

# Physiology-Guided Decision Making for Complex PCI

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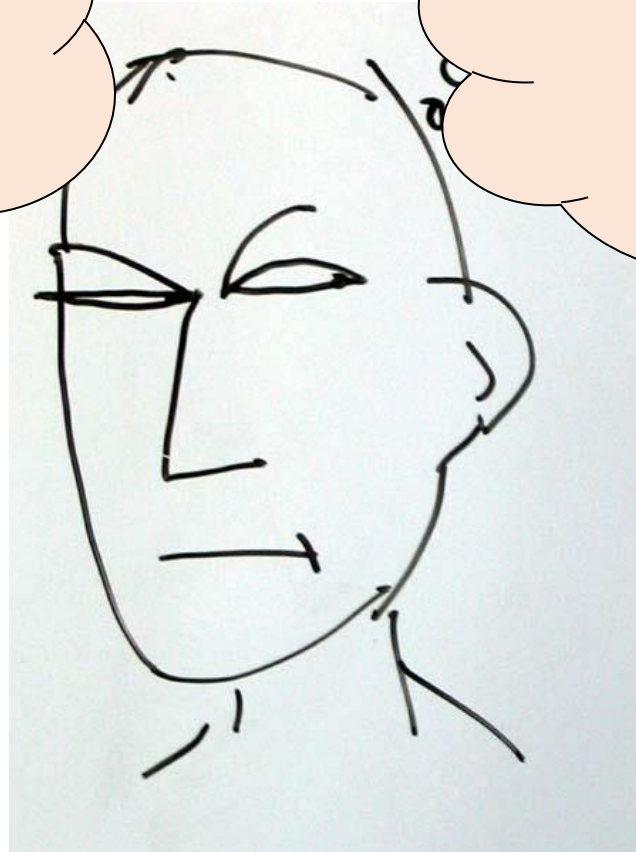
# “Physiology” for “Complex PCI”?

Physiology itself is complex.

Therefore, any physiology-guided PCI is “Complex PCI”.

Invasive physiologic study is only for intermediate or simple lesions, or for researches.

There will be no role of physiology for complex PCI.

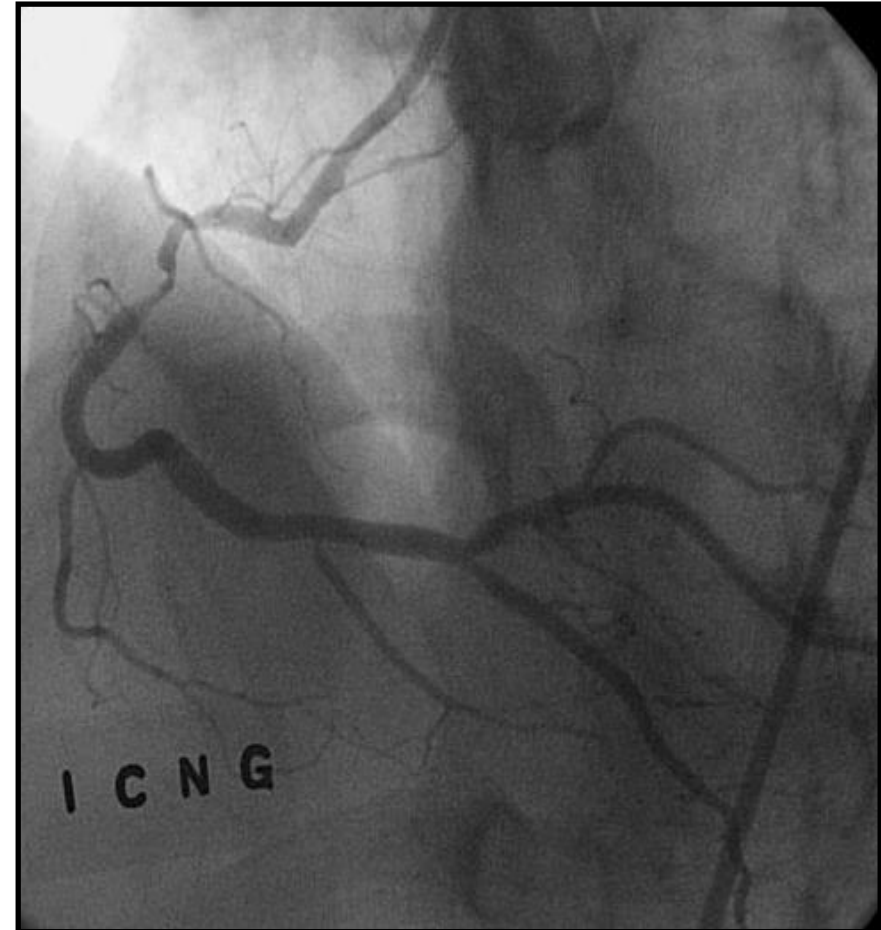
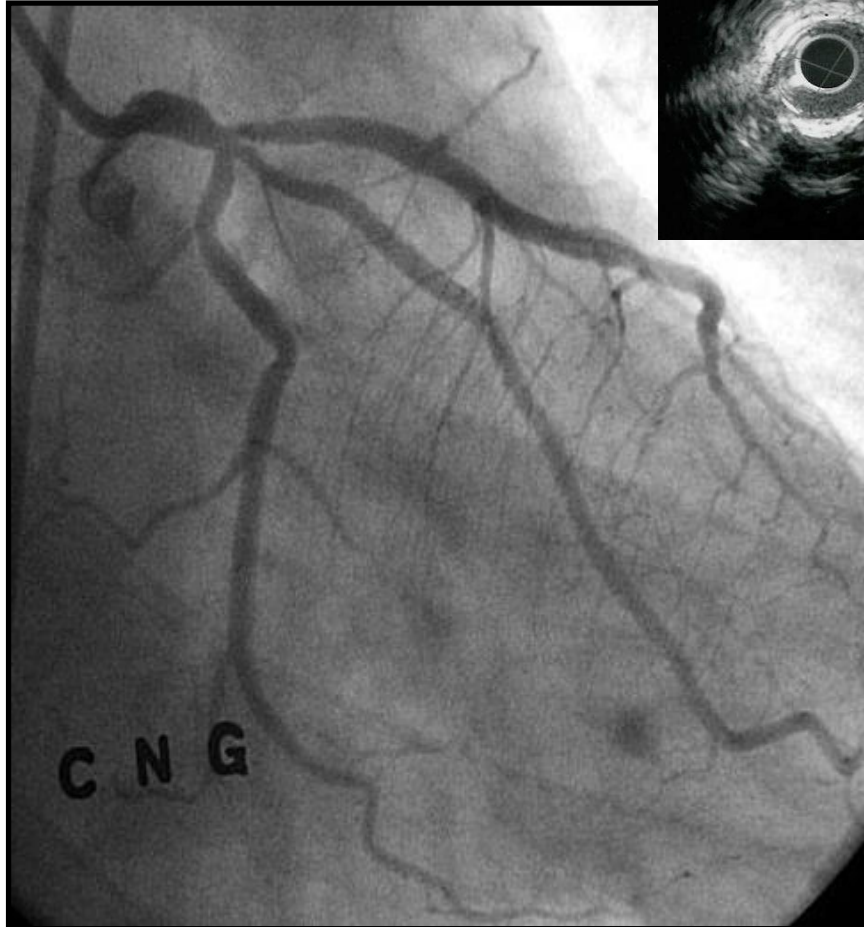
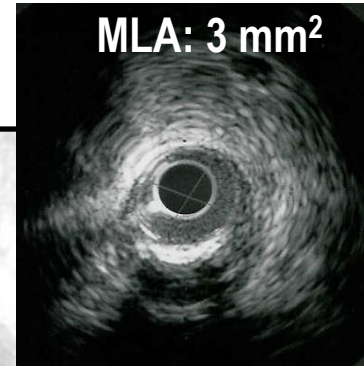


# Physiology in Complex PCI

- **Left main and/or Bifurcation lesions**
- Multi-lesion, Multi-vessel disease, Diffuse lesion
- Post-revascularization
- Complex disease – congenital anomaly

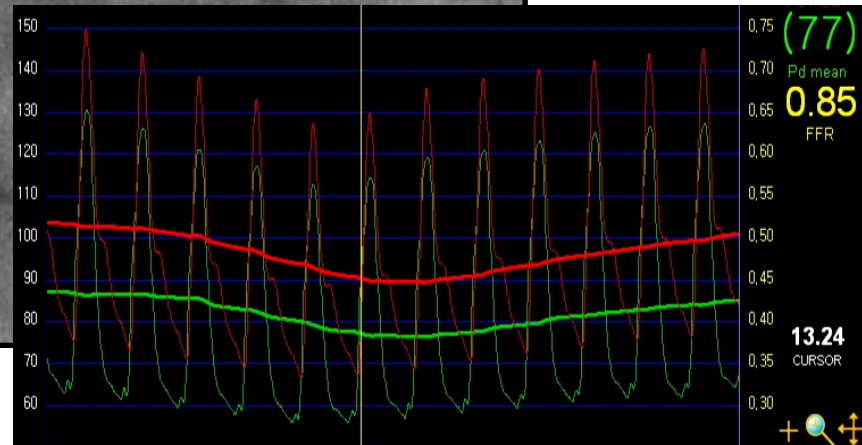
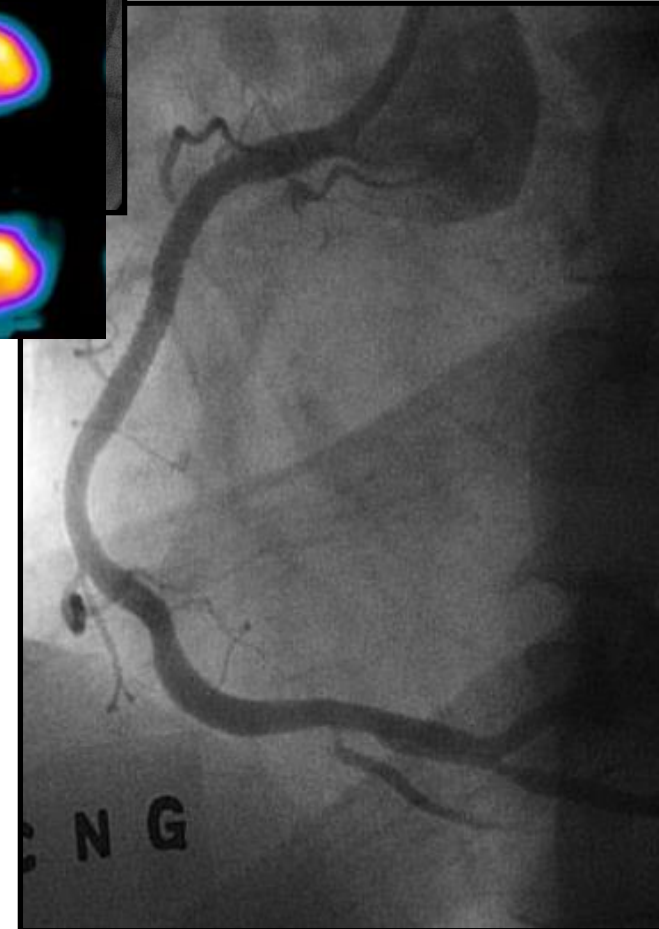
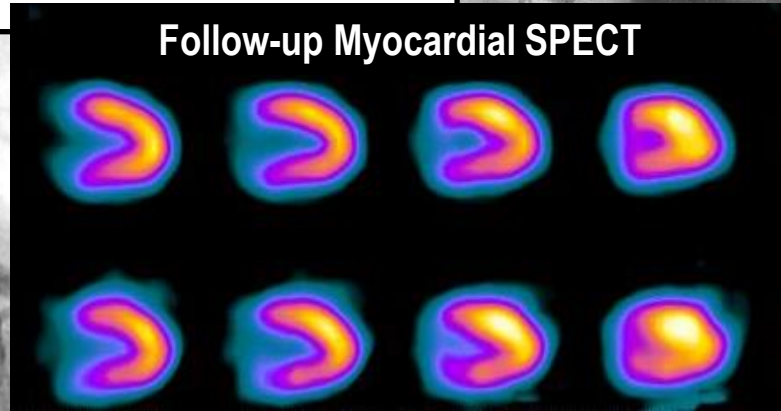
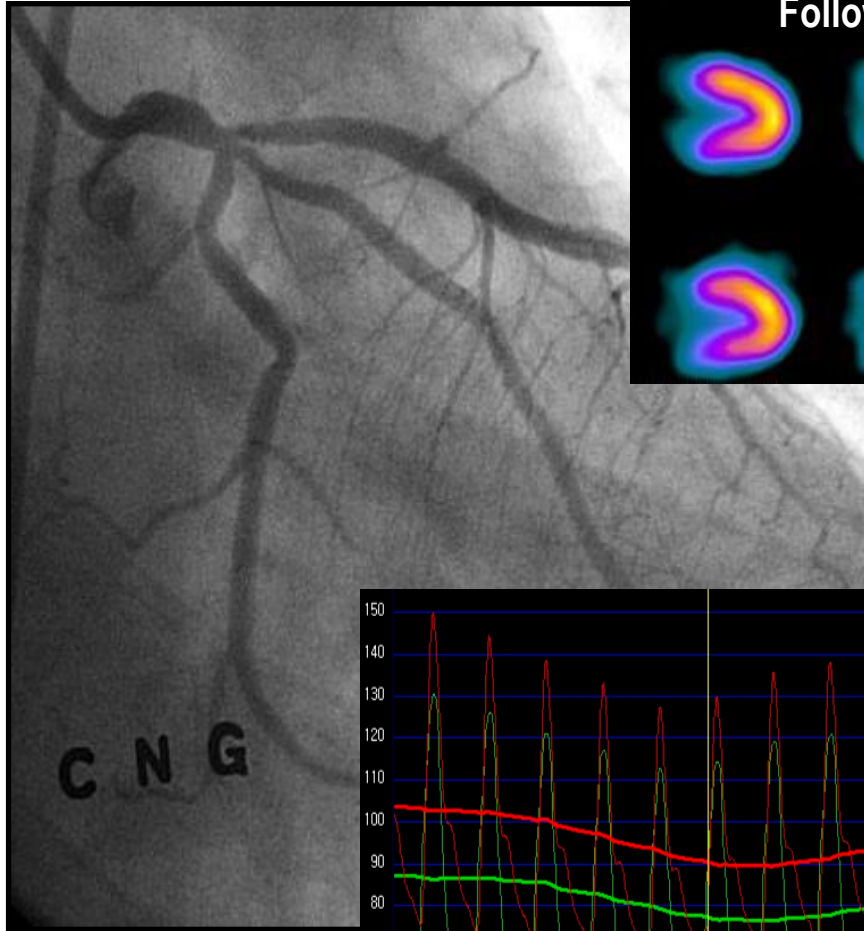
# Complex PCI case: Which technique for distal LM disease?

M/63 Unstable angina



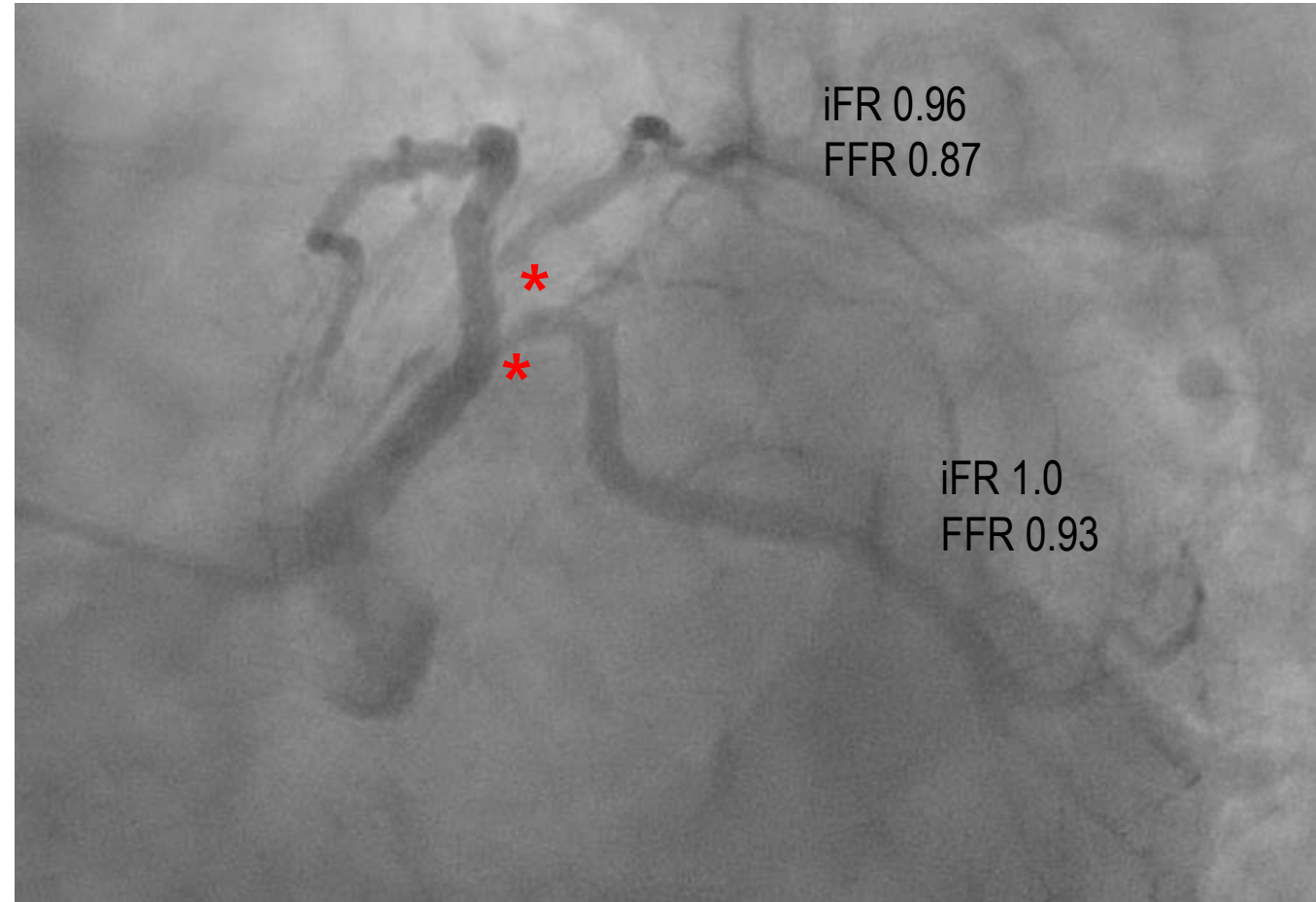
# ~~Complex PCI case: Which technique for distal LM disease?~~

M/63 Unstable angina





# ~~Complex PCI~~ for 14-year old jailed LCX & diagonal branch



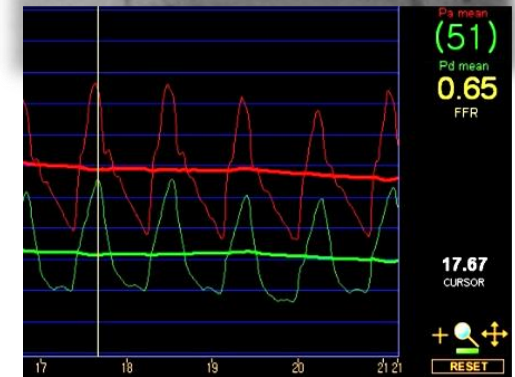
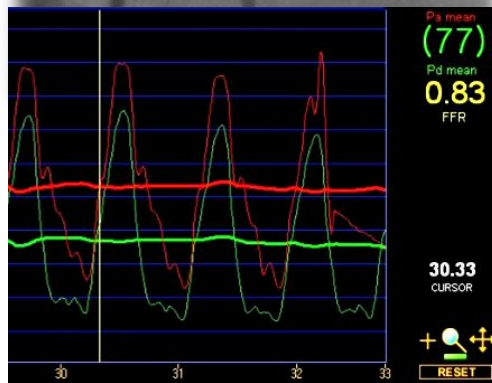
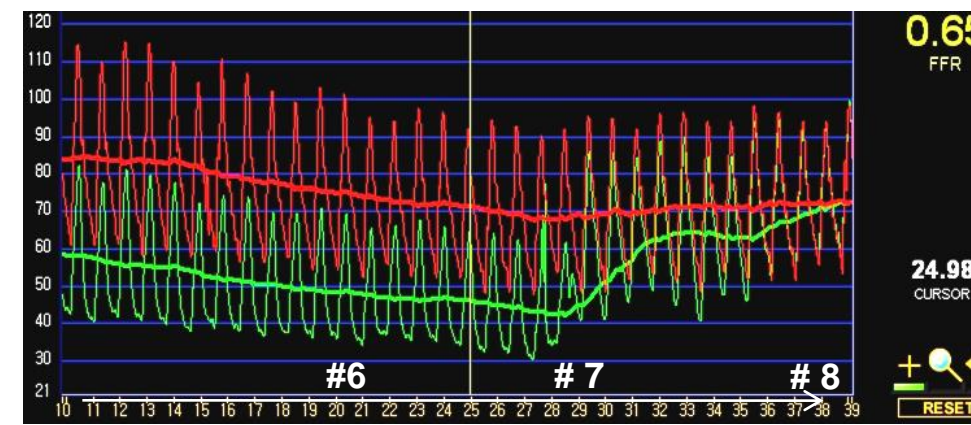
Left main to LAD Cypher 14 years ago

# Physiology in Complex PCI

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# Multi-vessel, multi-lesion

F/52 Stable angina



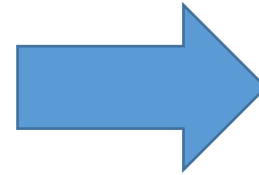
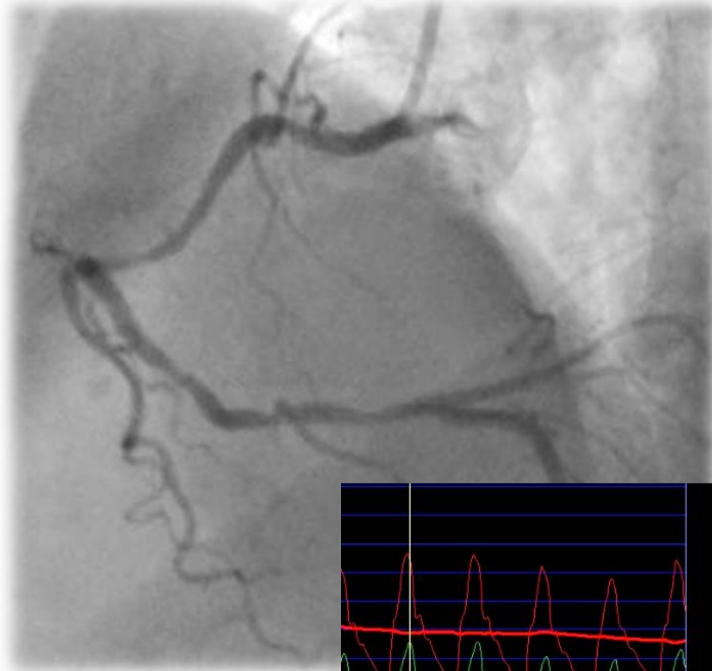
Distal left main disease + 3VD, 8 lesions



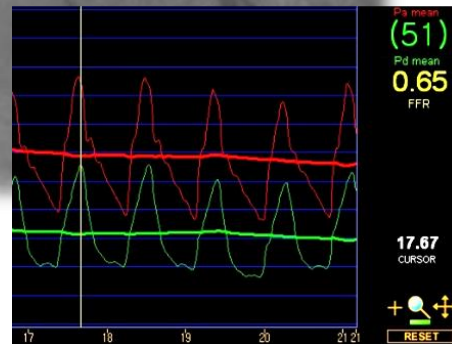
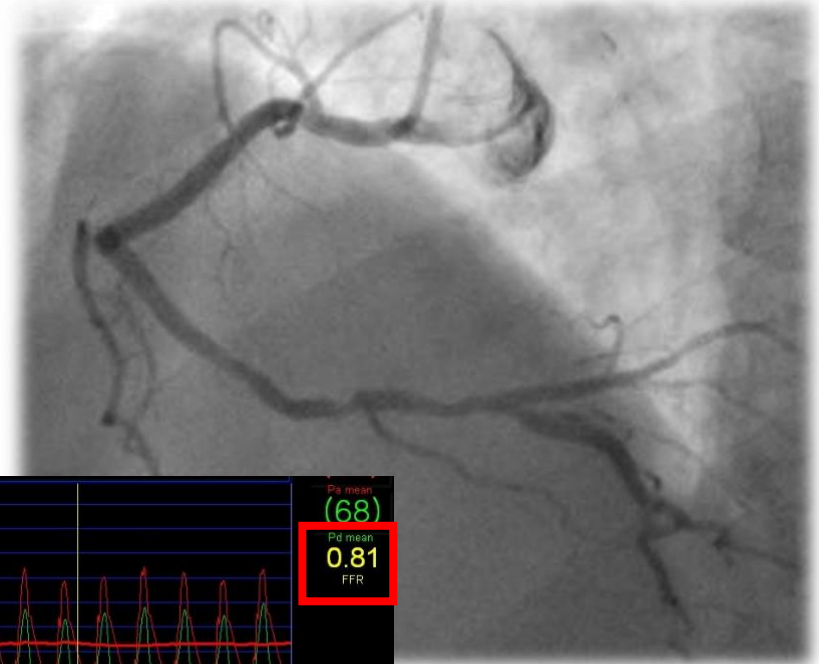
# Multi-vessel, multi-lesion disease

F/52 Stable angina

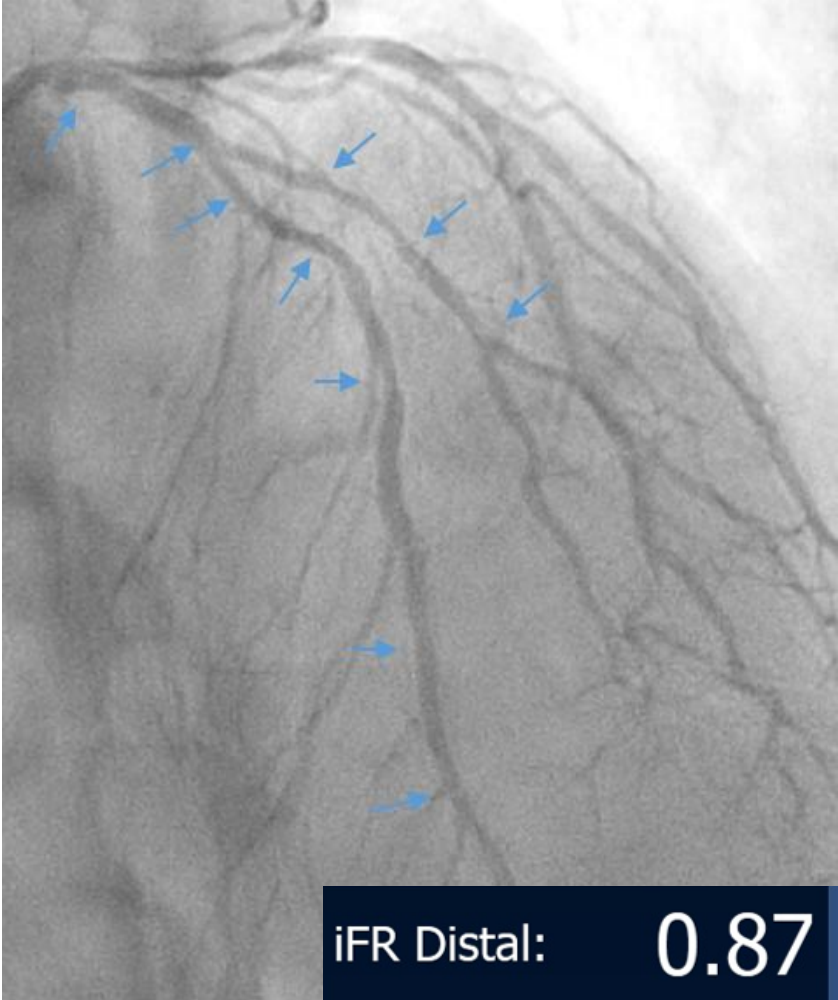
3VD, 8 lesions by coronary angiography



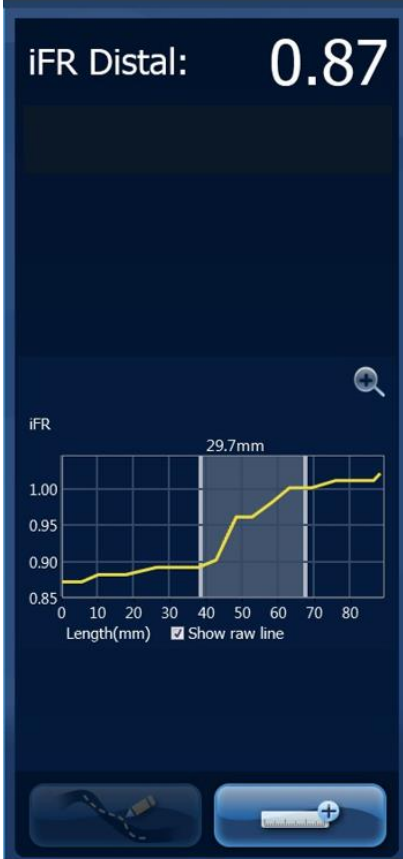
1VD, treated with 1 DES by FFR-guidance



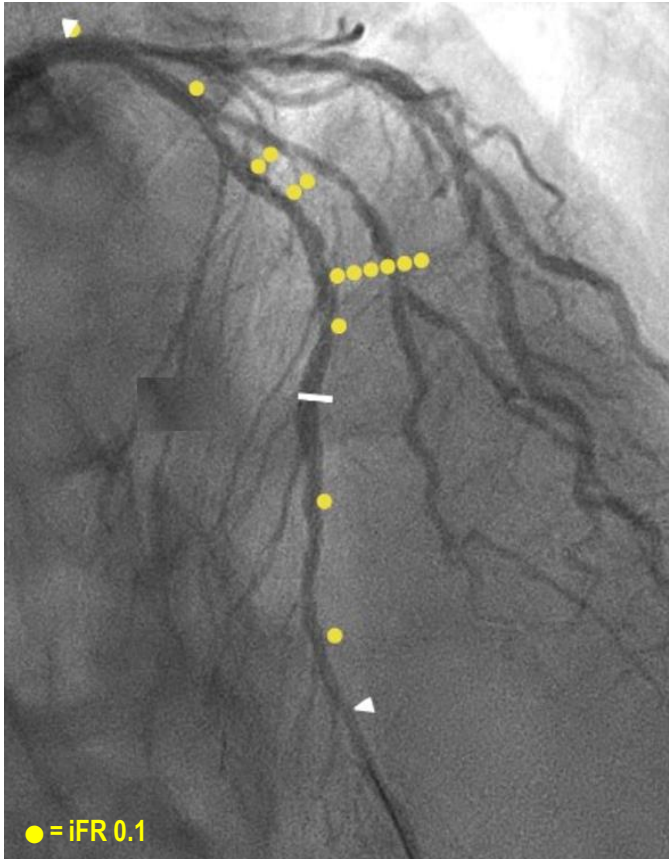
# Full metal jacket including complex bifurcation PCI?



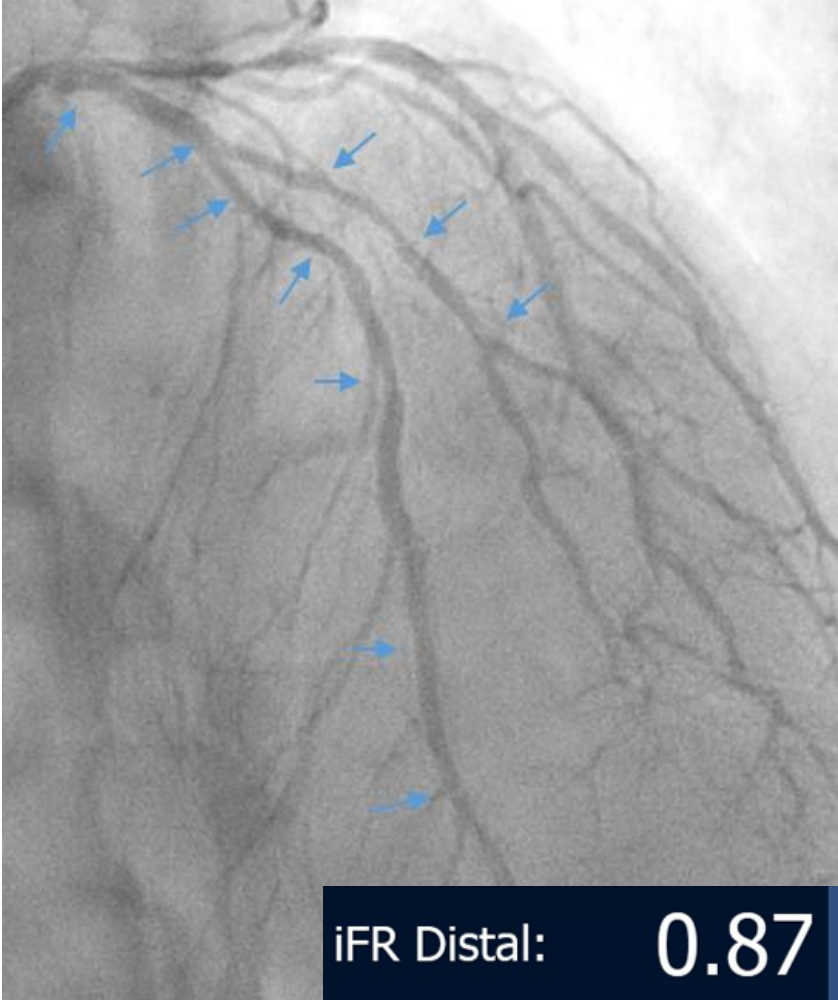
iFR pullback



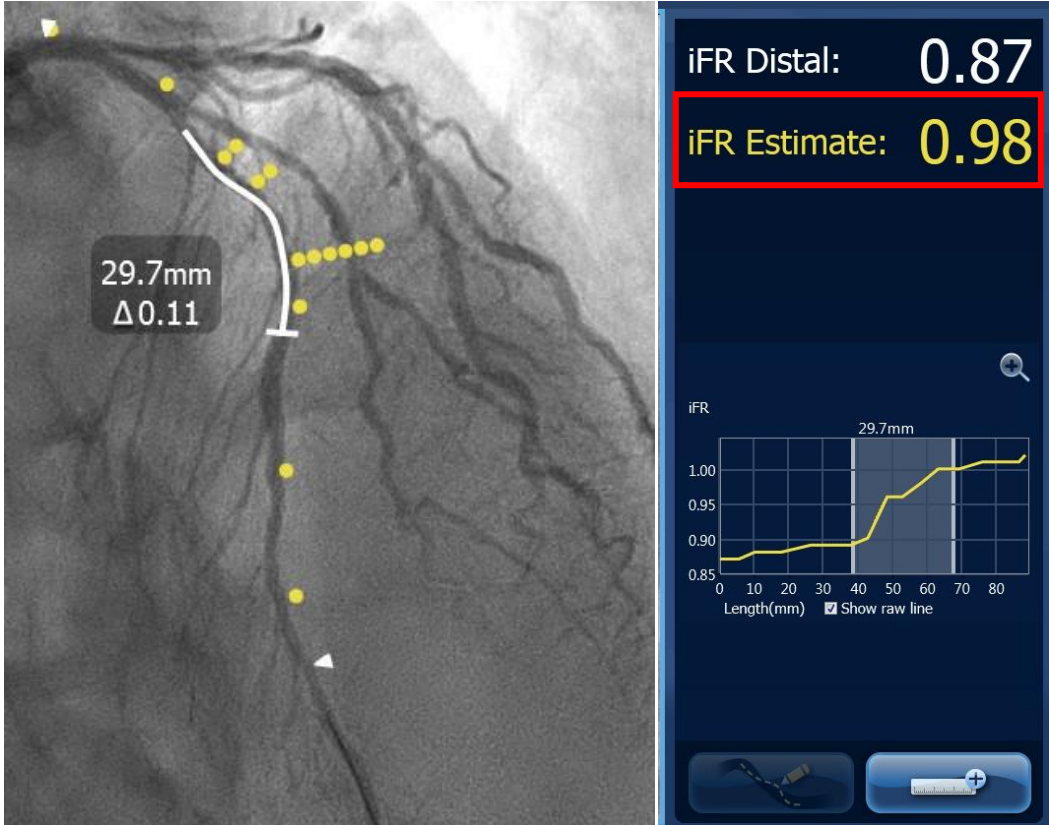
Co-registration with angiogram



# Full metal jacket including complex bifurcation PCI?



Single stent will be enough!



# Physiology in Complex PCI

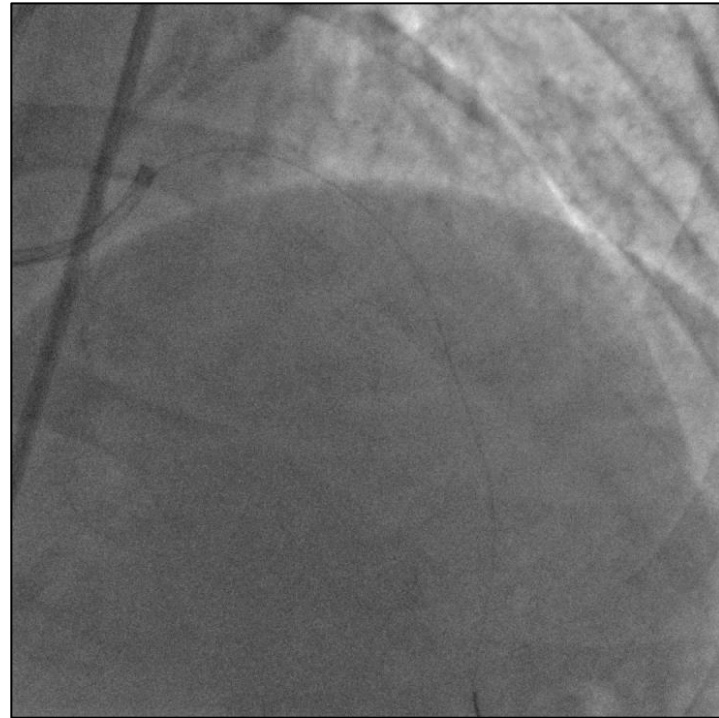
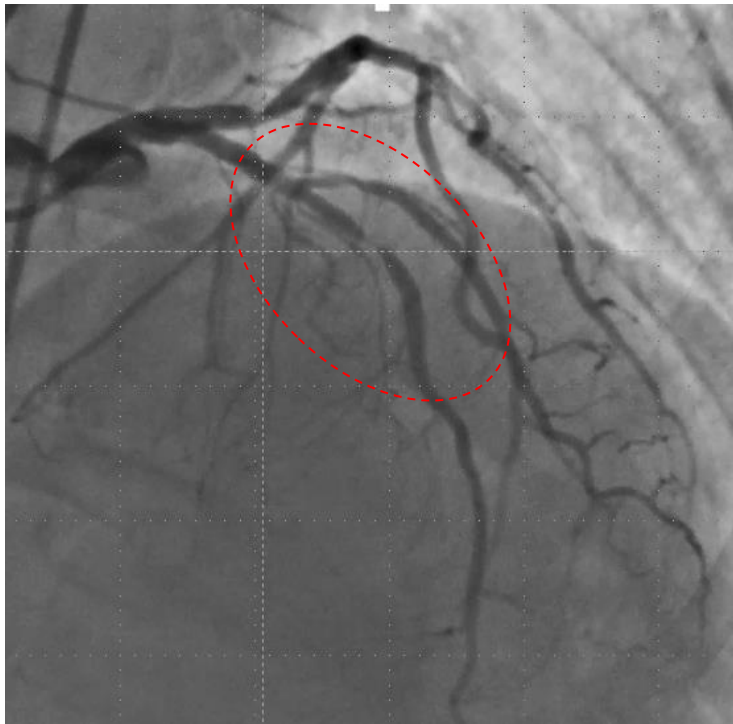
- Left main and/or Bifurcation lesions
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Courtesy of, Dr ES Shin, Korea

# Acceptable results for DCB?

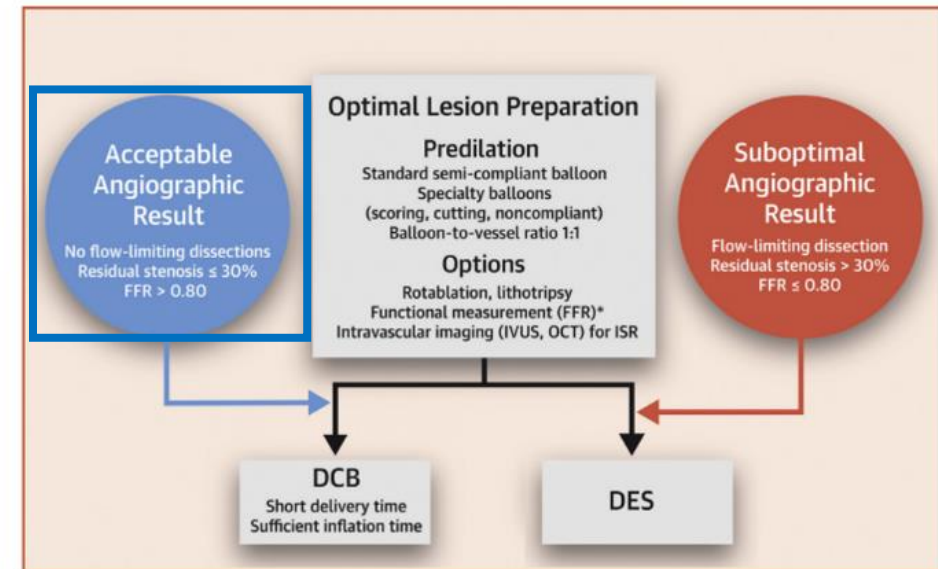


After balloon angioplasty

## Drug-Coated Balloons for Coronary Artery Disease

### Third Report of the International DCB Consensus Group

Raban V. Jeger, MD,<sup>a</sup> Simon Eccleshall, MD,<sup>b</sup> Wan Azman Wan Ahmad, MD,<sup>c</sup> Junbo Ge, MD,<sup>d</sup> Tudor C. Poerner, MD,<sup>e</sup> Eun-Seok Shin, MD,<sup>f</sup> Fernando Alfonso, MD,<sup>g</sup> Azeem Latib, MD,<sup>h</sup> Paul J. Ong, MD,<sup>i</sup> Tuomas T. Rissanen, MD,<sup>j</sup> Jorge Saucedo, MD,<sup>k</sup> Bruno Scheller, MD,<sup>l</sup> Franz X. Kleber, MD,<sup>m</sup> for the International DCB Consensus Group



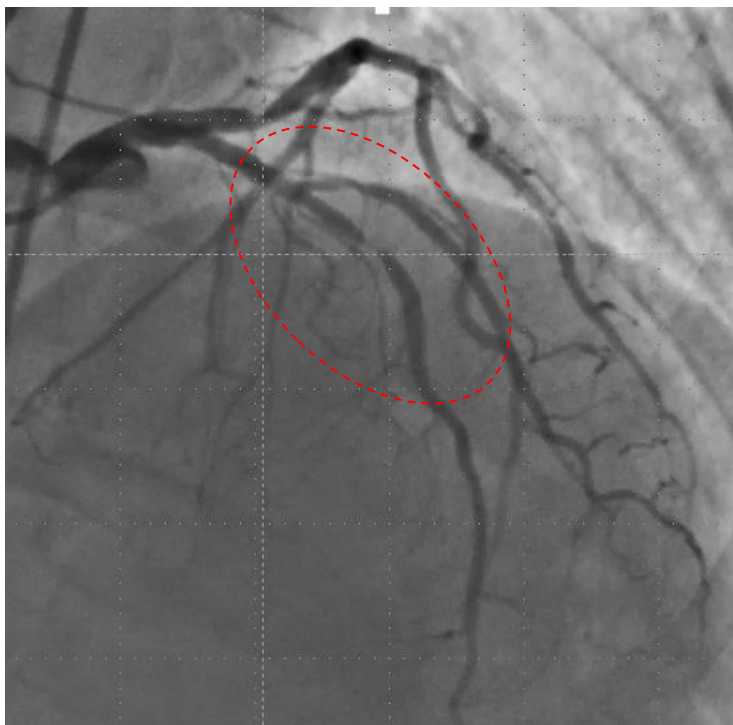
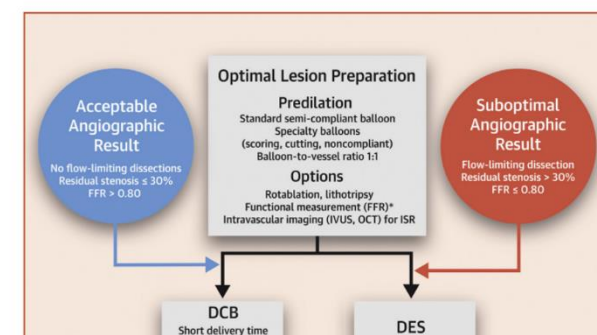
Jeger, R.V. et al. J Am Coll Cardiol Intv. 2020;13(12):1391-402.



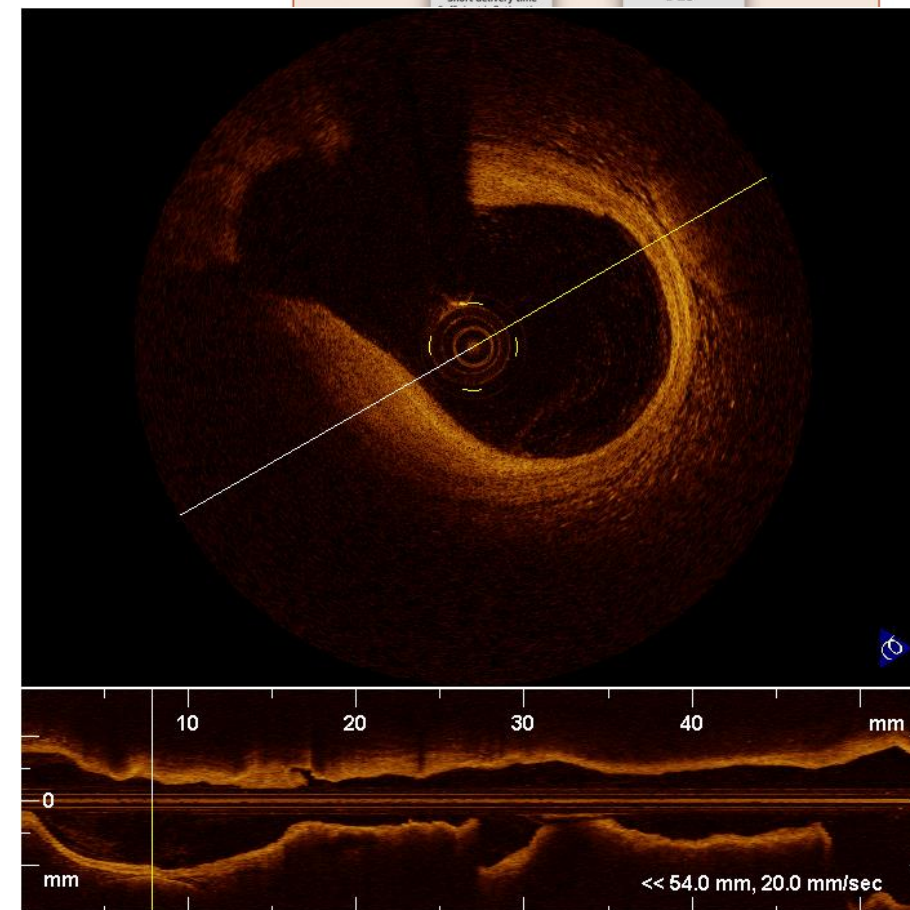


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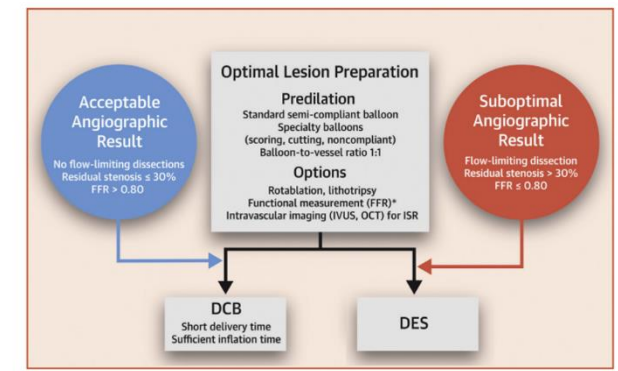
# How to apply these criteria for DCB?



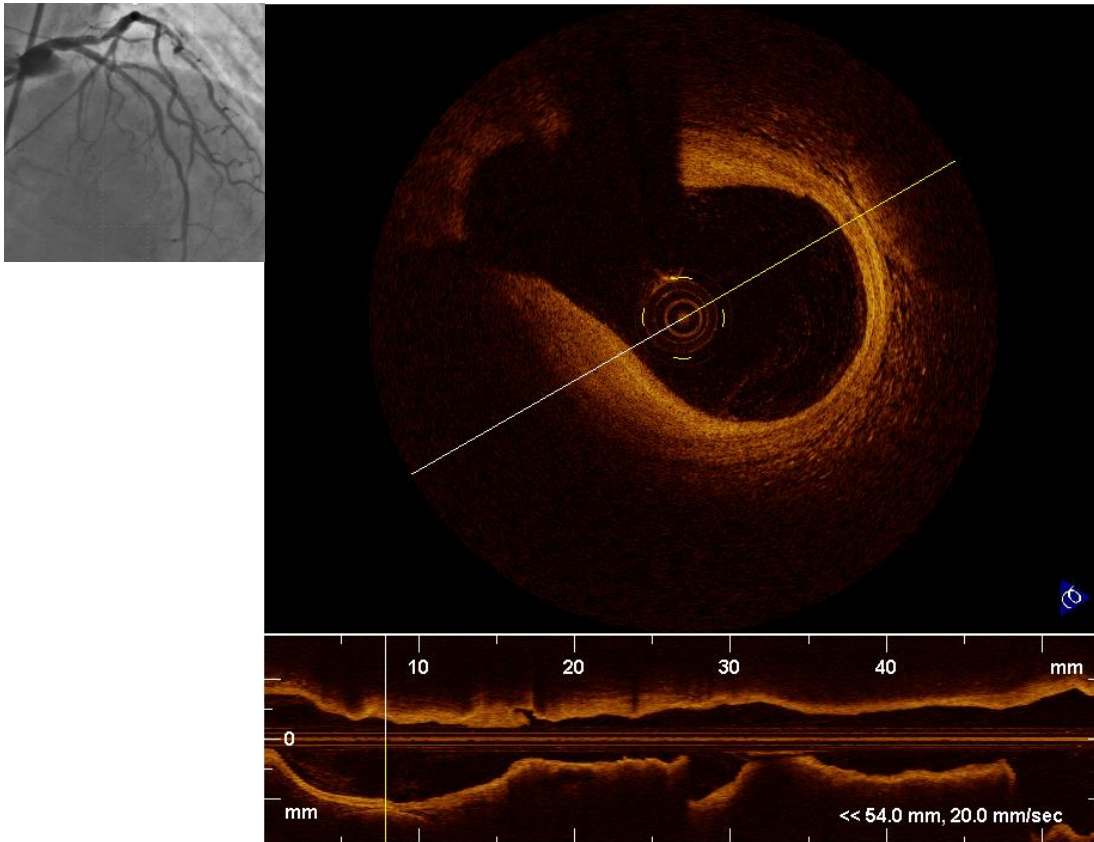
After balloon angioplasty



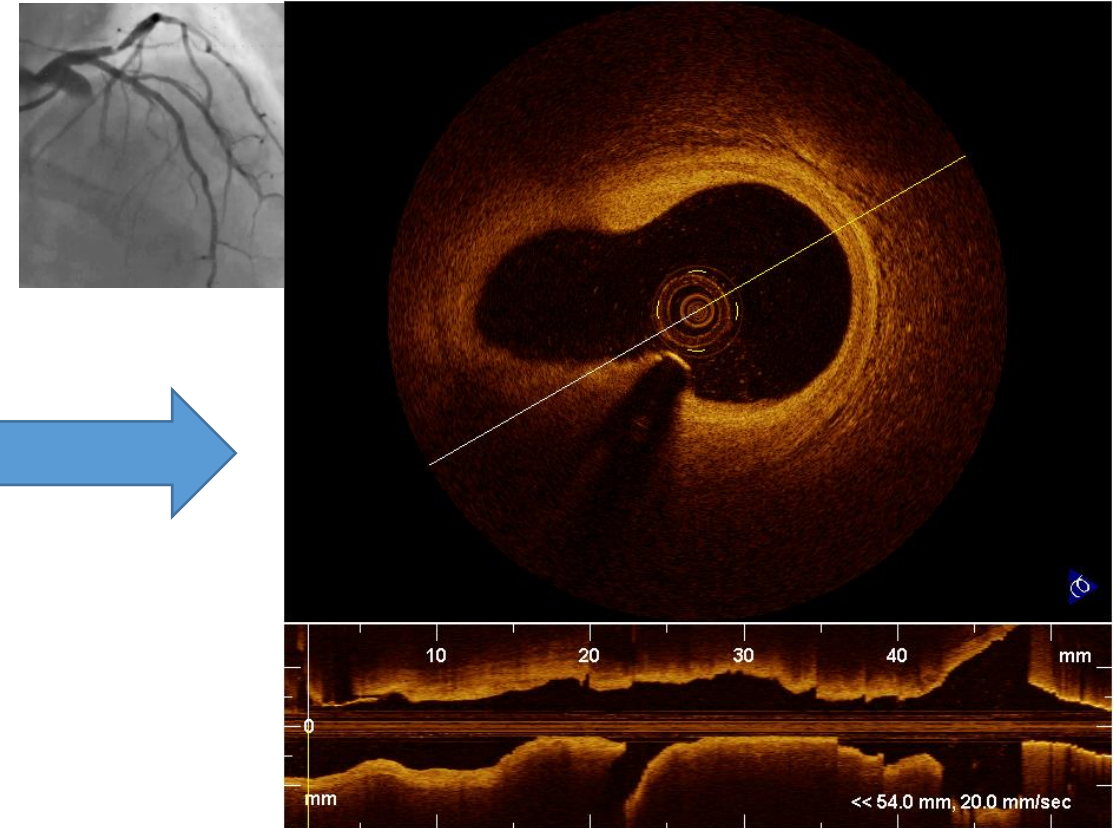
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Post-balloon angioplasty FFR=0.87



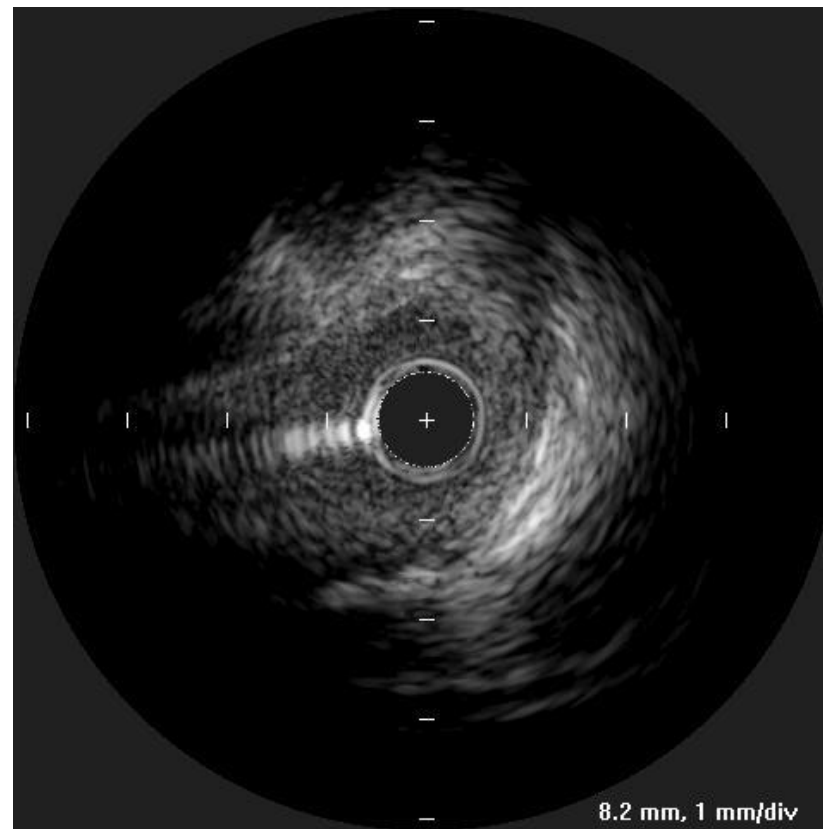
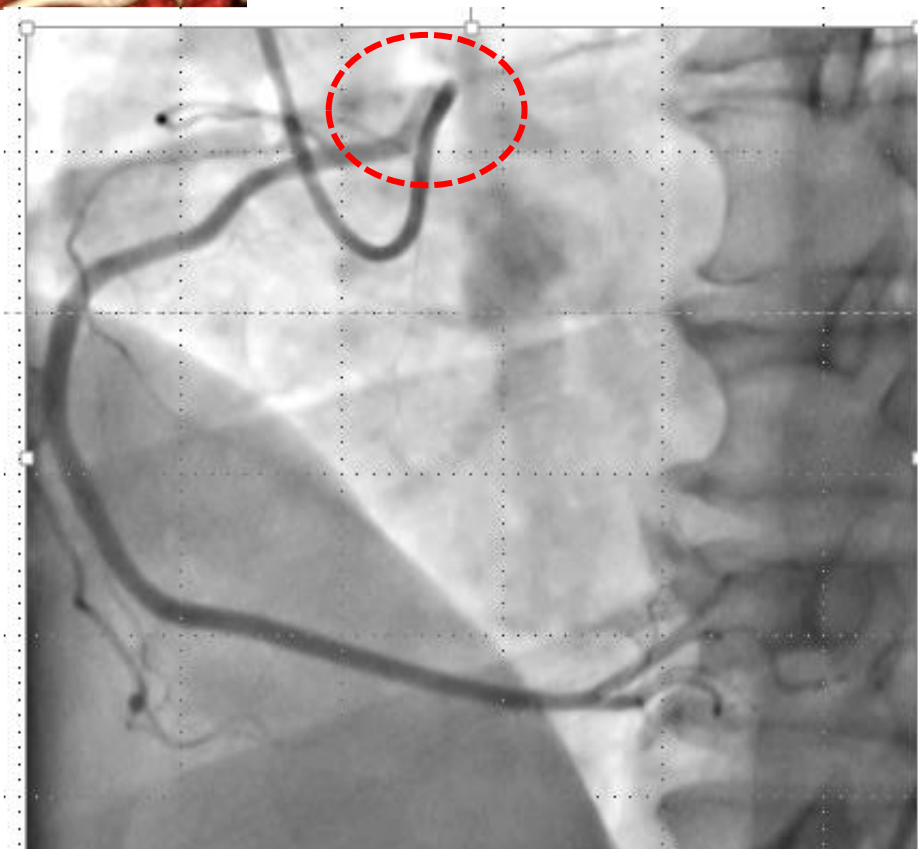
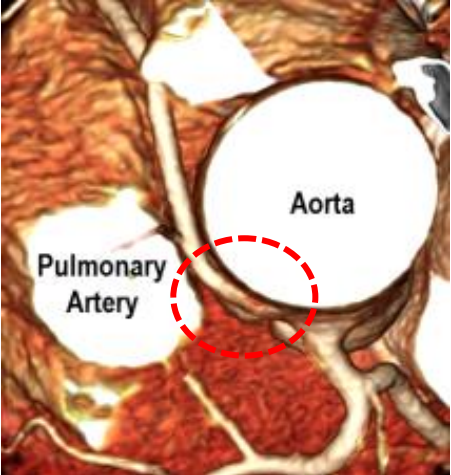
Nine-months after DCB

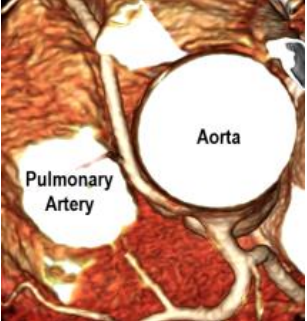


# Complex disease: How to assess?

Anomalous RCA from left sinus of Valsalva

## PCI? Surgery?

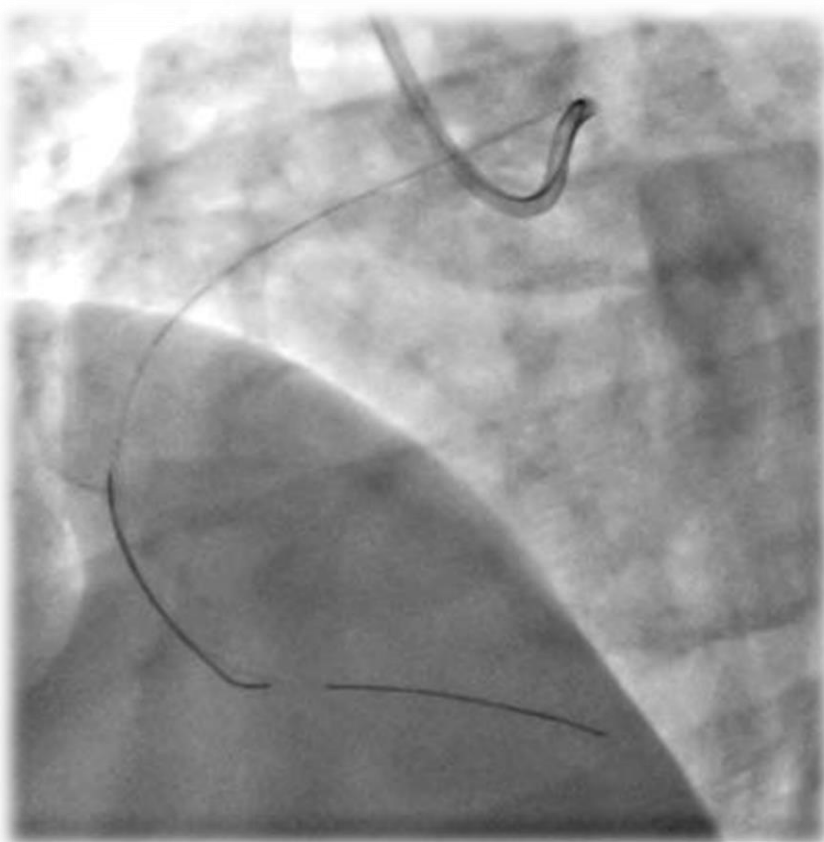


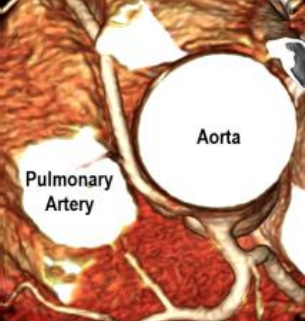


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Anomalous RCA from left sinus of Valsalva

## Fractional flow reserve

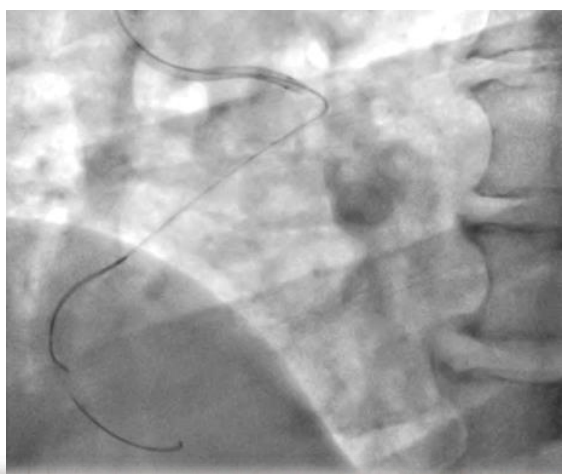




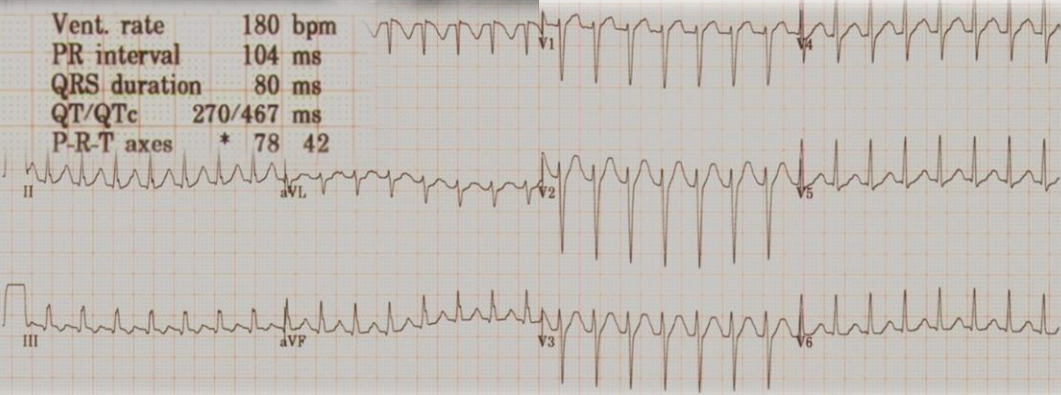
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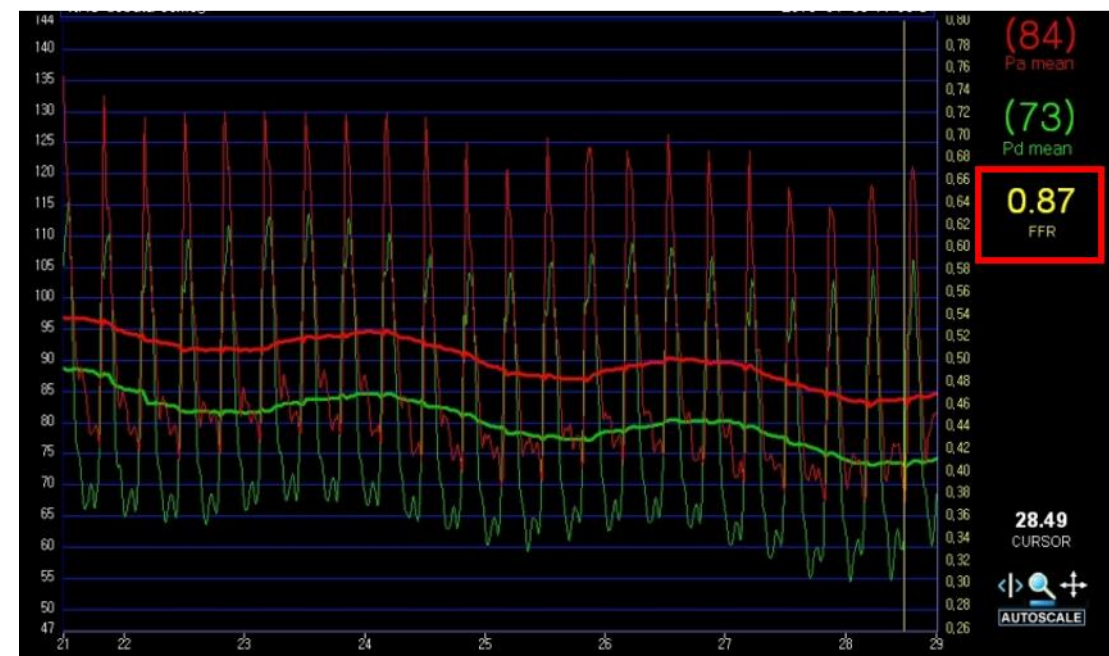
Induce dynamic compression: Dobutamine + Atropine



Vent. rate 180 bpm  
PR interval 104 ms  
QRS duration 80 ms  
QT/QTc 270/467 ms  
P-R-T axes \* 78 42



Dobutamine-stress FFR





# Physiology for Complex PCI



- **Coronary physiology** is complex and its assessment is not the cure-for-all. However, it is an essential element for understanding patient's disease status and clinical decision making.
- FFR/NHPR and its extended concept can help operators select the appropriate treatment strategy for complex lesions and make the complex PCI simple in daily practice.

