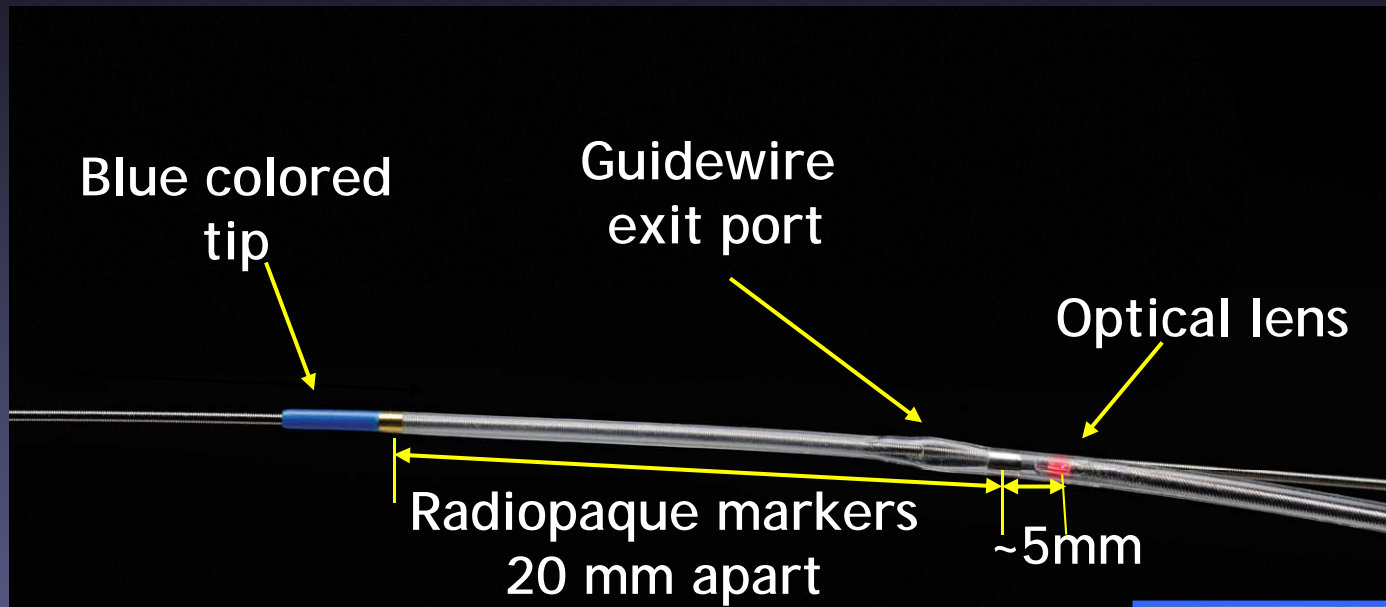
DOC

.014 inch wire lumen

2.7 Fr tip
diameter
(distal 28 cm)



Dragonfly Tip

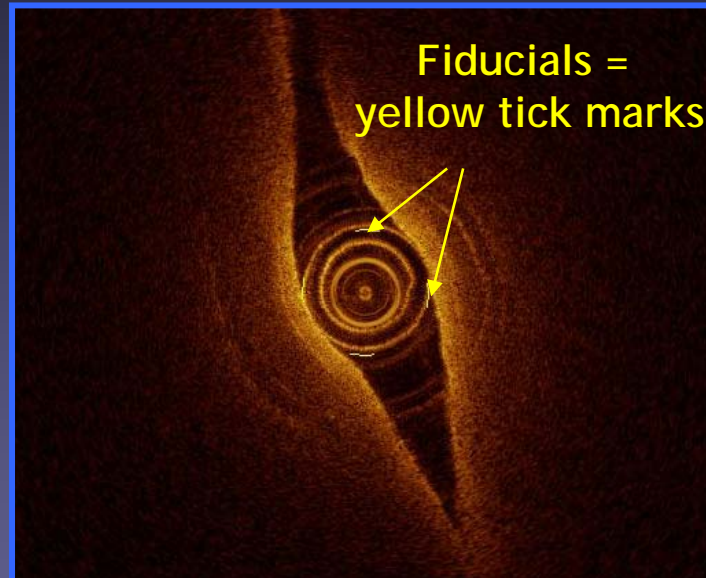


Method of connection to DOC



II. Set up

Dragonfly/DOC Connection and Auto-Z



Auto-Z calibration aligns catheter sheath reflection with fiducials

Select Pullback Settings

- **Automatic**: software will initiate pullback automatically (*default setting*)

- **Manual**: pullback must be initiated manually at console or DOC (Total occlusion)

The screenshot displays the LightLab software interface. At the top, patient information is shown: Patient Name: Patient, Default; Birth Date: 6/14/2007; Patient ID: DEF_1; Case Date: 7/27/2009 10:53 AM; Comment: [empty]. System parameters include Frame Rate: 54.0 mm (with a yellow progress bar) and Flush Medium: Contrast. The LightLab logo and version information (Monday, July 27, 2009 04:24:55 PM) are in the top right.

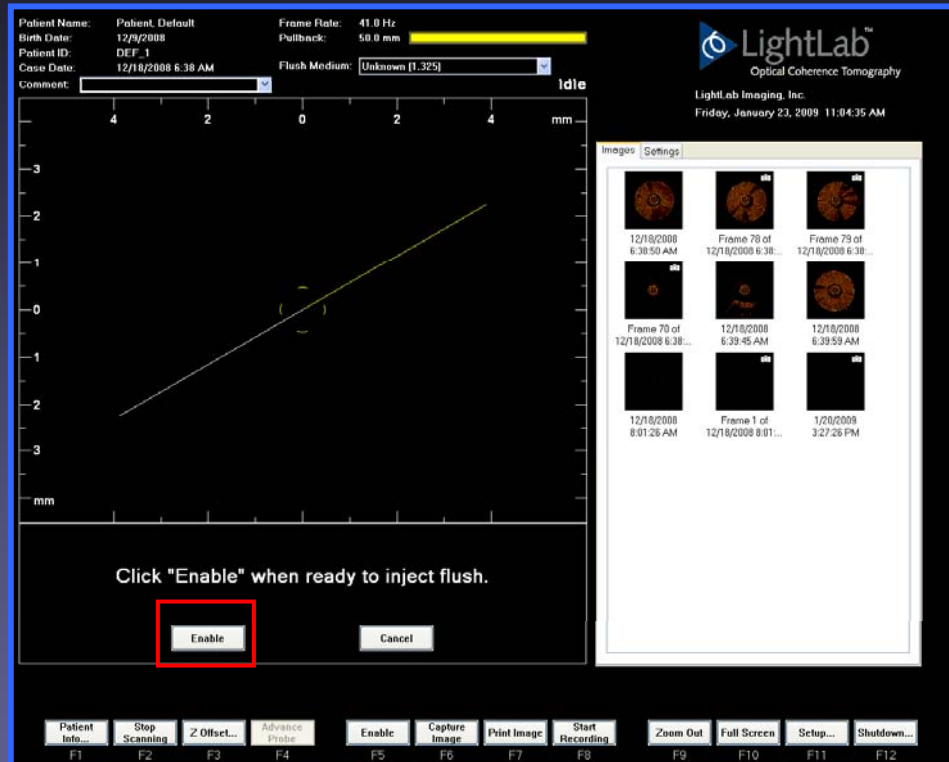
The 'Setup' dialog box is open, showing various configuration options. The 'Pullback Settings' section is highlighted with a red box. It includes:

- Pullback Speed:** 20.0 mm/sec (dropdown menu)
- Max. Pullback Recording Distance:** 54.0 mm
- Automatically Record when Pulling Back:**
- Trigger Type:** Automatic (dropdown menu with options: Automatic, Pressure, Manual)
- Advance Settings:** Automatically Advance after Pullback

Other settings in the dialog include General Settings (Institution Name: LightLab Imaging, Inc., Catheter Type: C7 Dragonfly, Maximum Record Time Limit: 61 seconds, Image Stabilization: , Automatically review recordings: , Show "Enable" Overlay Warning: , Frame Rate: 100) and buttons for 'Set the current date and time', 'Restore factory default settings', and 'Change Operating Mode'. The dialog also has 'Refresh', 'OK', 'Cancel', and 'Apply' buttons.

At the bottom of the interface, there is a control bar with buttons for Patient Info... (F1), Start Scanning (F2), Z Offset... (F3), Advance Fiber (F4), Enable (F5), Capture Image (F6), Print Image (F7), Start Recording (F8), Zoom Out (F9), Full Screen (F10), Setup... (F11), and Shutdown... (F12). A status bar at the bottom center shows '<< 0.0 mm, 20.0 mm/sec'.

Ready for Imaging



1. Click "Enable" to prepare system



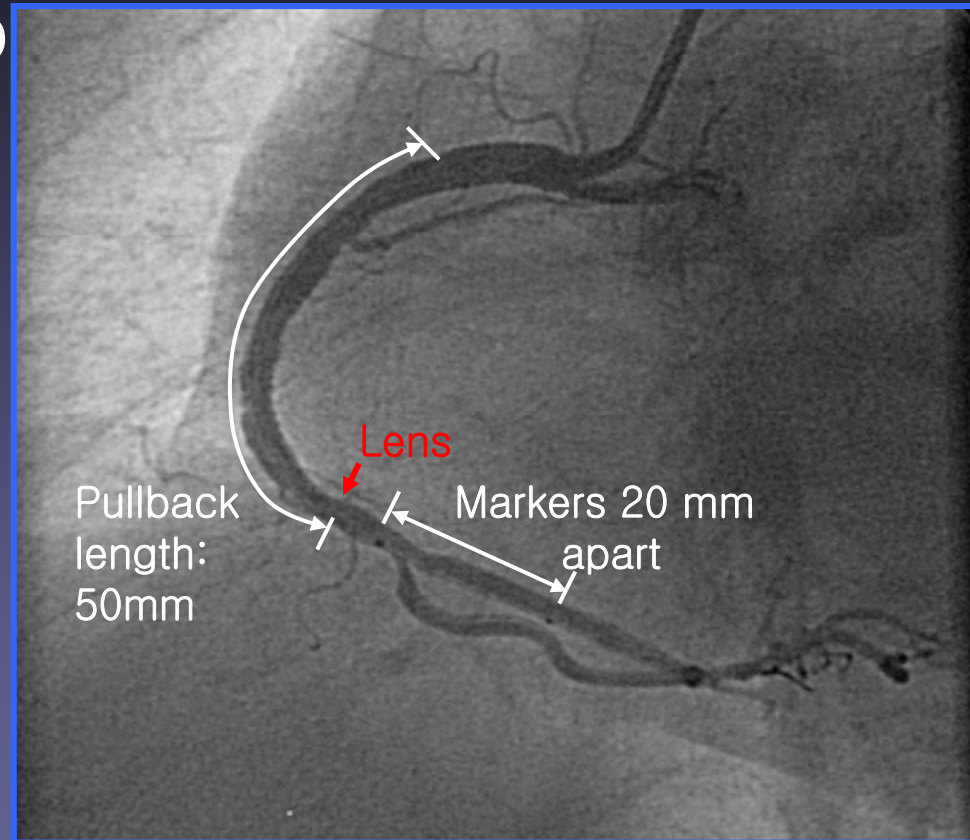
2. 15 seconds are allowed for flush to start (*Automatic trigger mode*)

Insertion and Positioning

Advance catheter to desired position for 50 mm pullback.

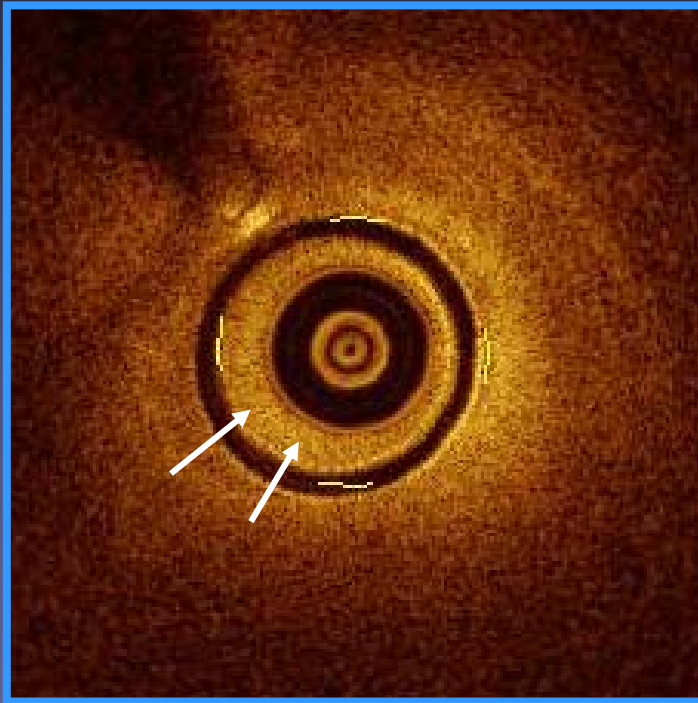
Reminder:

- Markers are 20mm apart
- Optical imaging lens is ~ 5 mm proximal to proximal marker

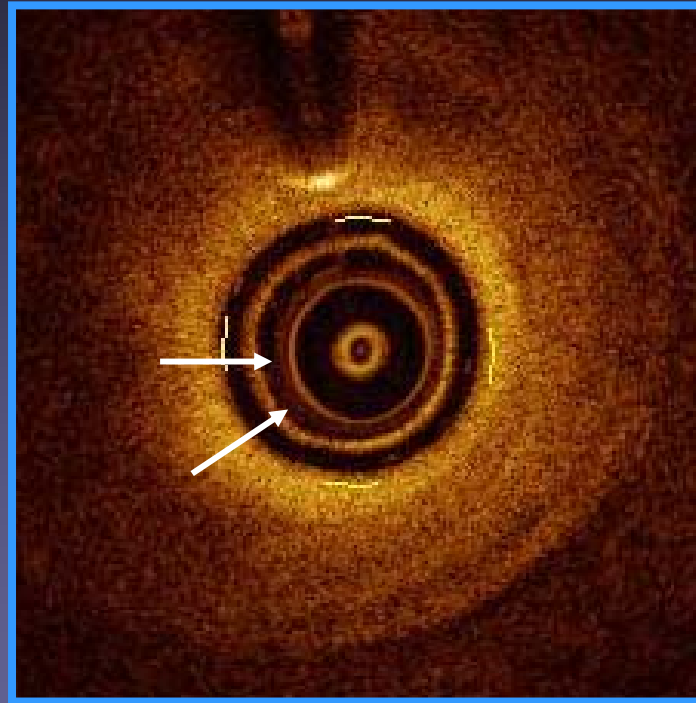


Pullback Prep: Purging

If blood creeps into catheter lumen, purge with attached contrast syringe.

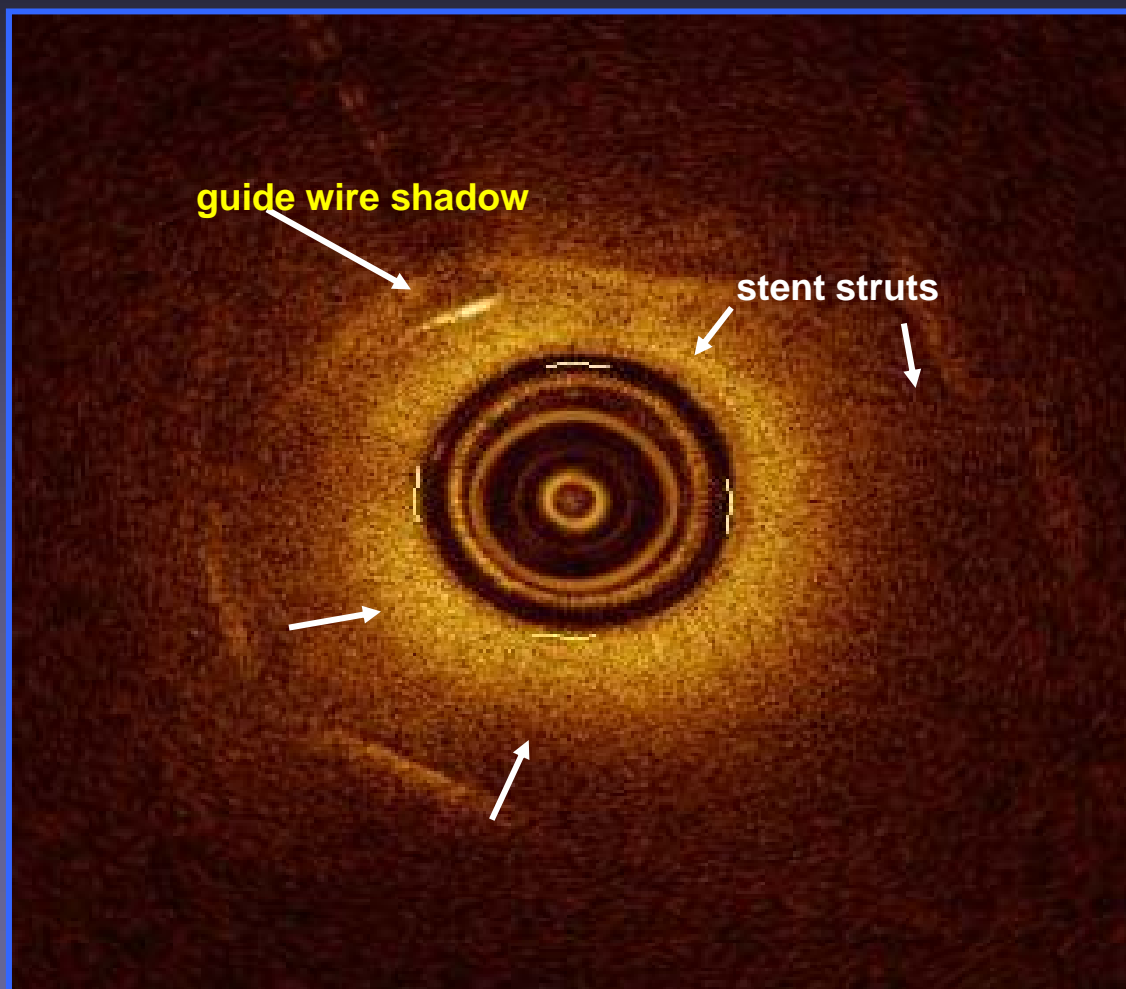


Blood



Purged

Pull back Positioning Post Stent

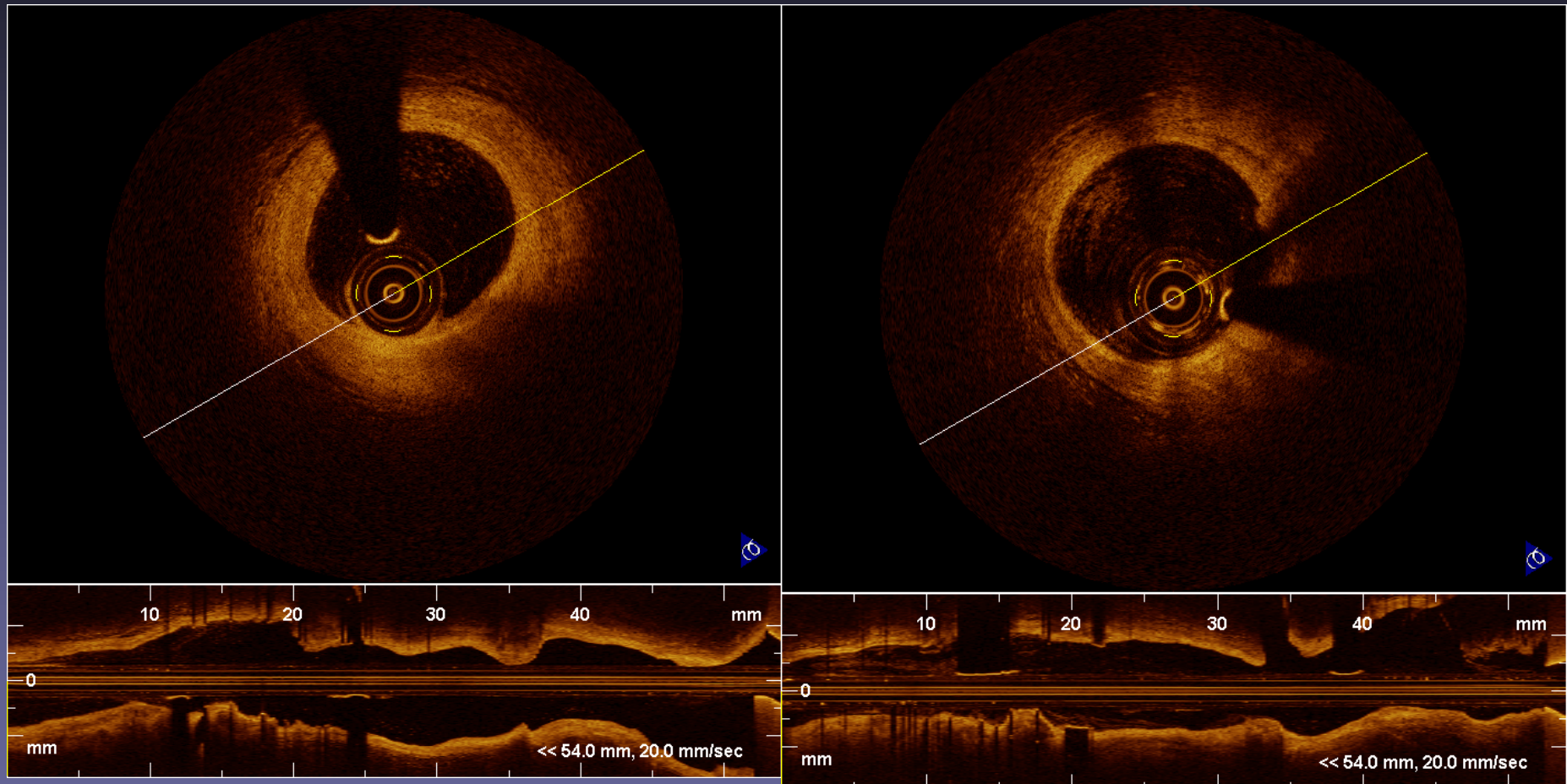


IV. Pitfalls & Tips

Tips for Good images

1. G/C: only End hole & minimize back flow
2. Contrast media: Viscosity High
3. Pull back: auto & manual
4. Auto injector Setting: 4 ~ 6ml/s, 20 ~ 30ml, 300psi, delay time 0
5. Don't use mixed dye !

Side hole & End hole Guiding catheter

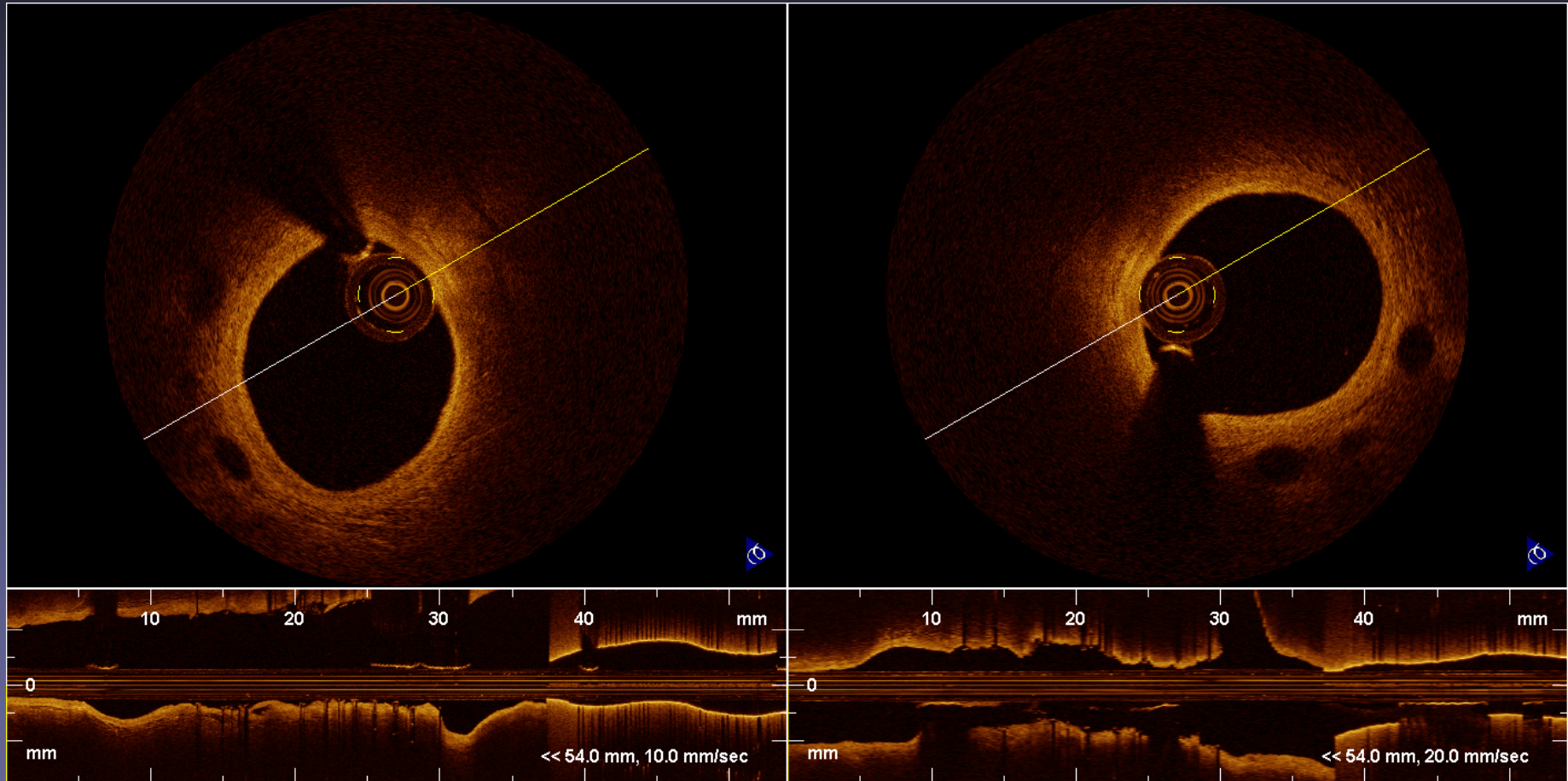


End Hole

Side hole

10mm/s

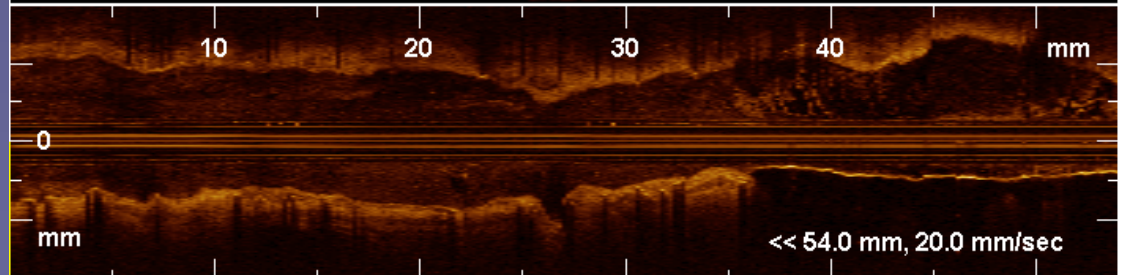
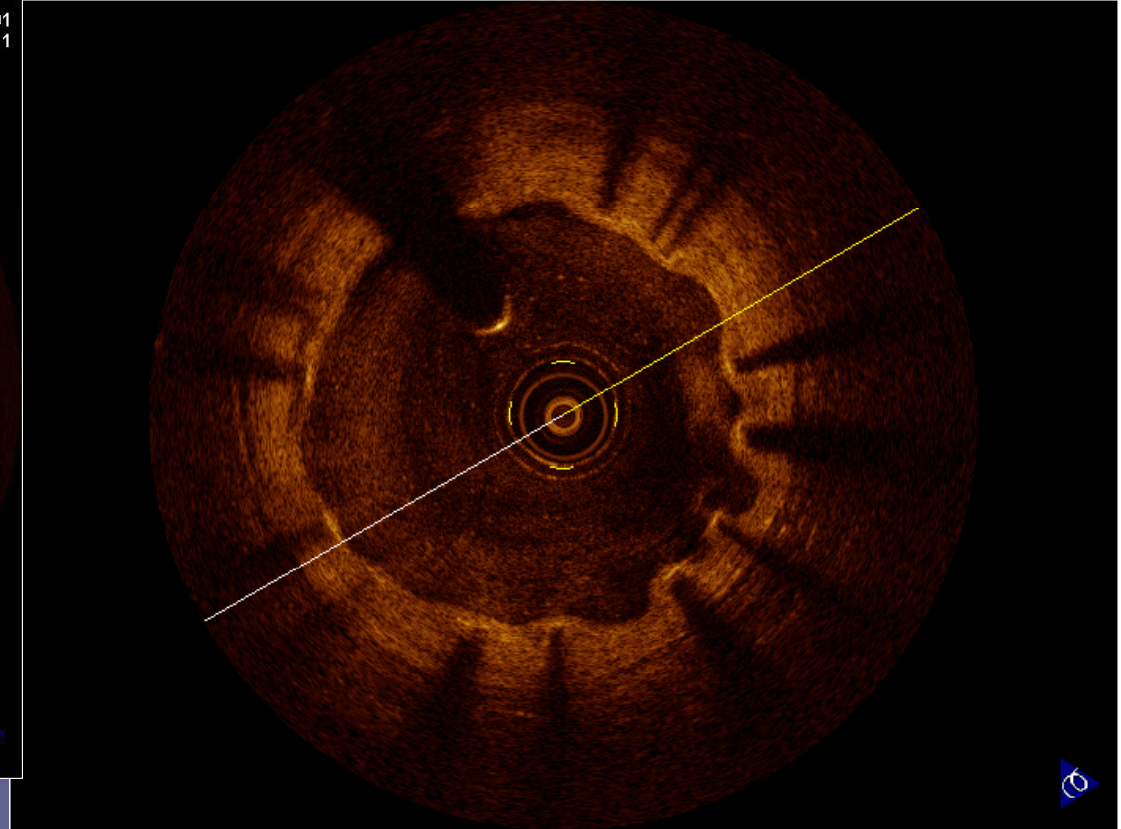
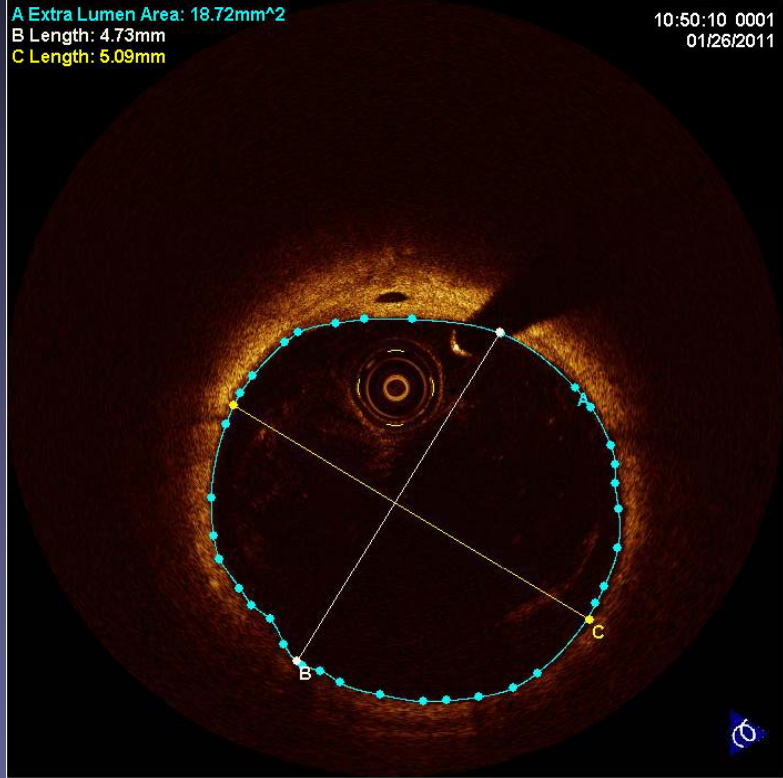
20mm/s



OCT Image in Large vessel

A Extra Lumen Area: 18.72mm²
B Length: 4.73mm
C Length: 5.09mm

10:50:10 0001
01/26/2011

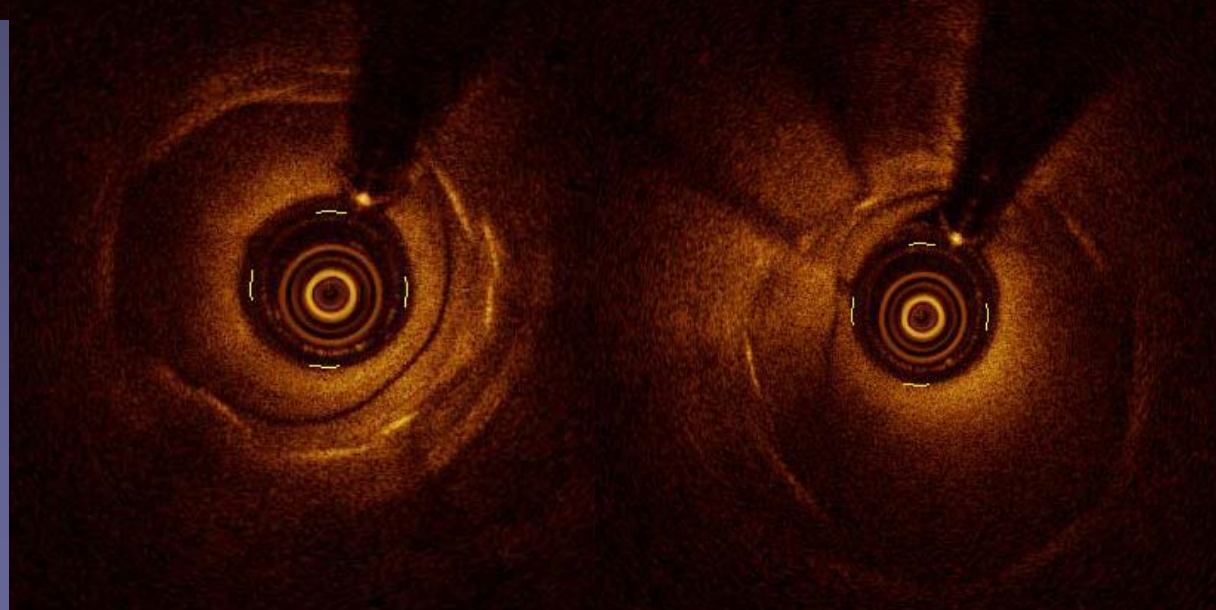
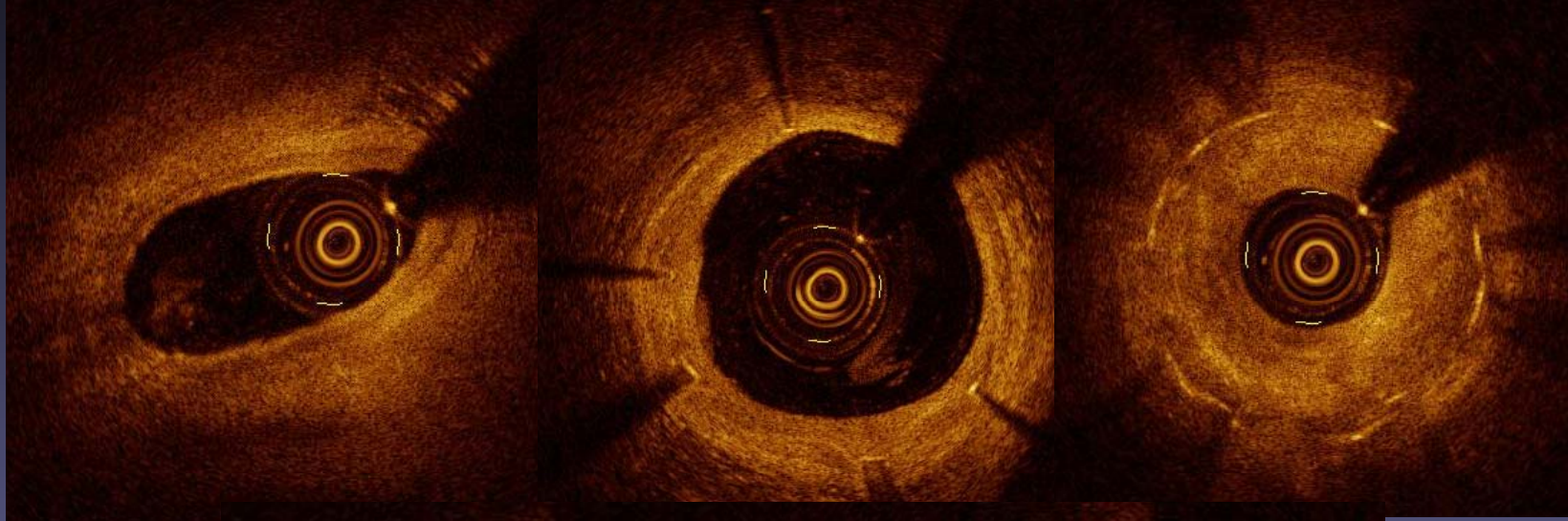


Big main



OCT Image in Mixed dye(20% D/W)

DISTAL ←

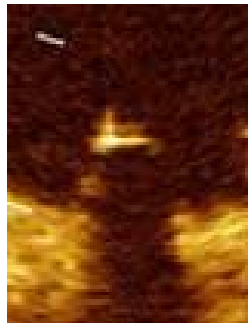


→ Proximal

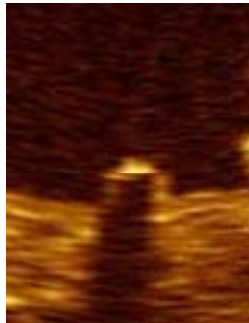
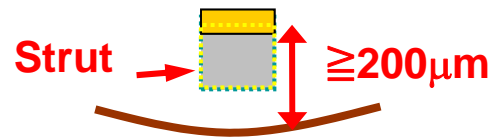
V. Interesting image

Stent Strut Coverage Patterns

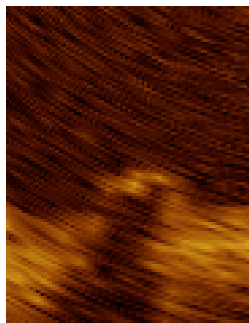
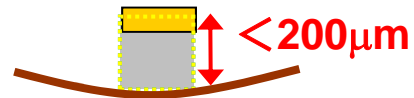
UNCOVERED



Incomplete Apposition



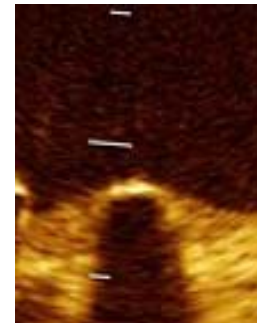
Complete Stent Apposition



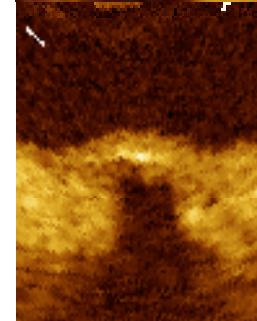
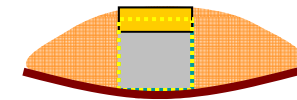
Complete Stent Apposition with irregularity



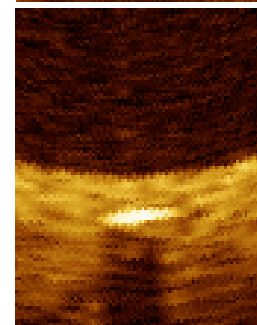
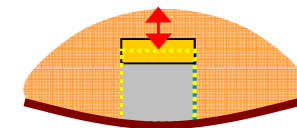
COVERED



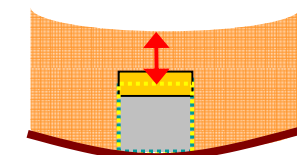
Rhombus



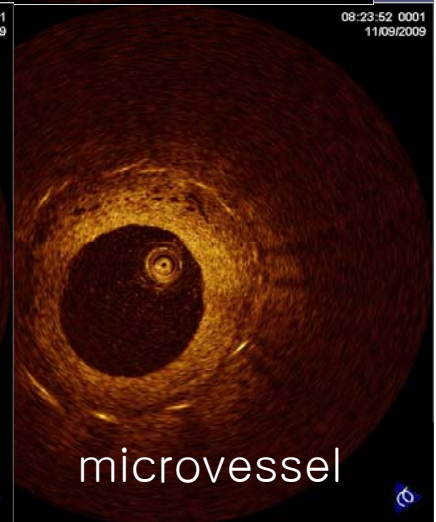
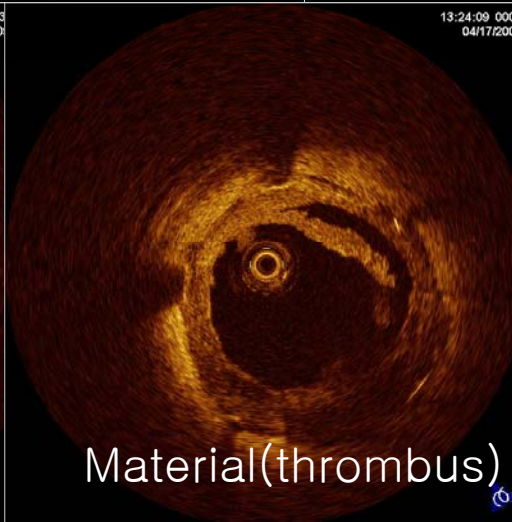
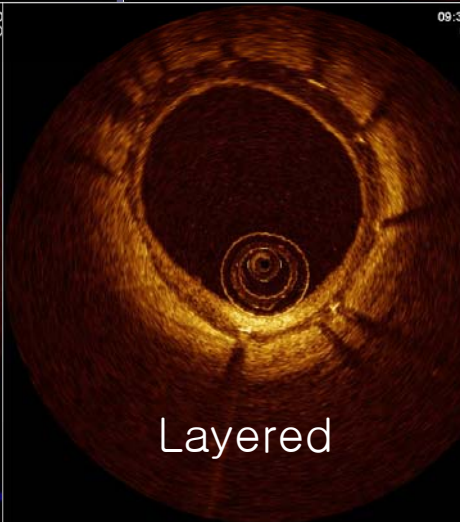
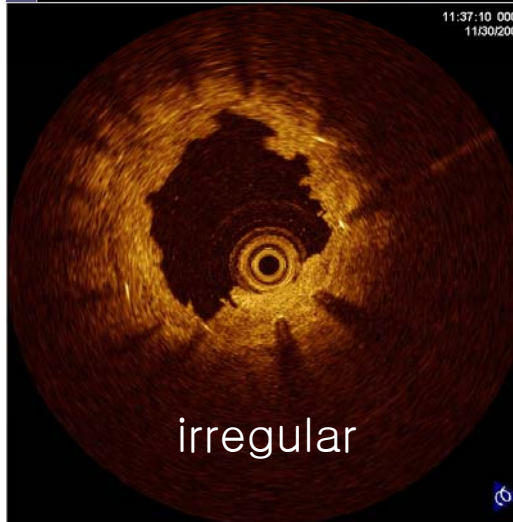
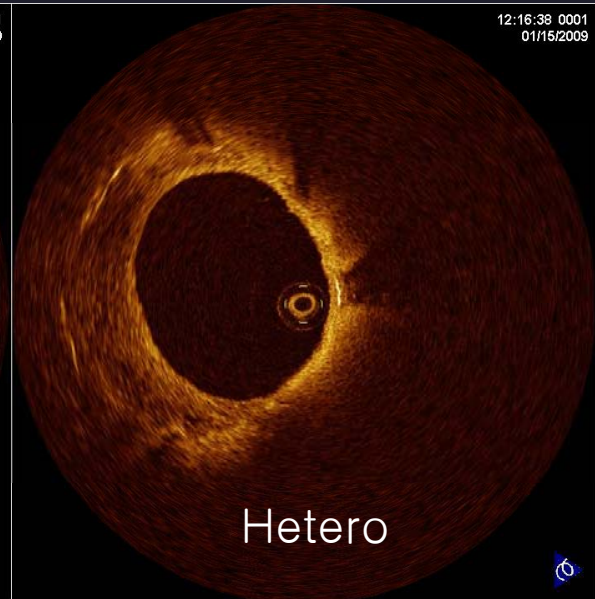
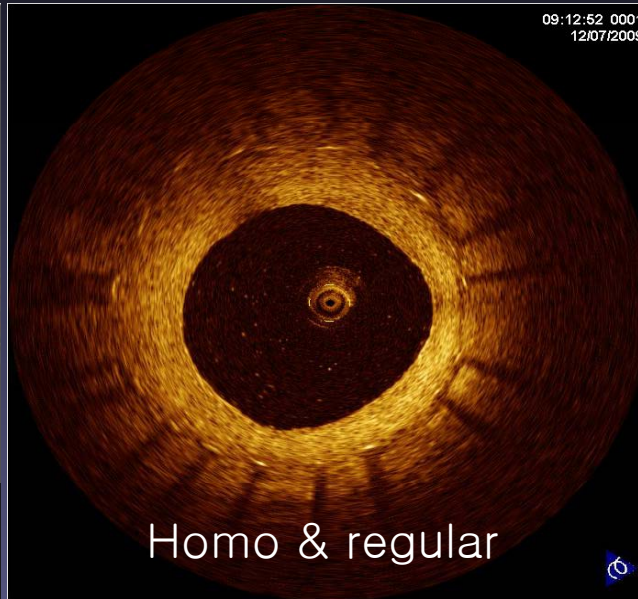
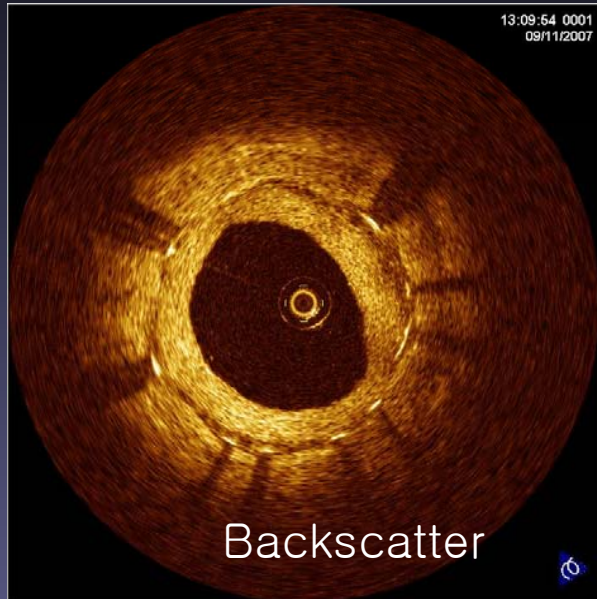
Rhombus with Cover



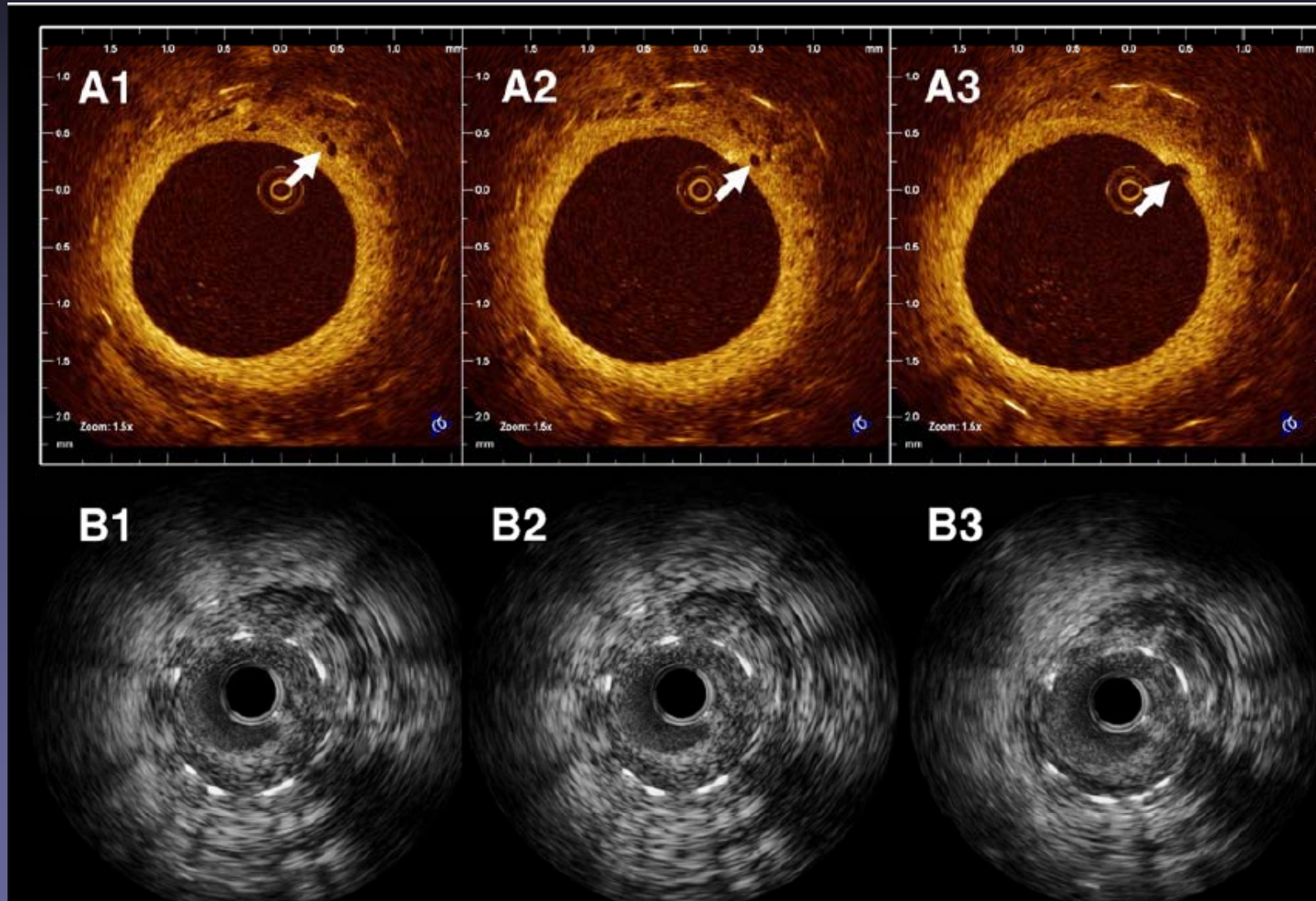
Full Cover



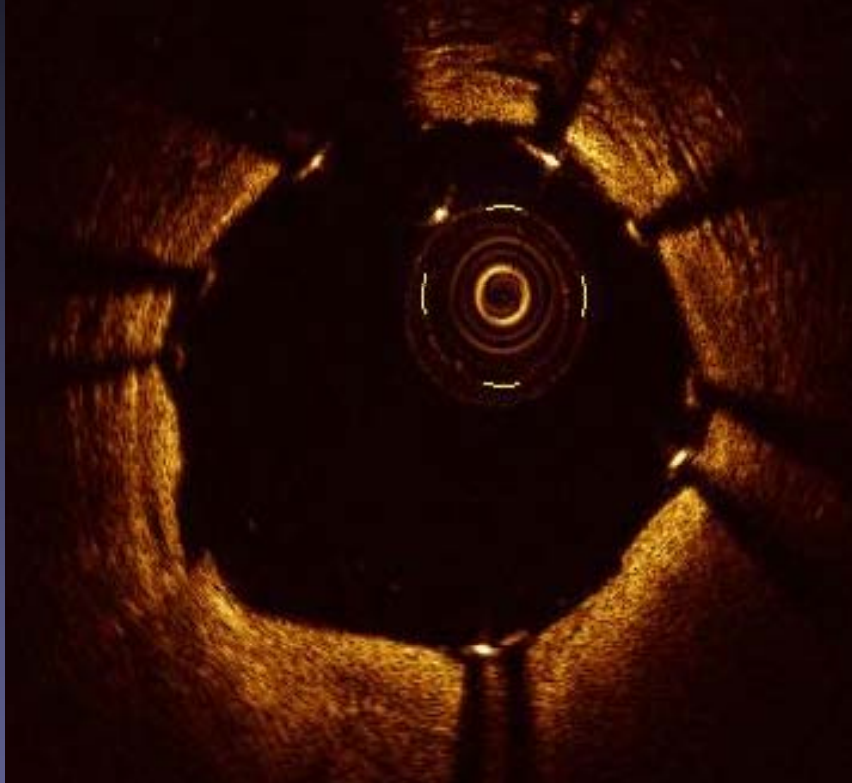
OCT image of Neo-intima



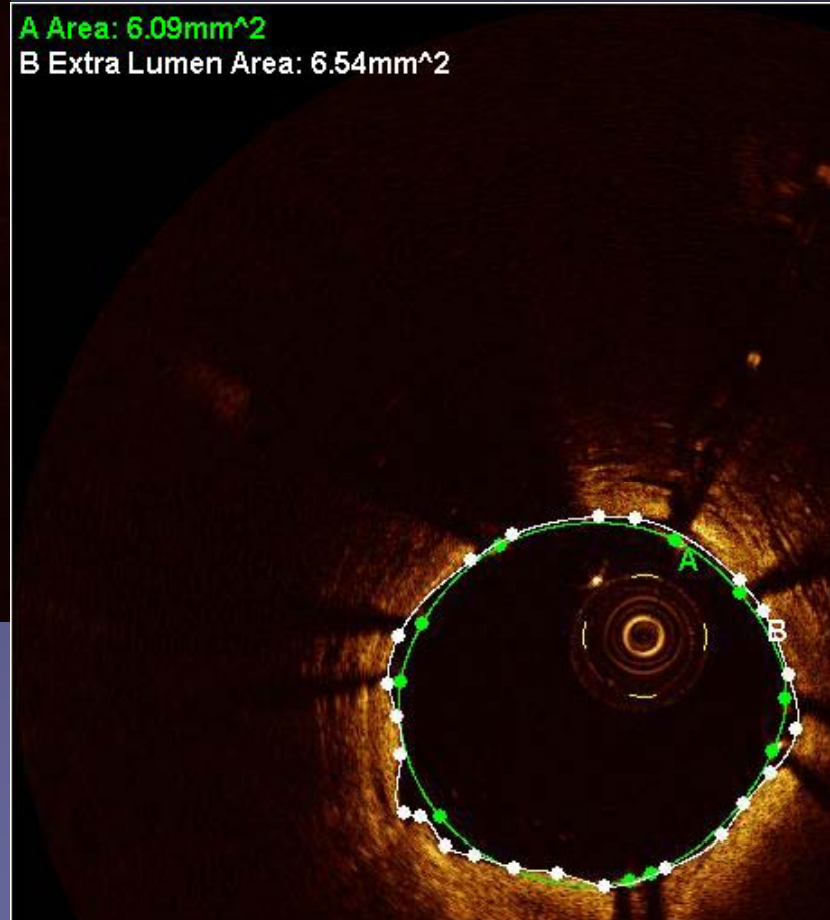
Micro vessels



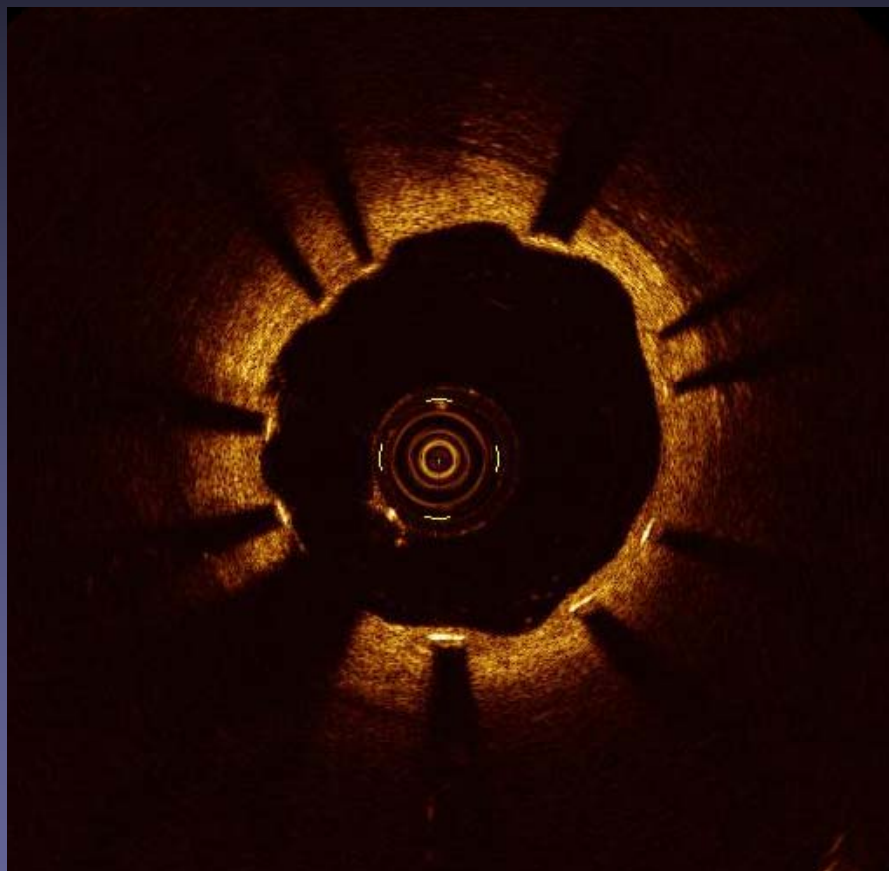
Nobori Post stent



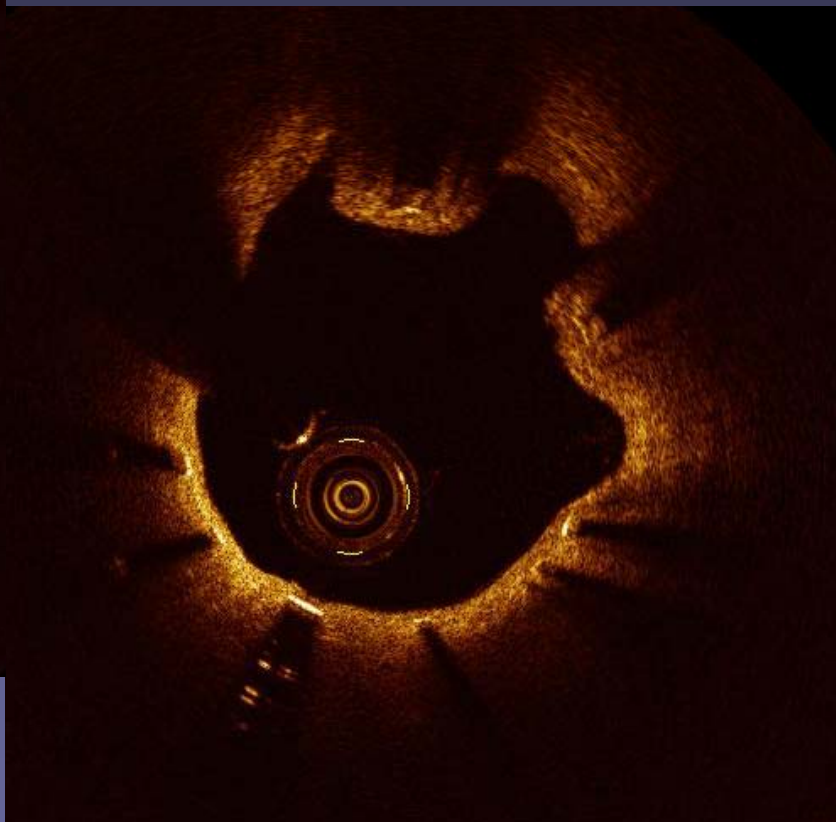
A Area: 6.09mm²
B Extra Lumen Area: 6.54mm²



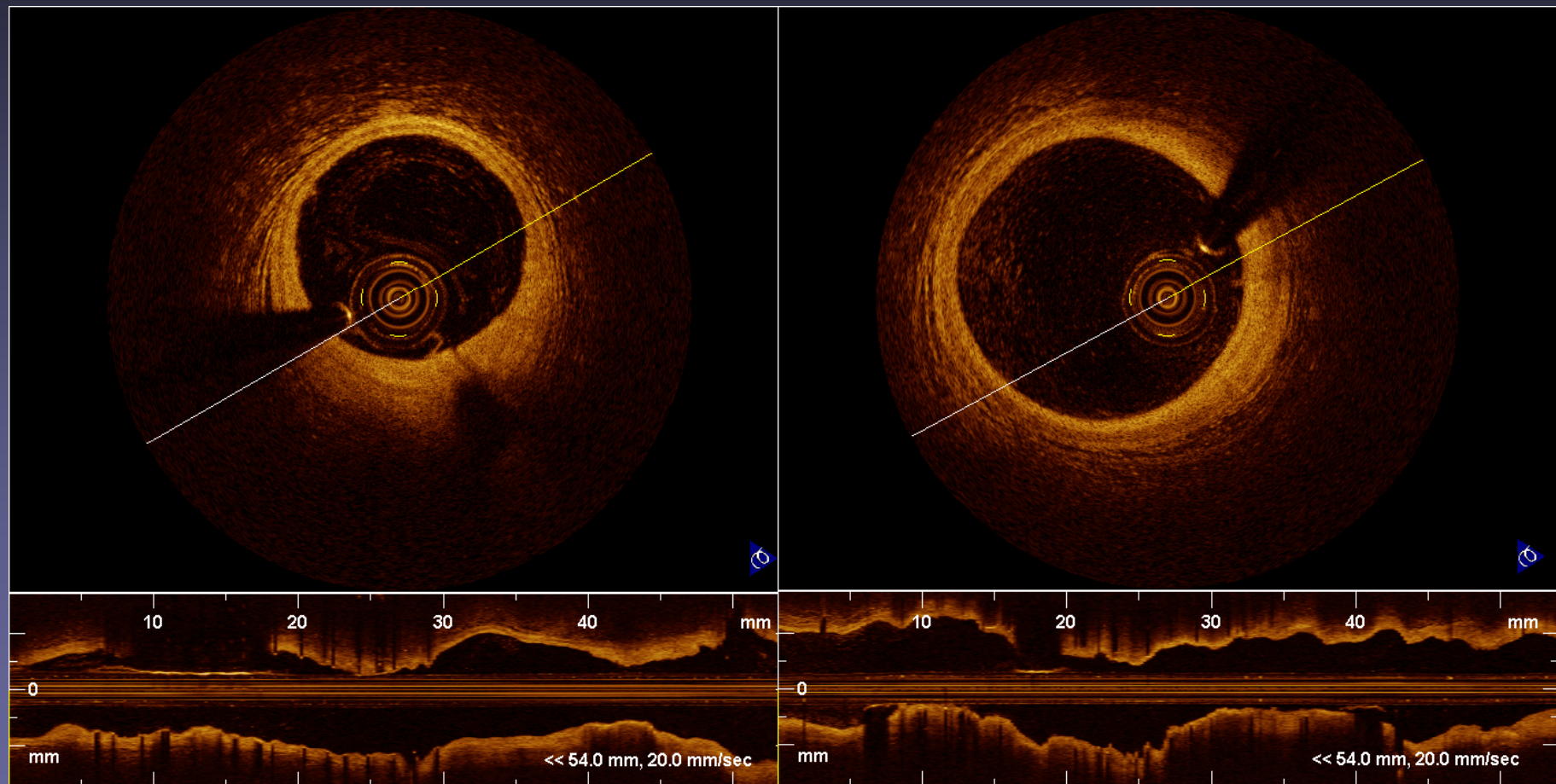
Nobori stent 3M FU



Cypher stent 12M FU



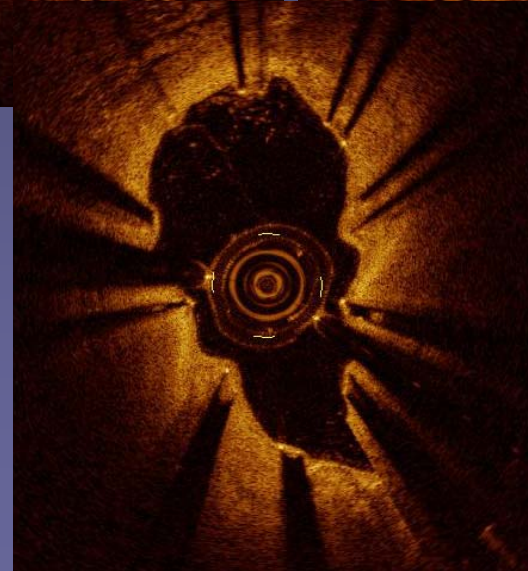
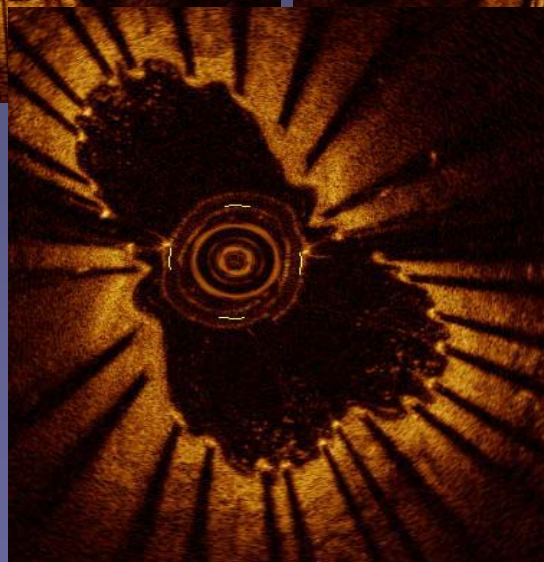
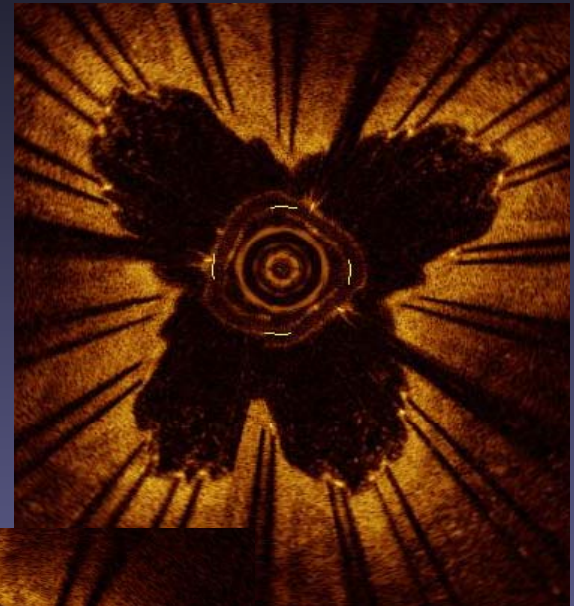
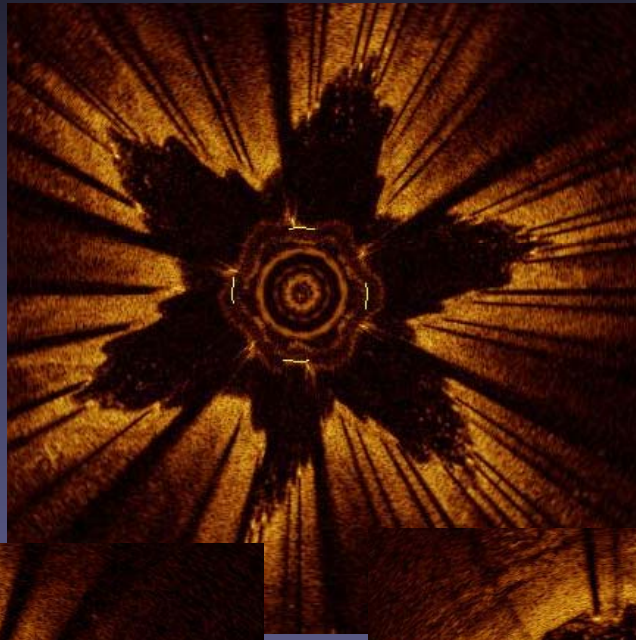
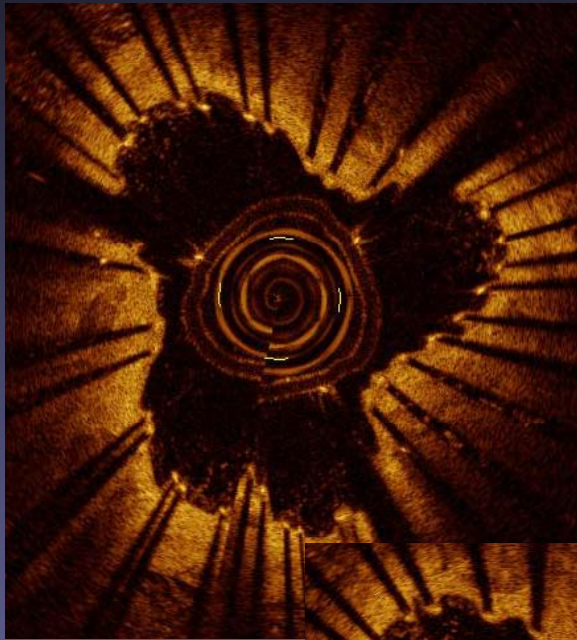
Same patient & different stent



Nobori 3 M

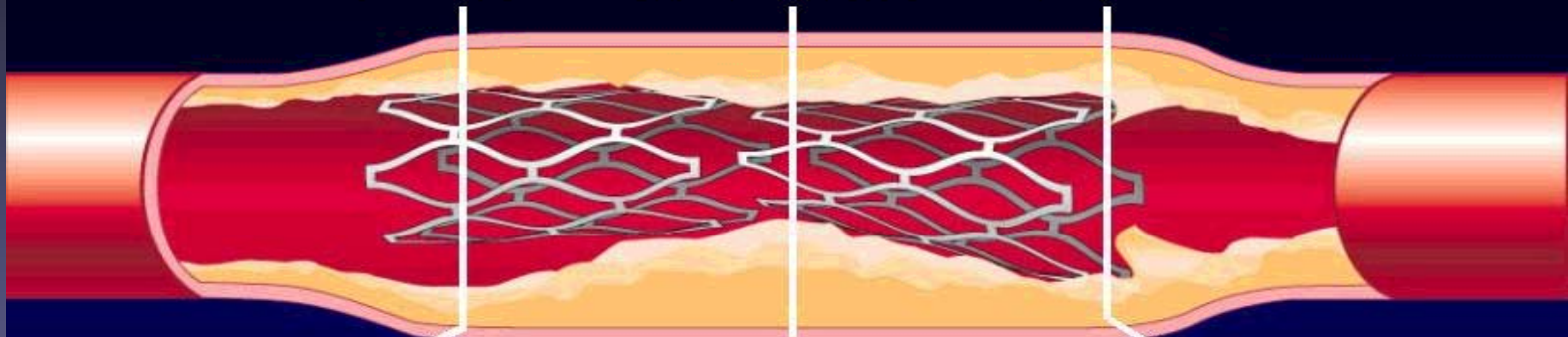
Cypher 12 M

Misconnection! Dragonfly catheter & DOC



Angio=Normal & OCT= Edge Dissection ???

Target Stent Segment IVUS



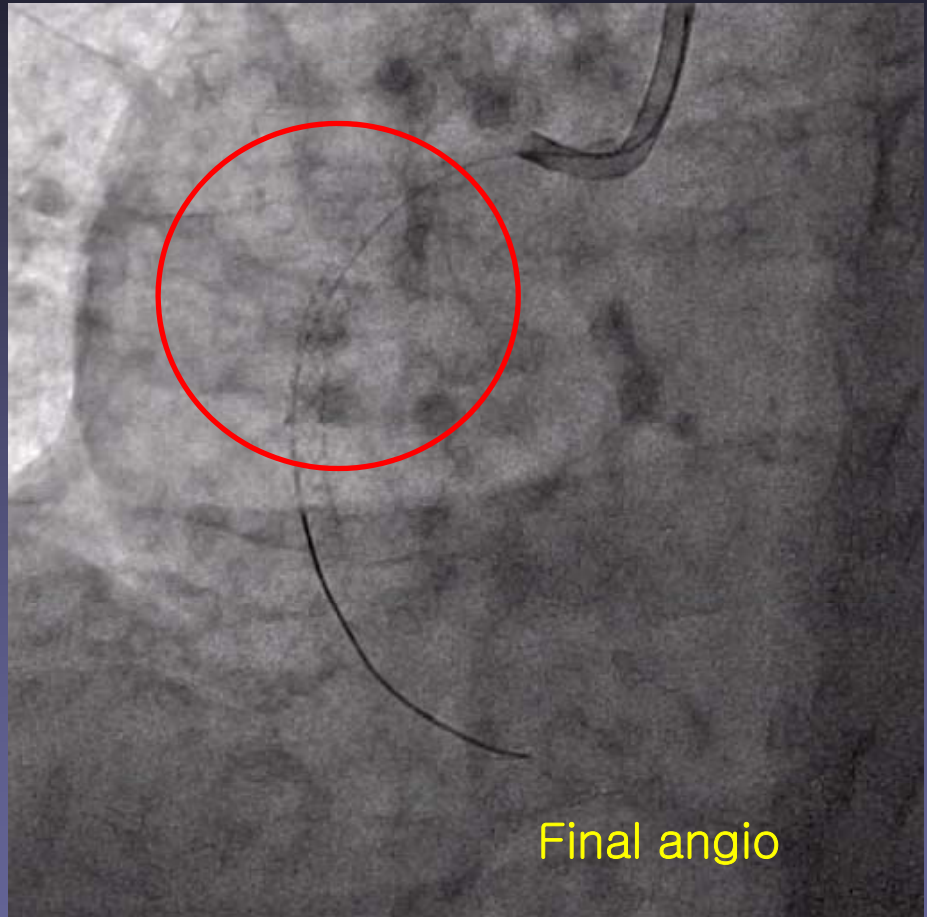
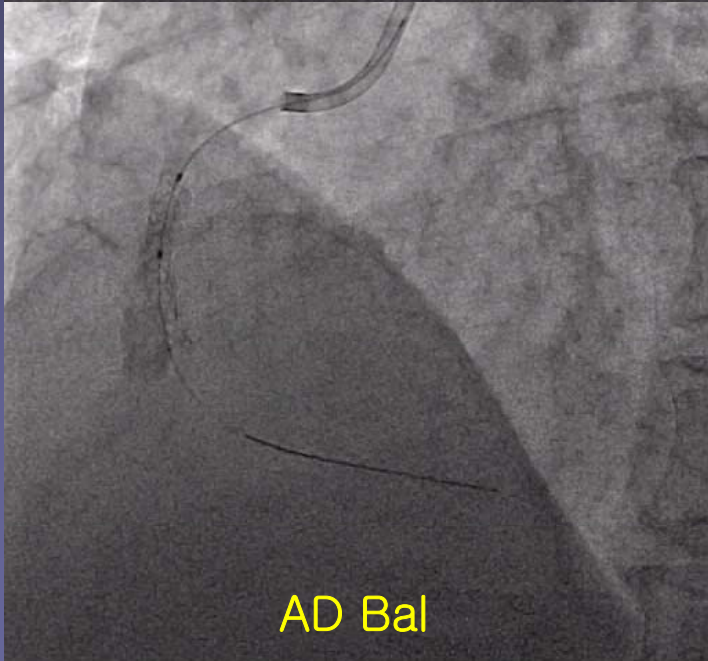
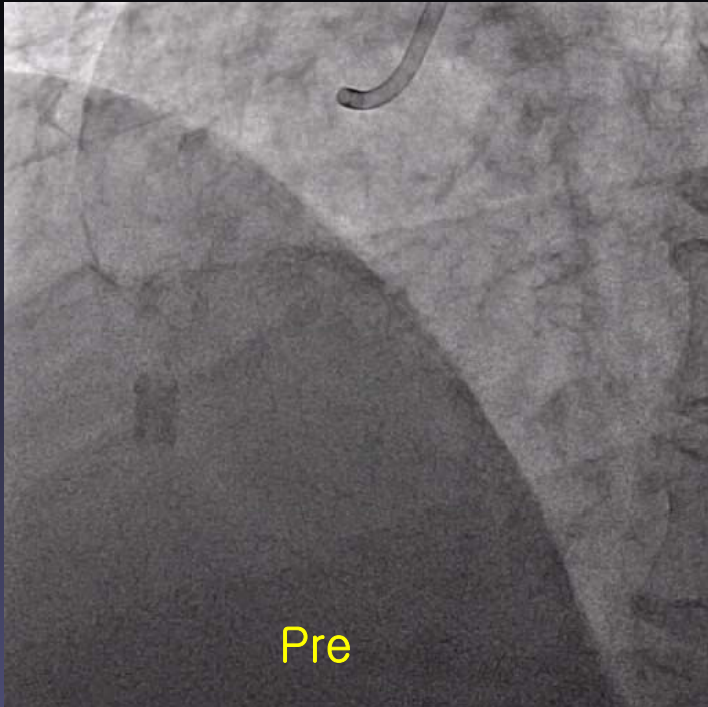
Incomplete Apposition

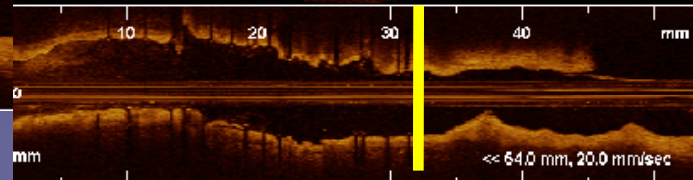
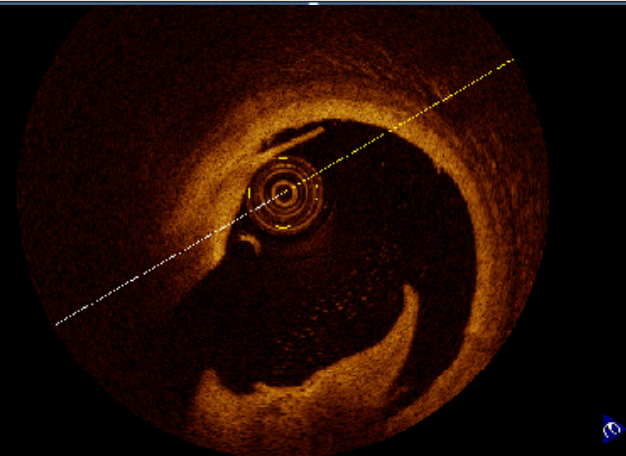
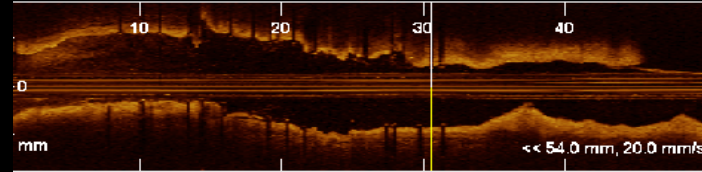
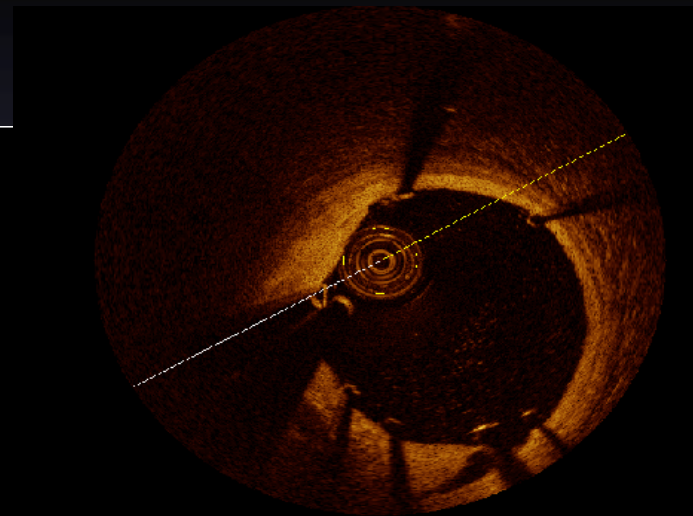
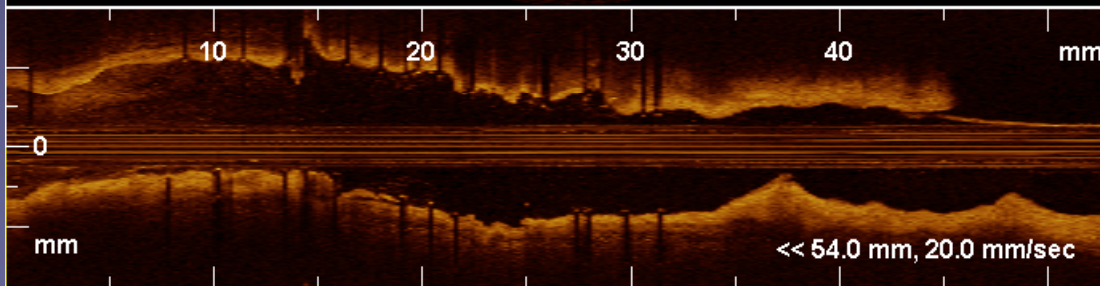
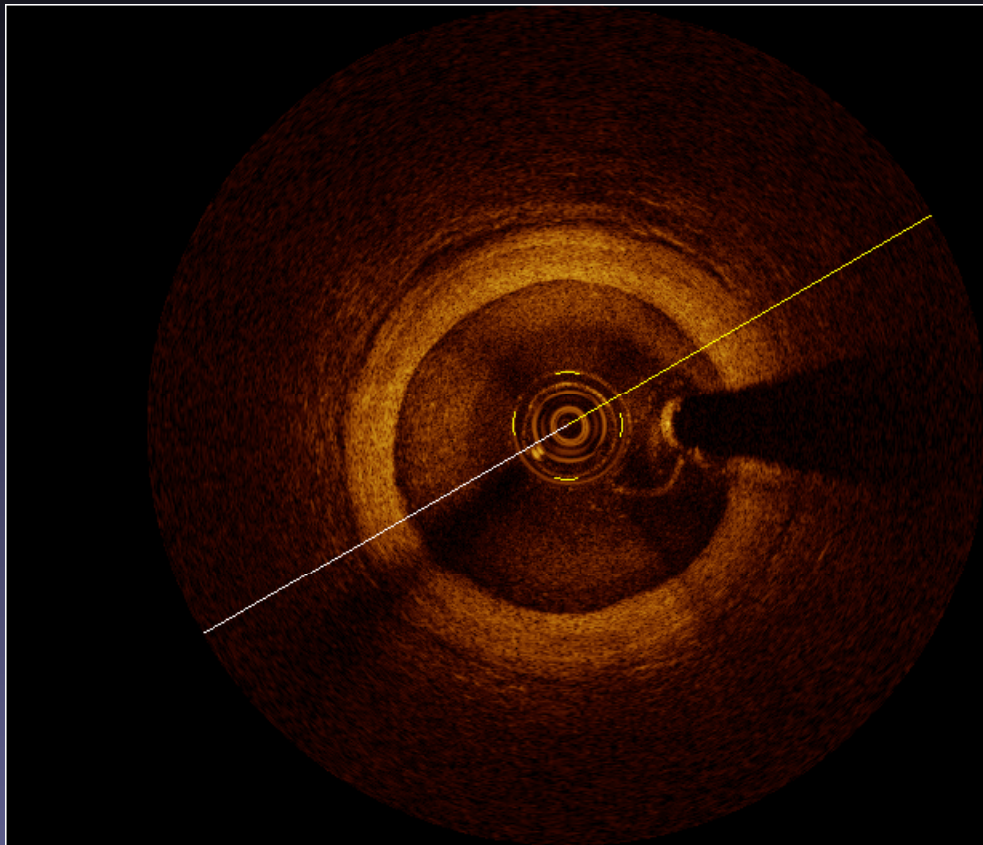


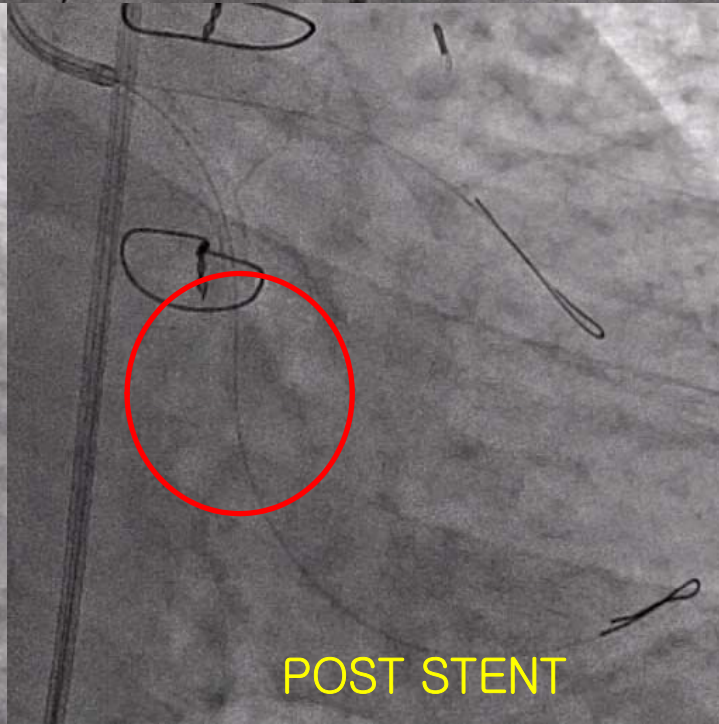
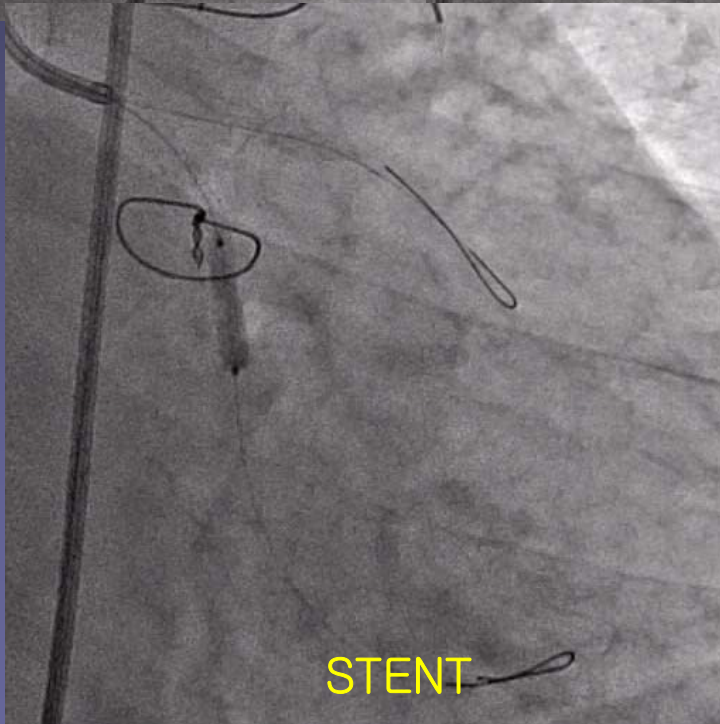
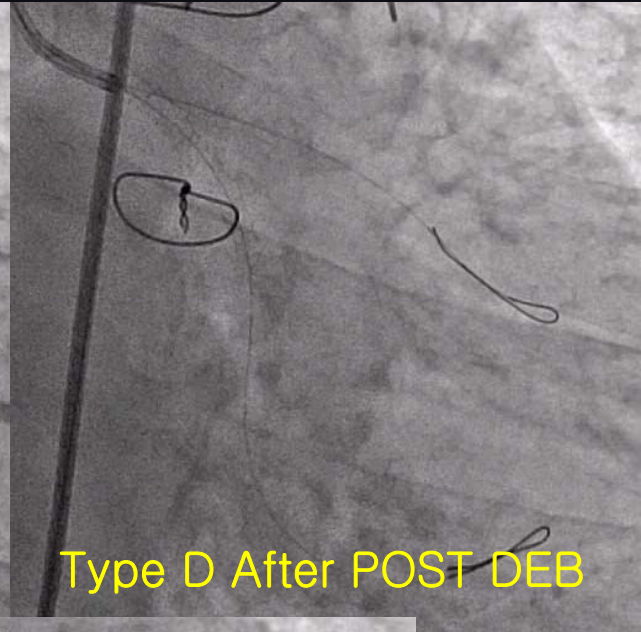
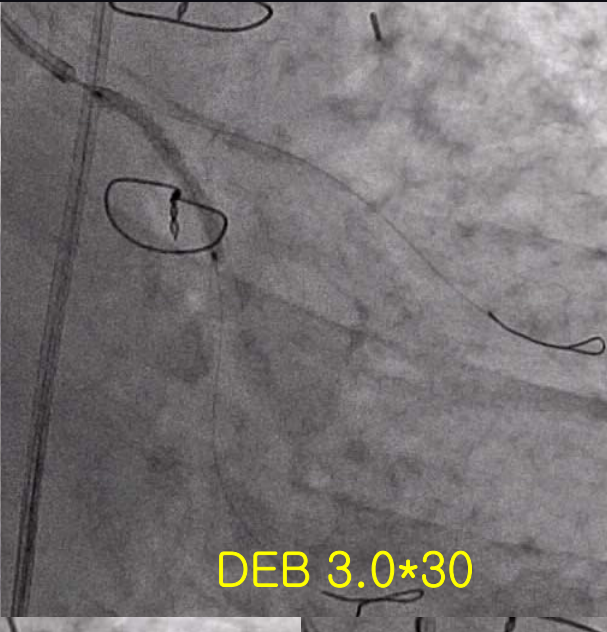
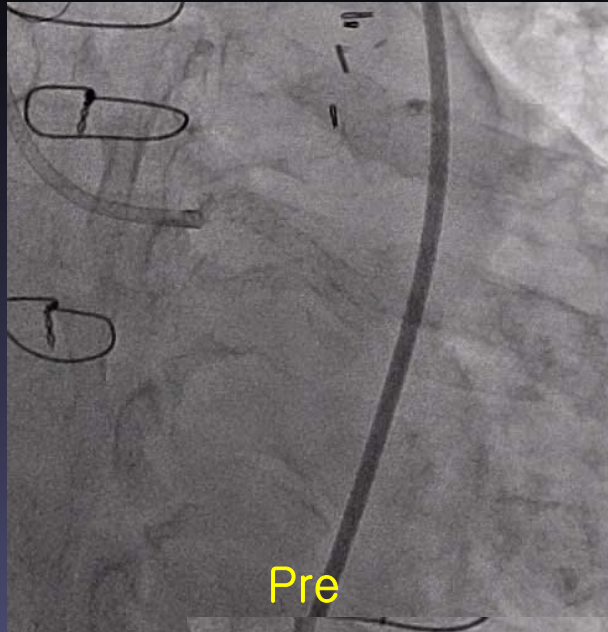
Incomplete Expansion

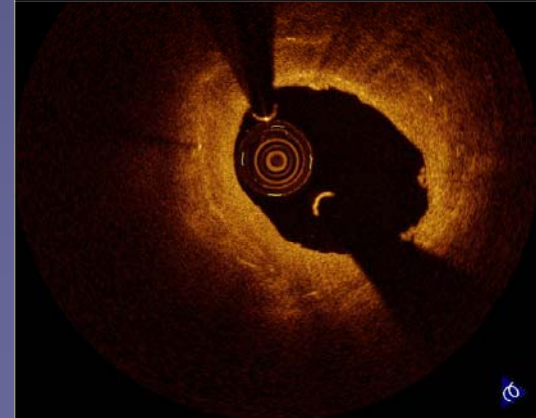
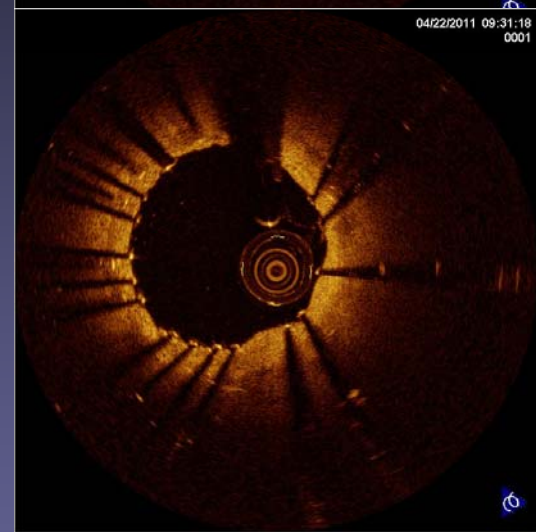
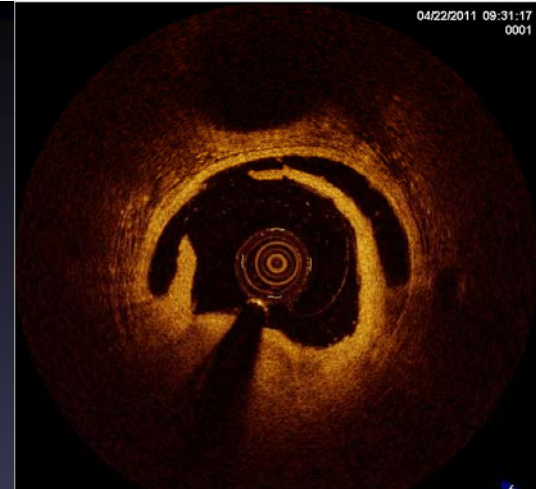
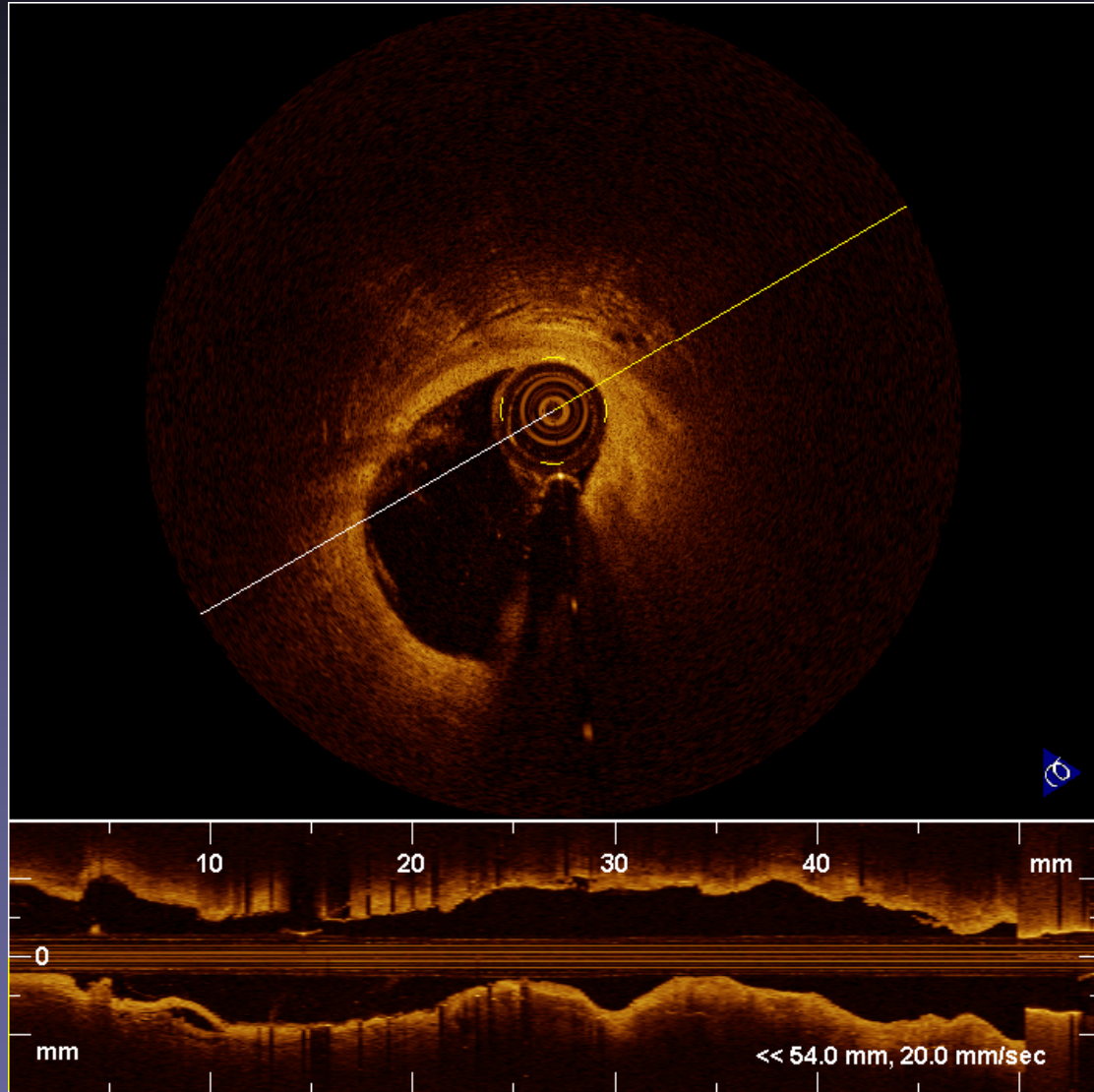


Edge Tear















Prox

E031 Dissection NHLBI classification

Dissection type	Description	Angiographic Appearance
A	Minor radiolucencies within the coronary lumen during contrast injection with minimal or no persistence after dye clearance.	
B	Parallel tracts or double lumen separated by a radiolucent area during contrast injection with minimal or no persistence after dye clearance.	
C	Extraluminal cap with persistence of contrast after dye clearance from the coronary lumen.	
D	Spiral luminal filling defects.	
E +	New persistent filling defects.	
F +	Those non-A-E types that lead to impaired flow or total occlusion.	

+ May represent thrombus