

**Practical Issue of  
Left Main & Multi-Vessel PCI:  
Make it Simple !**

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# **Global Guideline for Left Main PCI**

# 2018 ESC Guideline

## Revascularization for Left Main Disease

	CABG		PCI	
Recommendation according to extent of CAD	Class	Level	Class	Level
<b>LM disease a SYNTAX score <math>\leq 22</math></b>	<b>I</b>	<b>A</b>	<b>I</b>	<b>A</b>
<b>LM disease a SYNTAX score 23 -32</b>	<b>I</b>	<b>A</b>	<b>Ila</b>	<b>A</b>
<b>LM disease a SYNTAX score <math>&gt; 32</math></b>	<b>I</b>	<b>A</b>	<b>III</b>	<b>B</b>

Reference; SYNTAX Study, PRECOMBAT study, MAINCOMPARE registry study and Meta-Analysis. *Patrick, SW et al, NEJM. 2009 March 5;360(10), Park SJ et al, NEJM. 2011 May 5;364(18):1718-27, Levin GN et al. ACC/AHA guidelines. JACC 2011;58:44-122, Capodanno et al, JACC 2011;58:1426-32*

# 2021 ACC/AHA/SCAI Guideline

## Revascularization for Left Main Disease

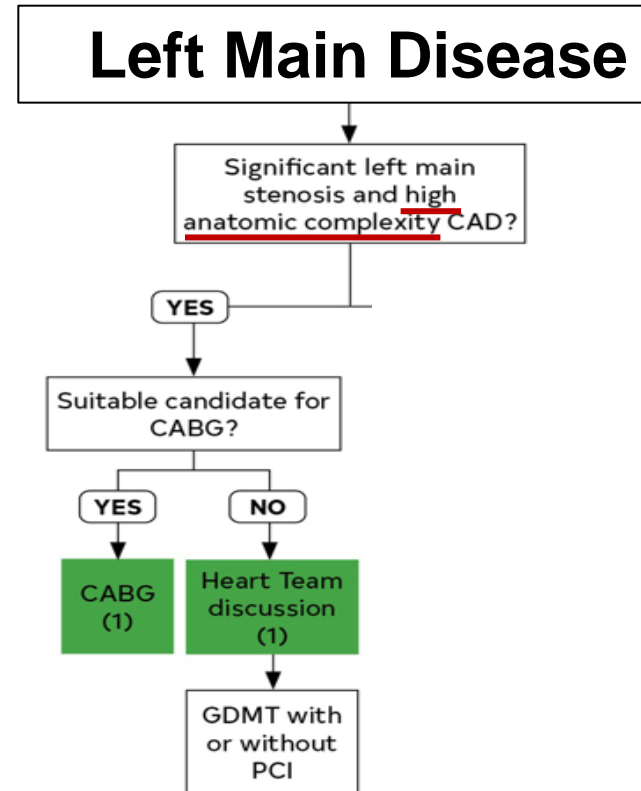
**High Anatomic Complexity**

↓

**Suitable candidate for CABG**

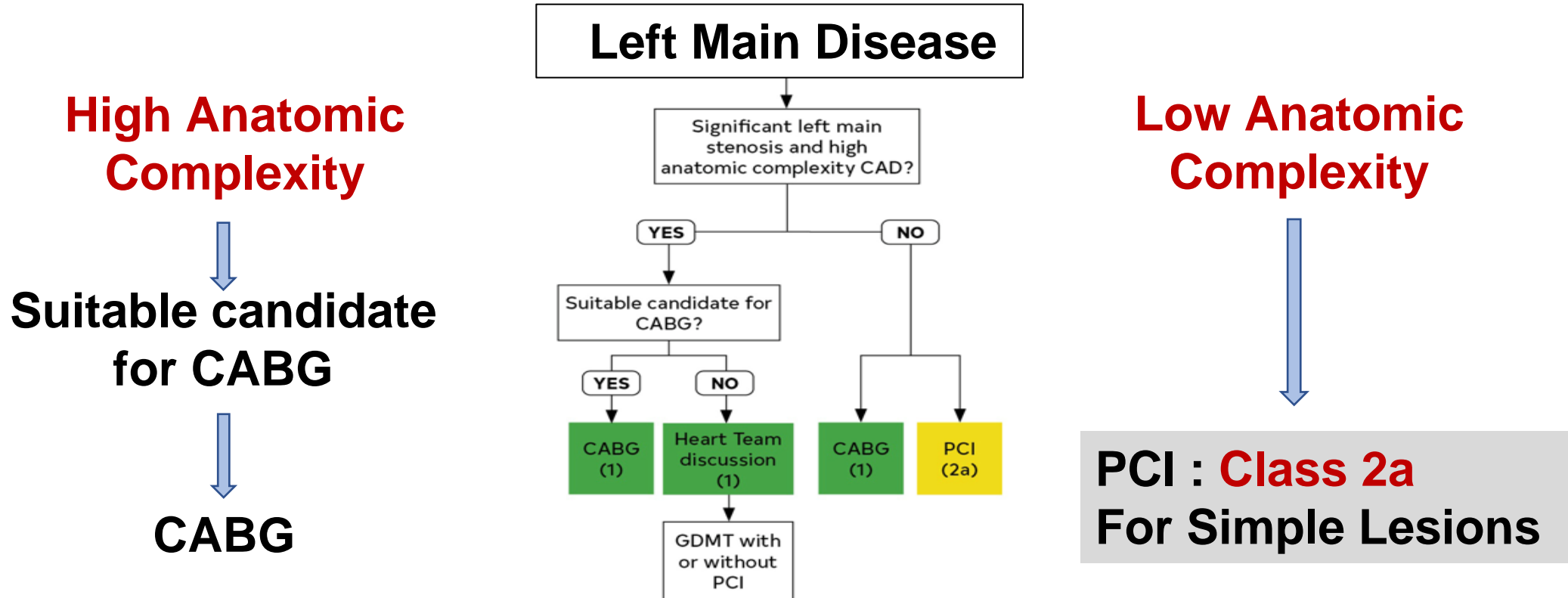
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**CABG**



# 2021 ACC/AHA/SCAI Guideline

## Revascularization for Left Main Disease



# **Global Guideline for Left Main PCI**

## **Class 2a**

# 2024 Practical Guideline

## Revascularization for Left Main Disease:

1. If LM with Extensive Non-LM CAD (3VD) is present  
**CABG** may be preferred.
2. If LM with Low Anatomic Complexity is present  
**PCI** may be preferred.
3. If Multiple Comorbidities (prior stroke, lung disease, frailty) are present **PCI** may be strongly preferred.

***LM Disease is  
Not Surgical Disease  
Anymore !***



# **Global Guideline for Multi-Vessel PCI**

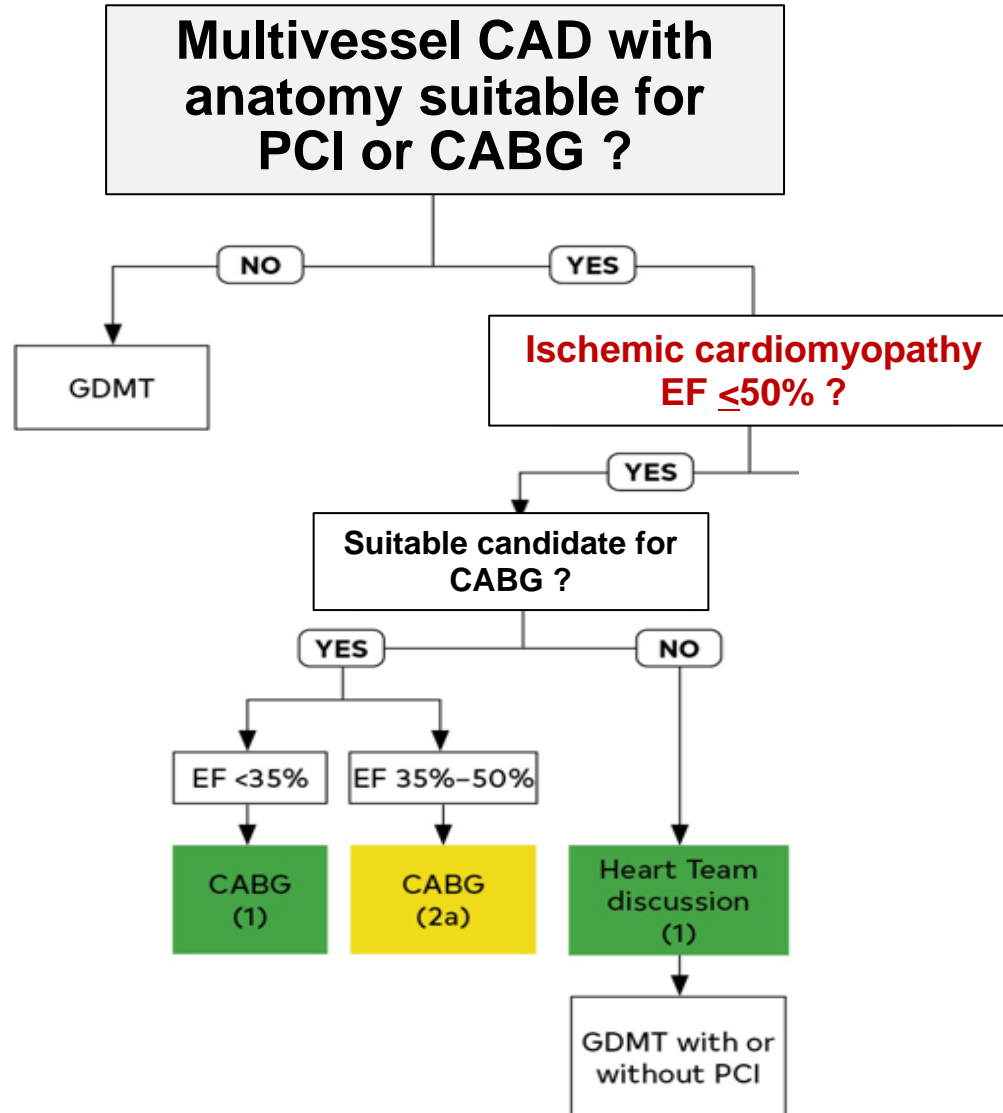
# 2018 ESC Guideline

## Revascularization for 3 Vessel Disease

	CABG		PCI	
	Class	Level	Class	Level
<b>3-VD without Diabetes Mellitus</b>				
3 VD with SYNTAX score (0-22)	I	A	I	A
3 VD with SYNTAX score (>22)	I	A	III	A
<b>3-VD with Diabetes Mellitus</b>				
3 VD with SYNTAX score (0-22)	I	A	IIb	A
3 VD with SYNTAX score (>22)	I	A	III	A

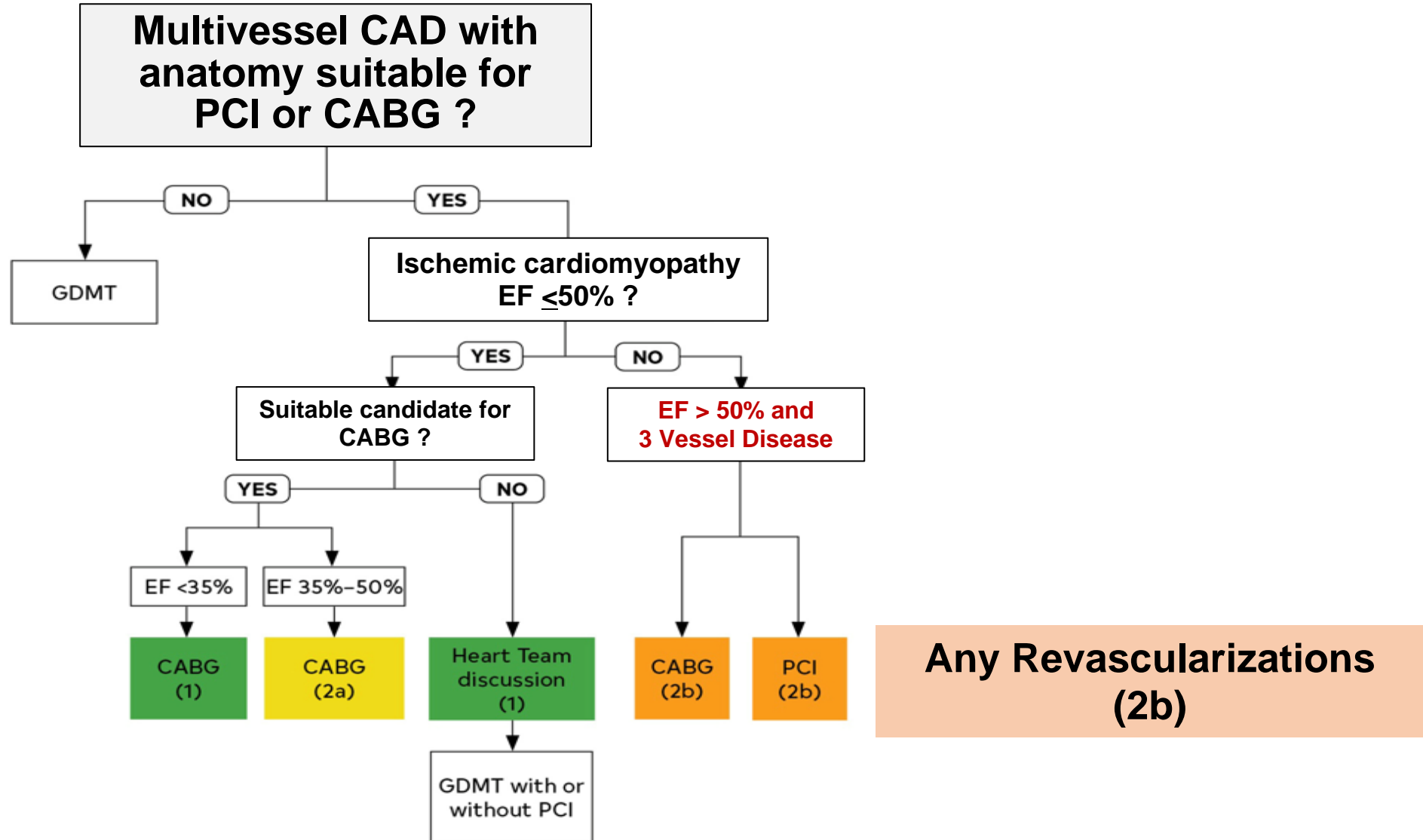
# 2021 ACC/AHA/SCAI Guideline

## Revascularization for Multi-Vessel Disease



# 2021 ACC/AHA/SCAI Guideline

## Revascularization for Multi-Vessel Disease

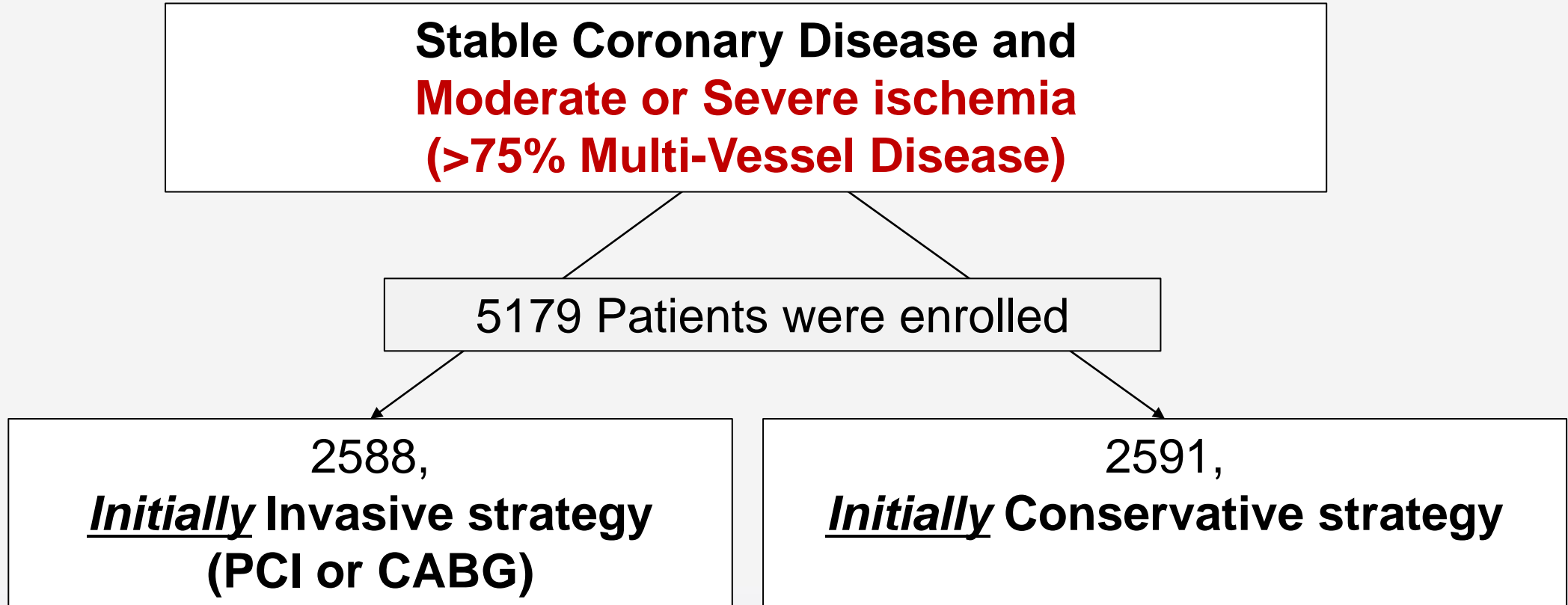


# Global Guideline for Multi-Vessel PCI

## Class 2b

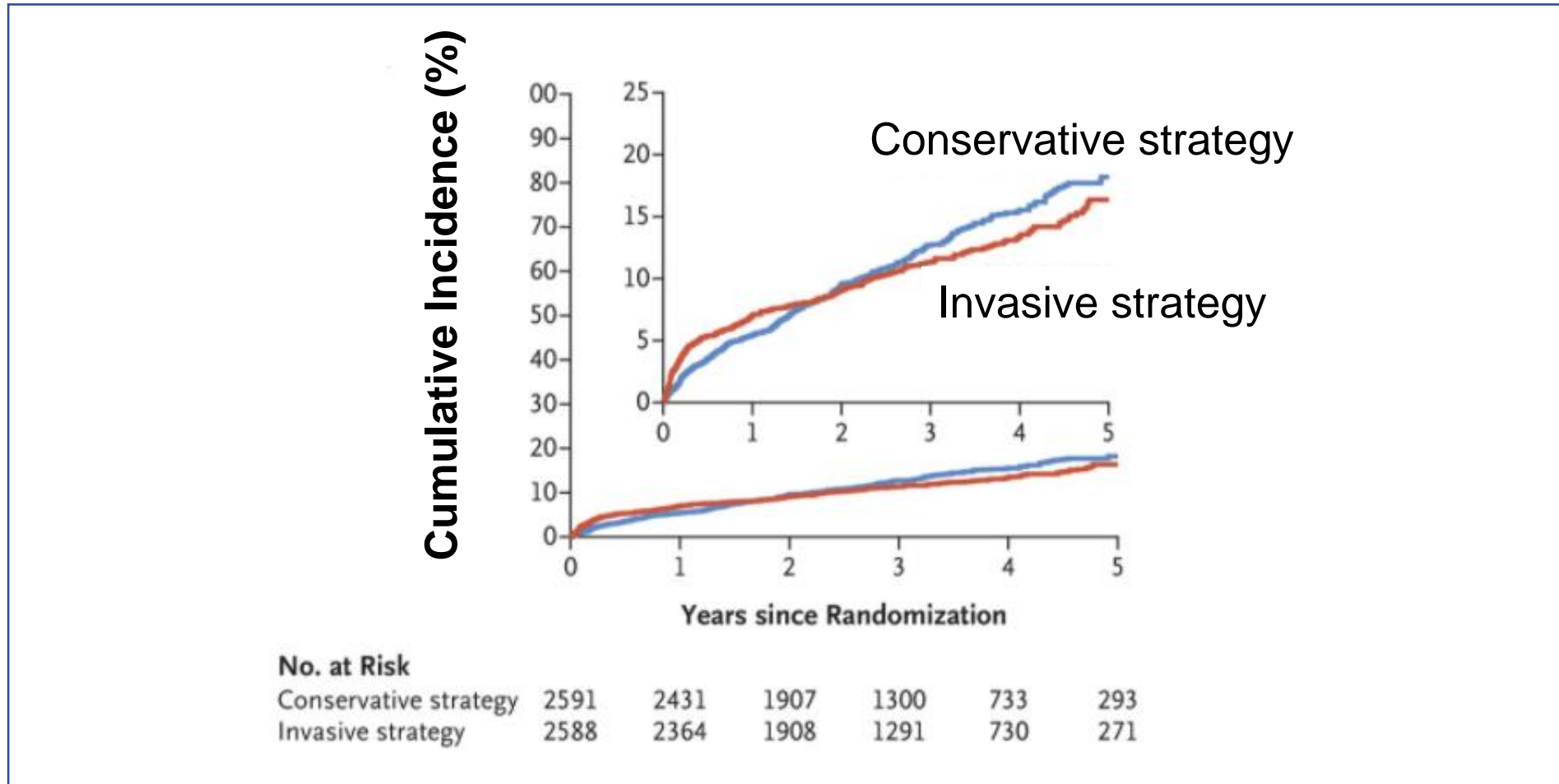
### Why?

# ISCHEMIA Study



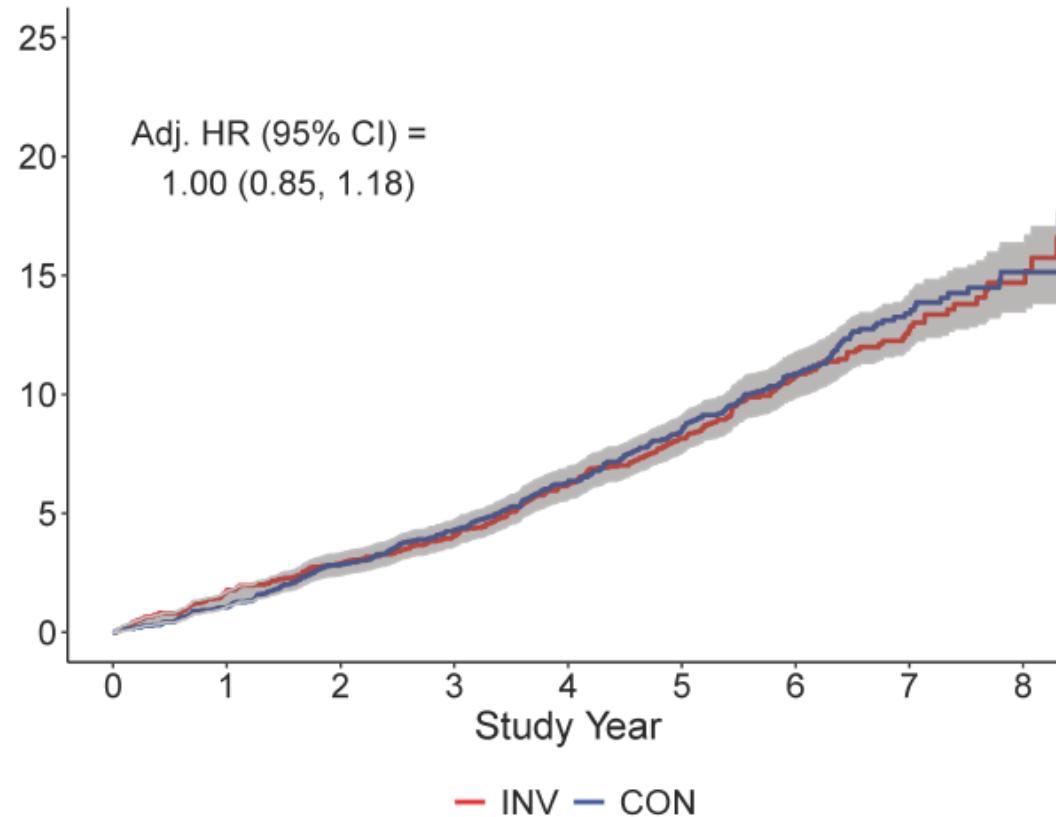
# **ISCHEMIA : Primary Composite Outcomes at 3.2 years**

Death from cardiovascular causes, Myocardial infarction, or Hospitalization for unstable angina, Heart failure, or Resuscitated cardiac arrest.



# **ISCHEMIA-EXTEND:** **All Death at 5.7 years**

Cumulative Death Rates of Death (%)



**Nearly  
Identical**



# ISCHEMIA Study

**No Survival and Ischemic Event Benefit  
of Invasive Strategy, as Compared With  
Conservative Strategy**

**Practical Approach 1.**  
**for Multivessel Disease Treatment**

**All Ischemic Lesions, Symptomatic,**  
**Favourable Anatomy for PCI,**  
**(RVD >2.5 mm and/or Lesion Length < 50 mm)**  
**PCI Favour!**

**Practical Approach 2.**  
**for Multivessel Disease Treatment**

***Low EF (≤ 50%),***  
**Diabetic, 3 Vessel Disease,**  
**Unfavourable Anatomy for PCI,**  
**CABG Favour!**

**Practical Approach 3.**  
**for Multivessel Disease Treatment**

**Majority of Multi-Vessel Disease,**  
**1 or 2 High Risk Major Vessel PCI**  
**with Optimal Medical therapy**

## **Limited Interpretation of Current Data**

- 1. Old Studies Used Old DESs.**
- 2. Lack of Concept of  
Physiology and Imaging Supported PCI**

## **Contemporary PCI**

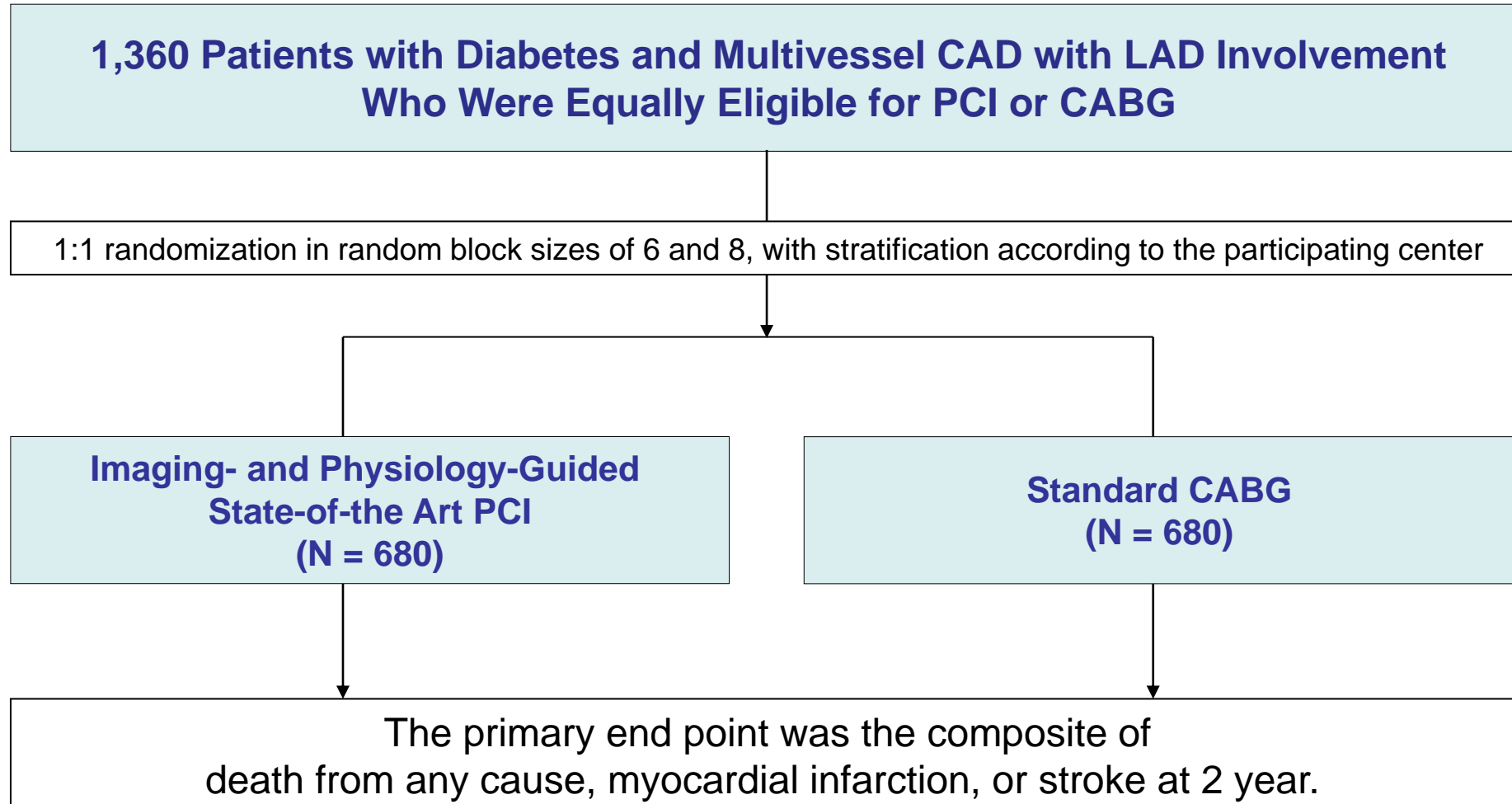
- ***FFR Guided Decision Making,***
- ***IVUS Guided Optimization !***

# Contemporary PCI

*New Studies!*

**Dibetes-Centered Evaluation of Functional and Imaging-CombiNEd  
State-of-the-Art Percutaneous Coronary Intervention or Coronary-Artery Bypass  
Grafting in Patients with Dibetes Mellitus and Multi-Vessel Coronary Artery Disease**

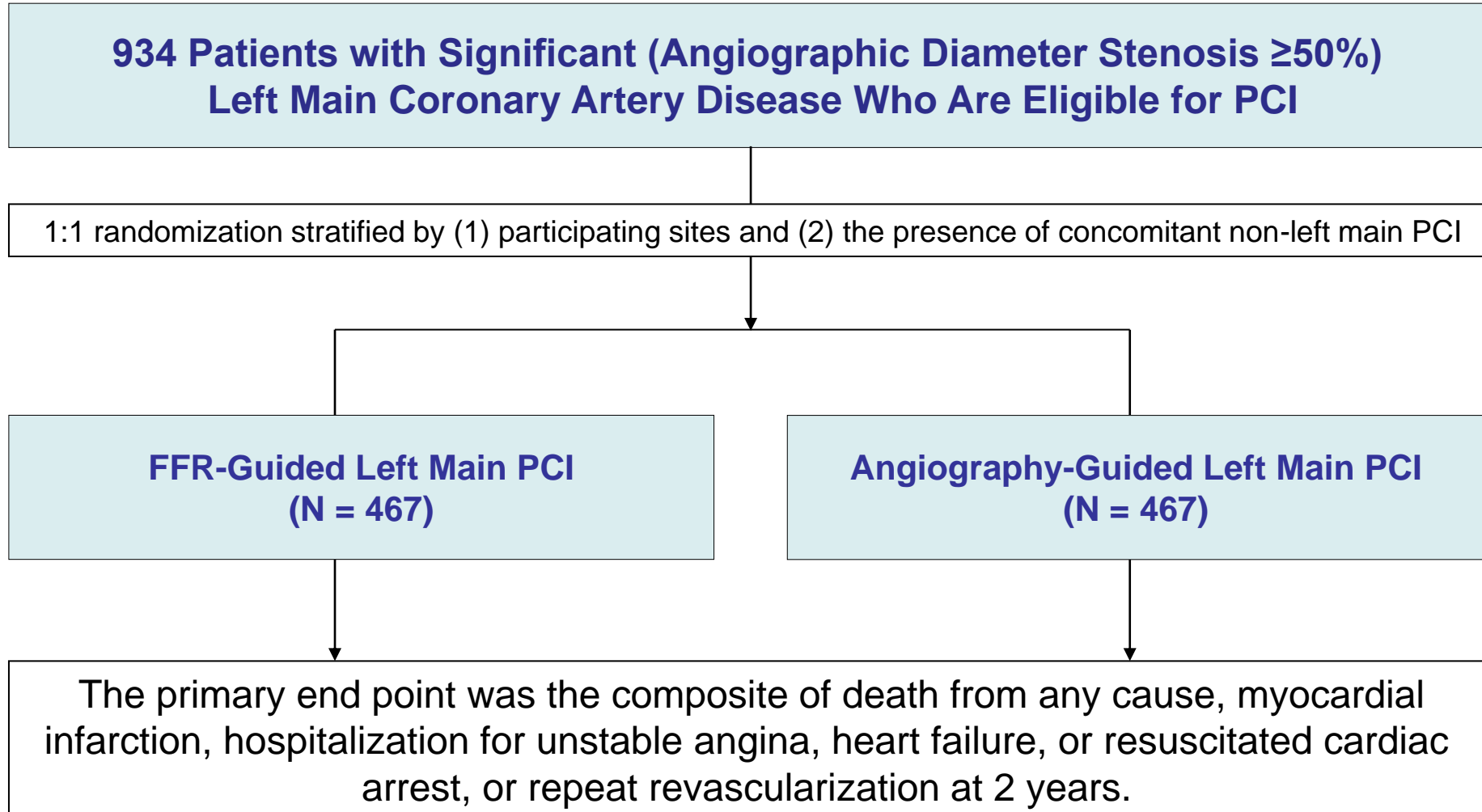
## **DEFINE-DM Trial**





**F**ractional Flow Reserve versus **A**ngiography for **T**reatment-Decision and **E**valuation of Significant Left **MAIN** Coronary Artery Disease

# **FATE-MAIN Trial**

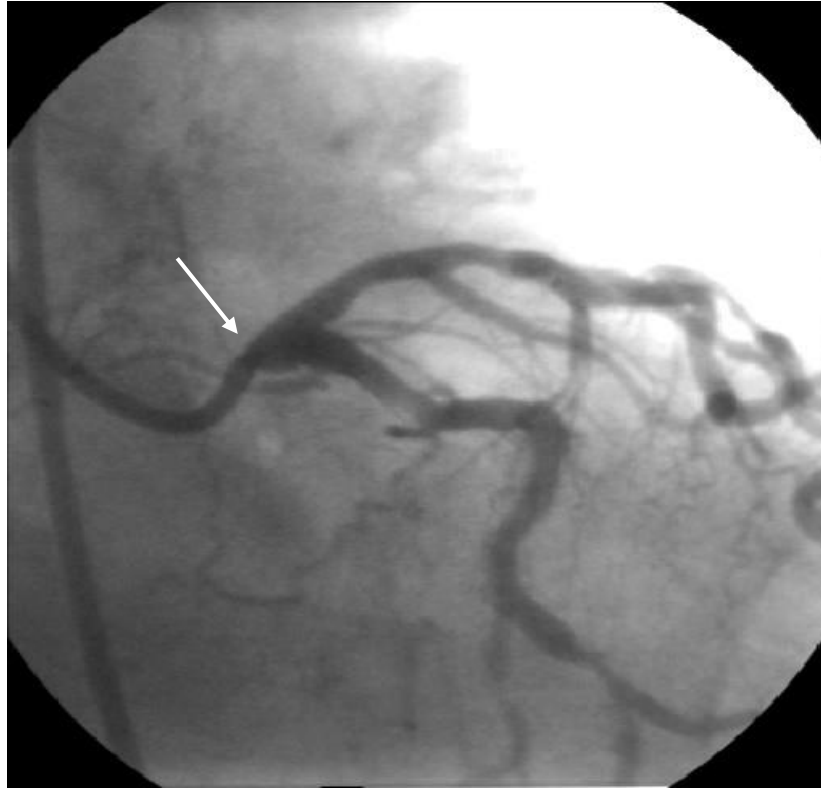


# Cases

# *Ostial or Shaft LM PCI*

## Class 1a

67/M, Stable angina  
Ostial LM disease

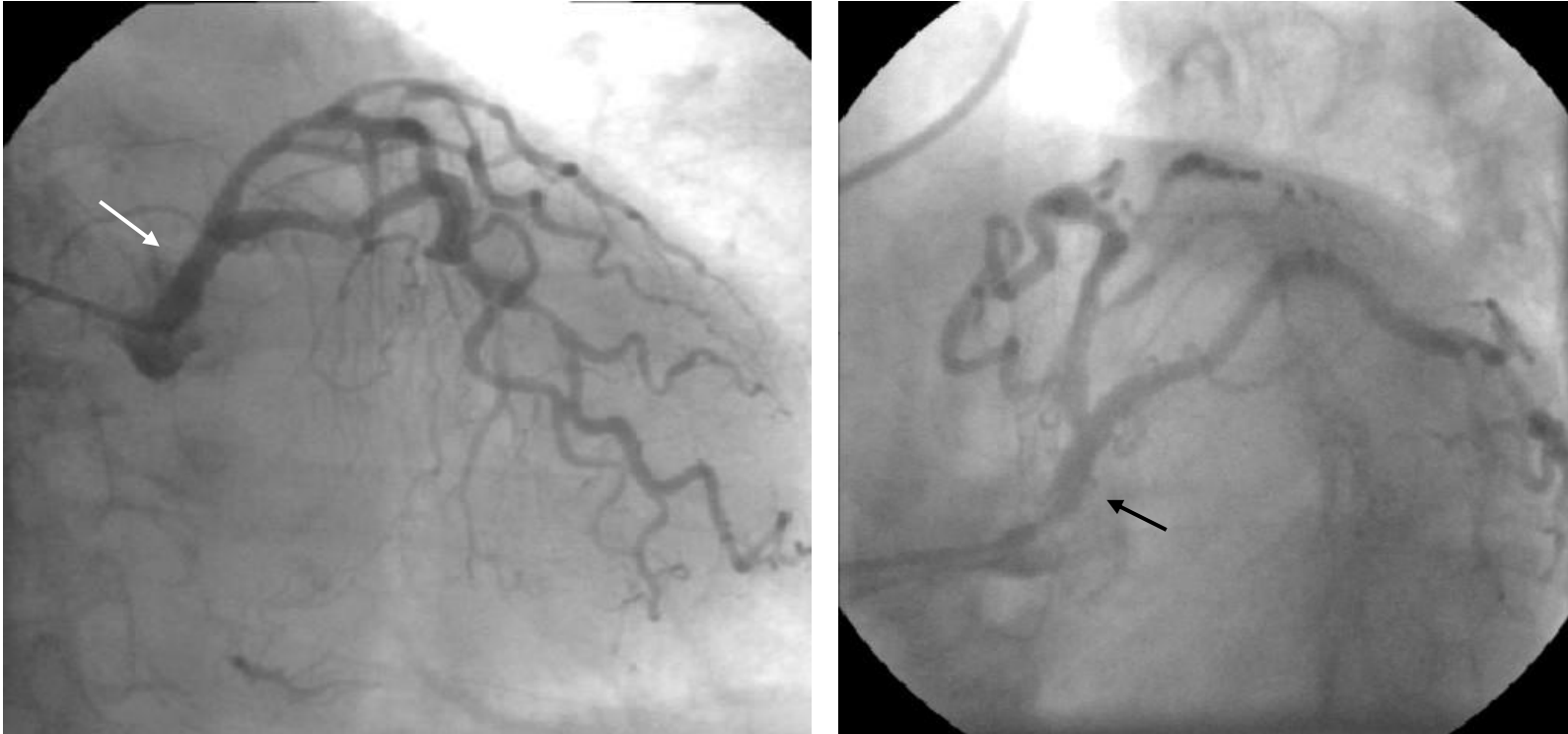


***Just Stent it !***



***It takes 5 minutes !***

# Angiographic follow-up at 2 Year



***Perfect !***

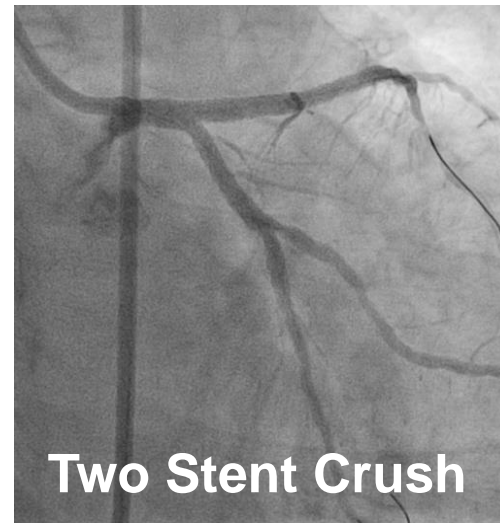
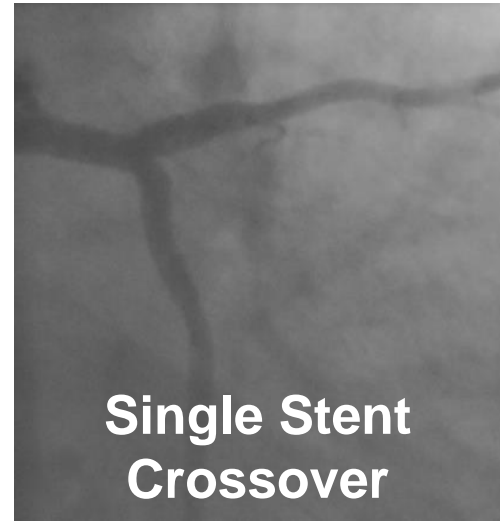
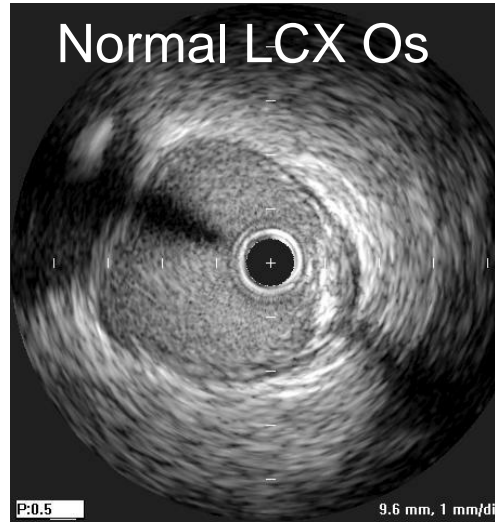
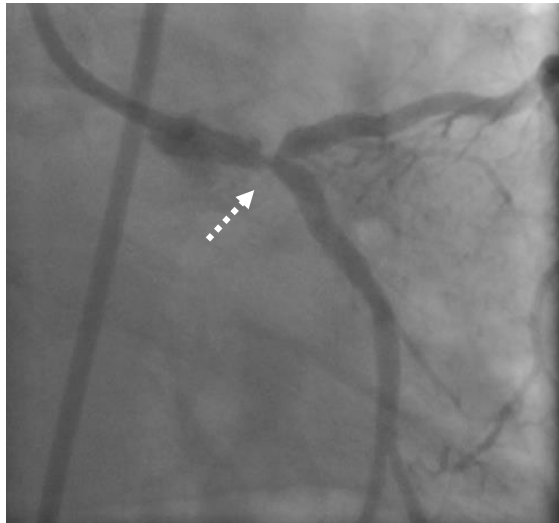
# LM Bifurcation PCI

**1 Stent,** *Normal or Small Diminutive LCX,*  
*(< 2.5 mm in diameter)*

**2 Stent,** *True Bifurcation Disease*  
*in Large LCX (>2.5 mm),*

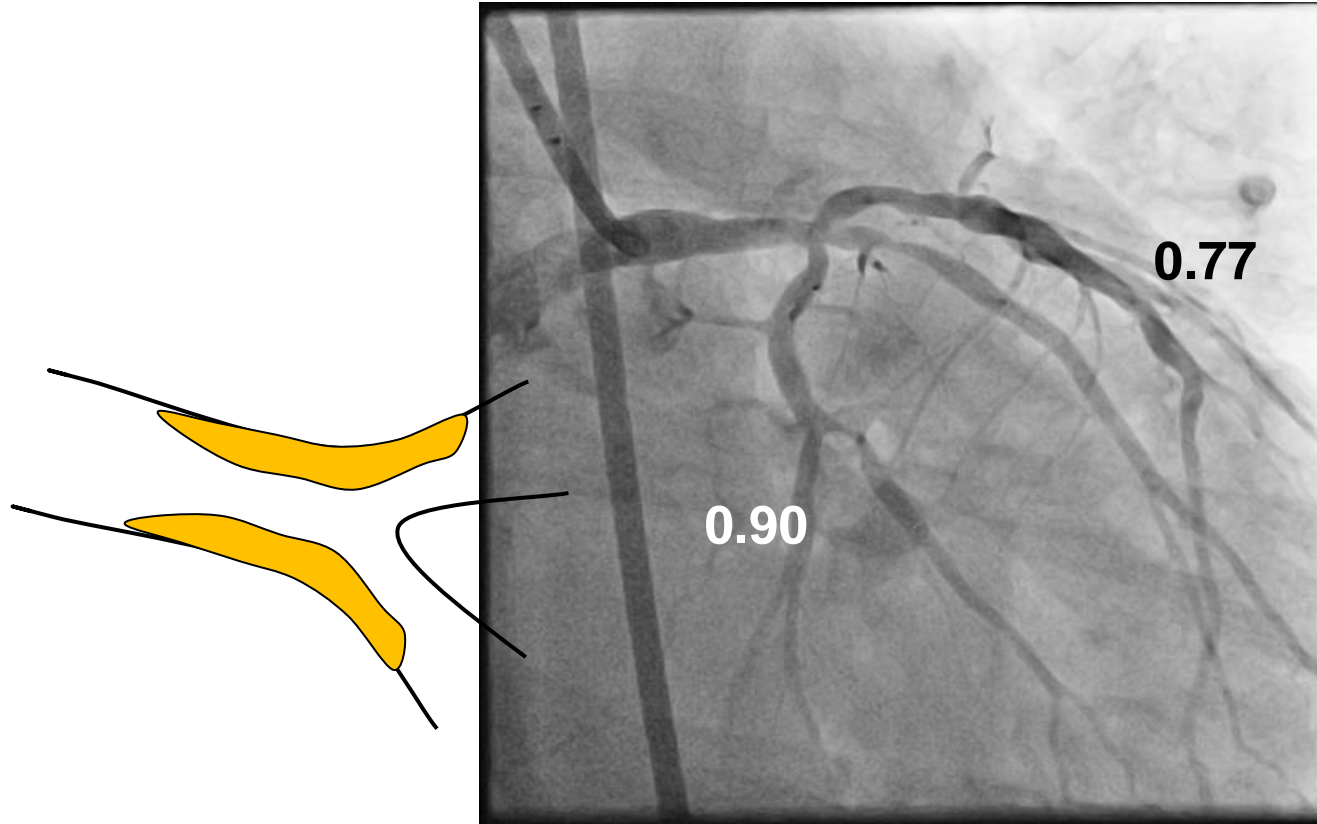
# 1 or 2 Stents

According to *LCX Disease Status by IVUS*



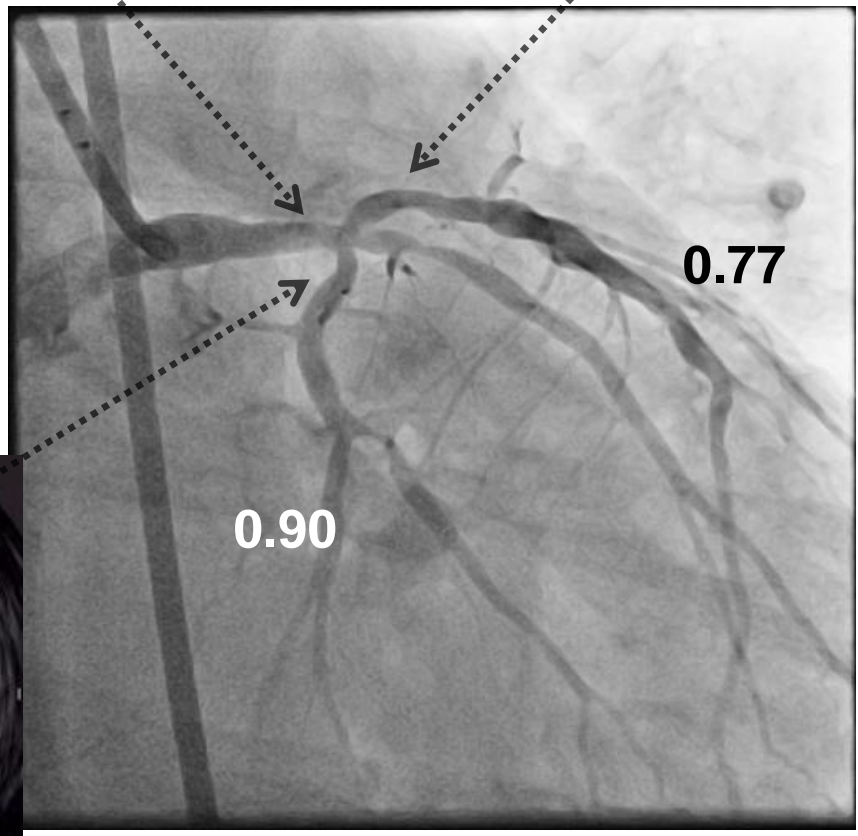


# How to Treat?



MLA 5.3 mm<sup>2</sup>

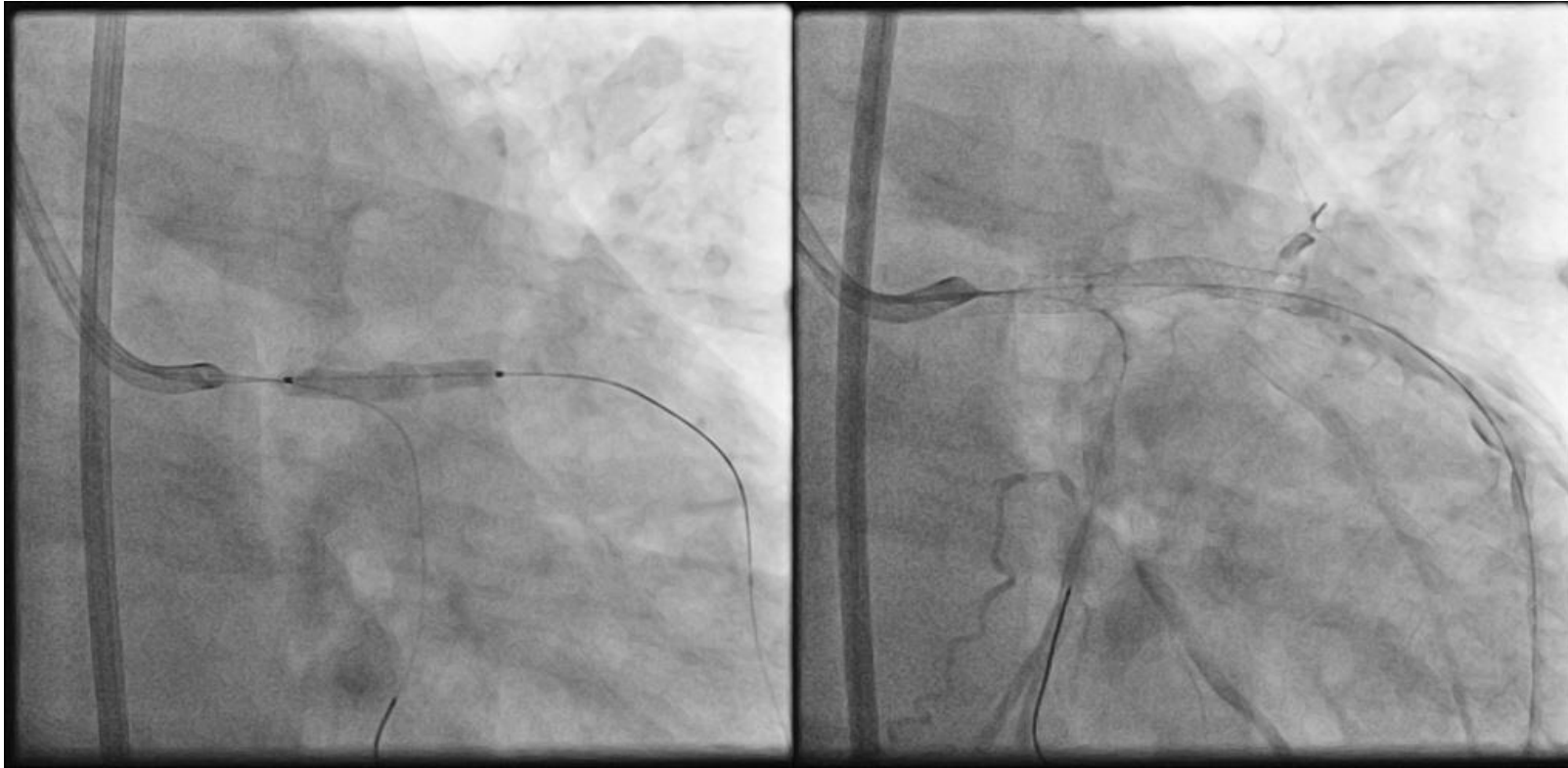
MLA 3.2 mm<sup>2</sup>



MLA 3.3 mm<sup>2</sup>

Not Significant Disease on LCX Ostium

# 1 Stent Crossover



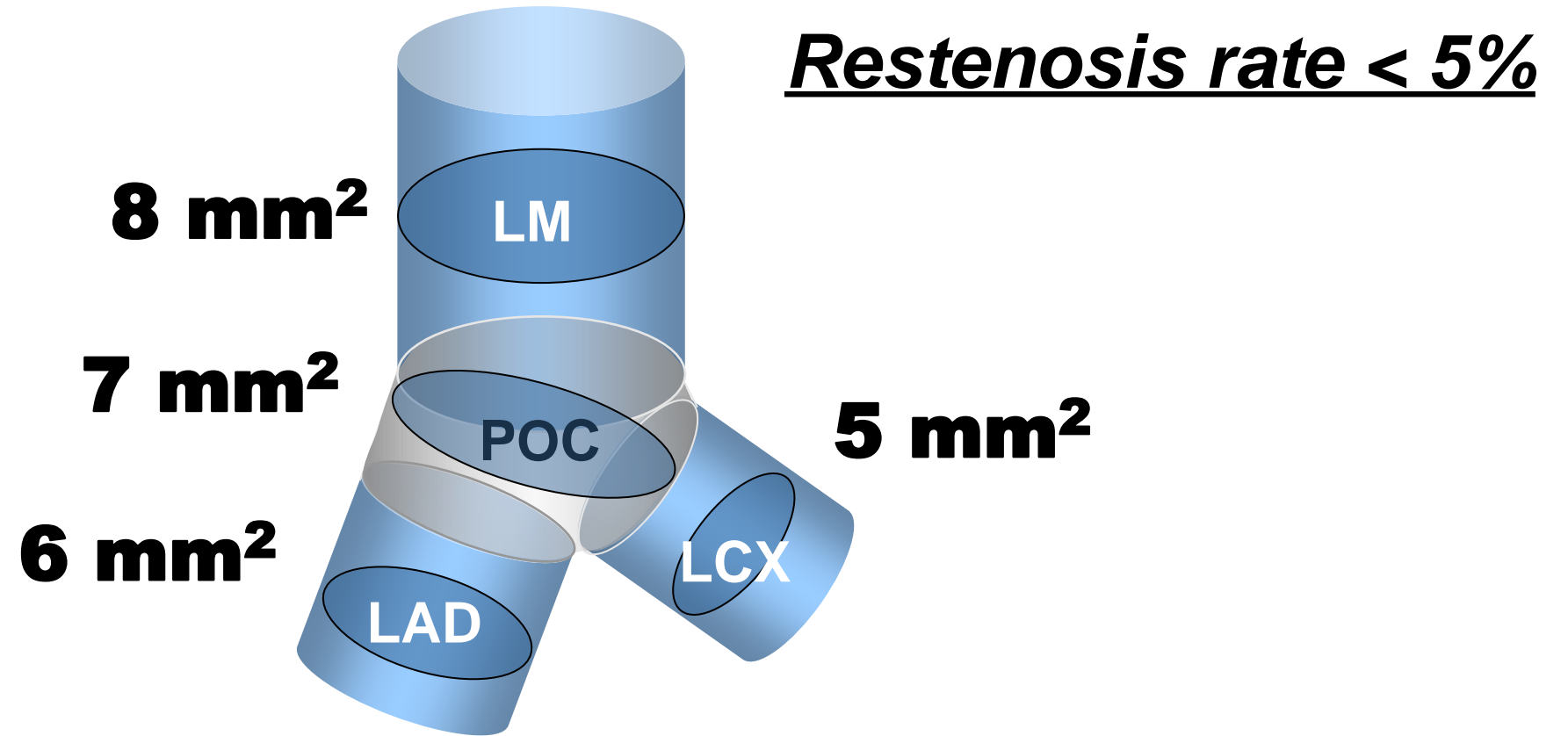
XIENCE Alpine  
4.0mm x 30mm

# Final Angiogram

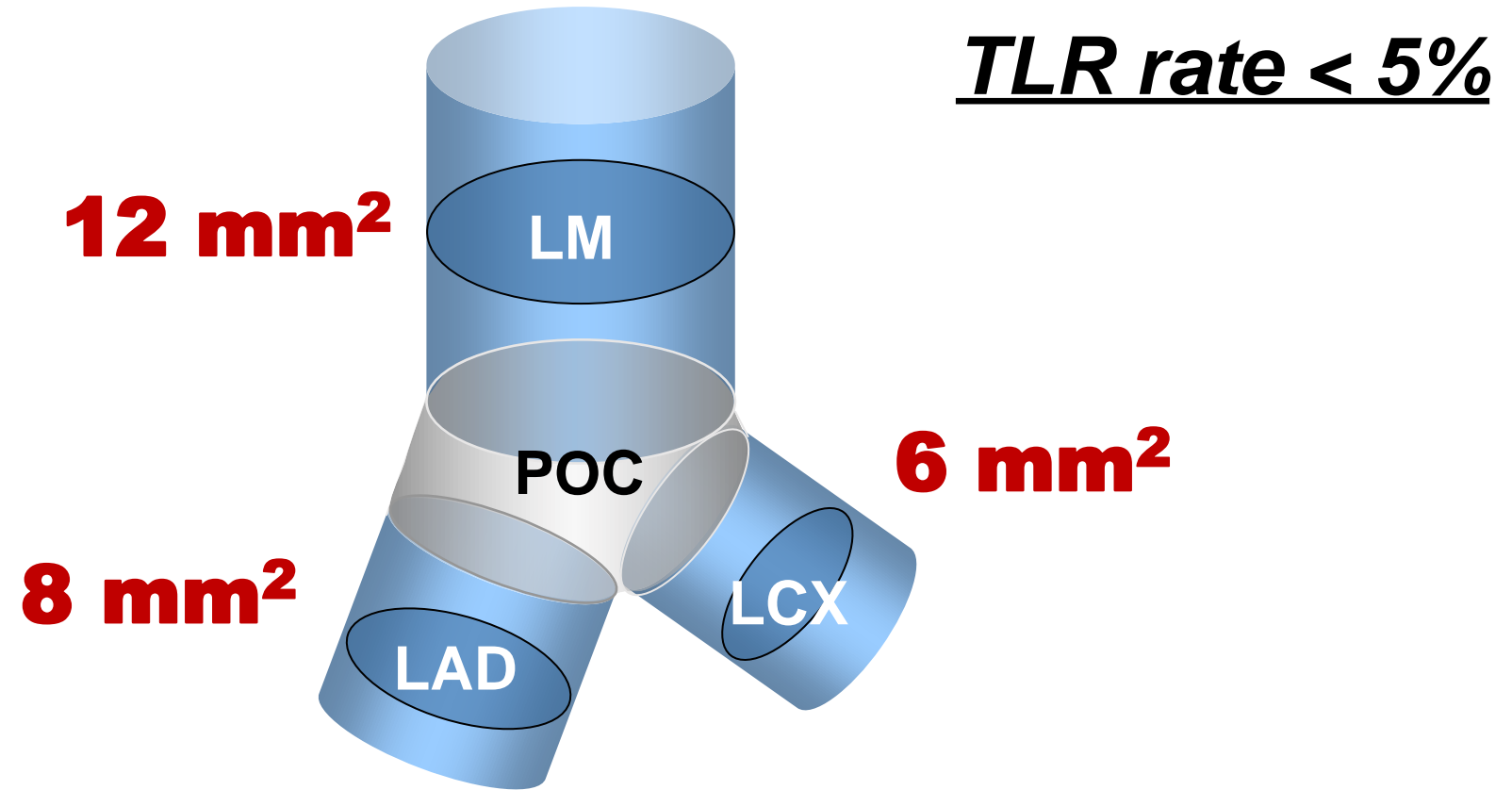


**Upfront 2 Stents**  
**for True Bifurcation**

# Post-Stenting Minimal Stent Area, According to 9 Month Restenosis Rate



# Post-Stenting Minimal Stent Area, According to 5 Year MACE Rate



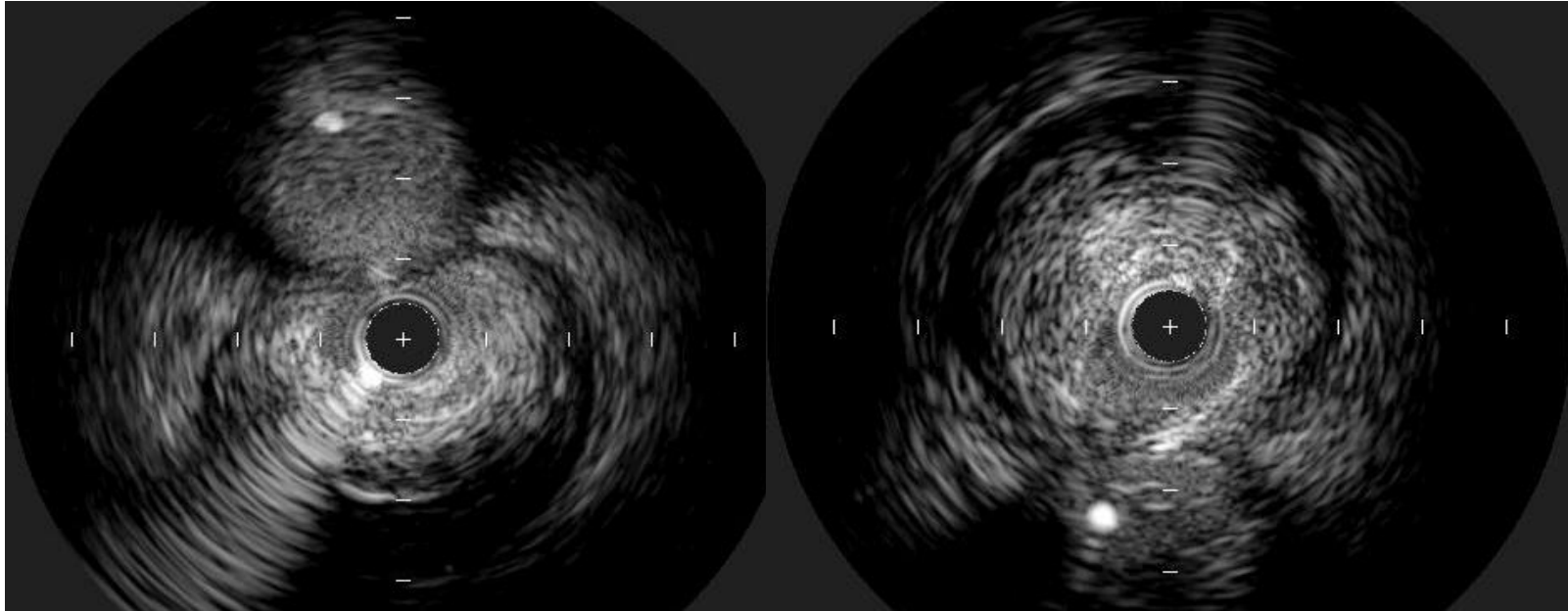
**70/M, Unstable angina**

*True Bifurcation Lesion (Medina 1,1,1)*





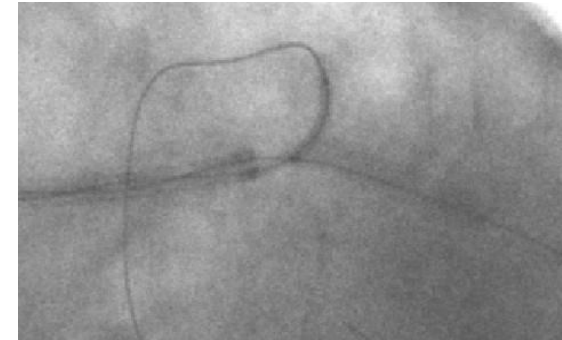
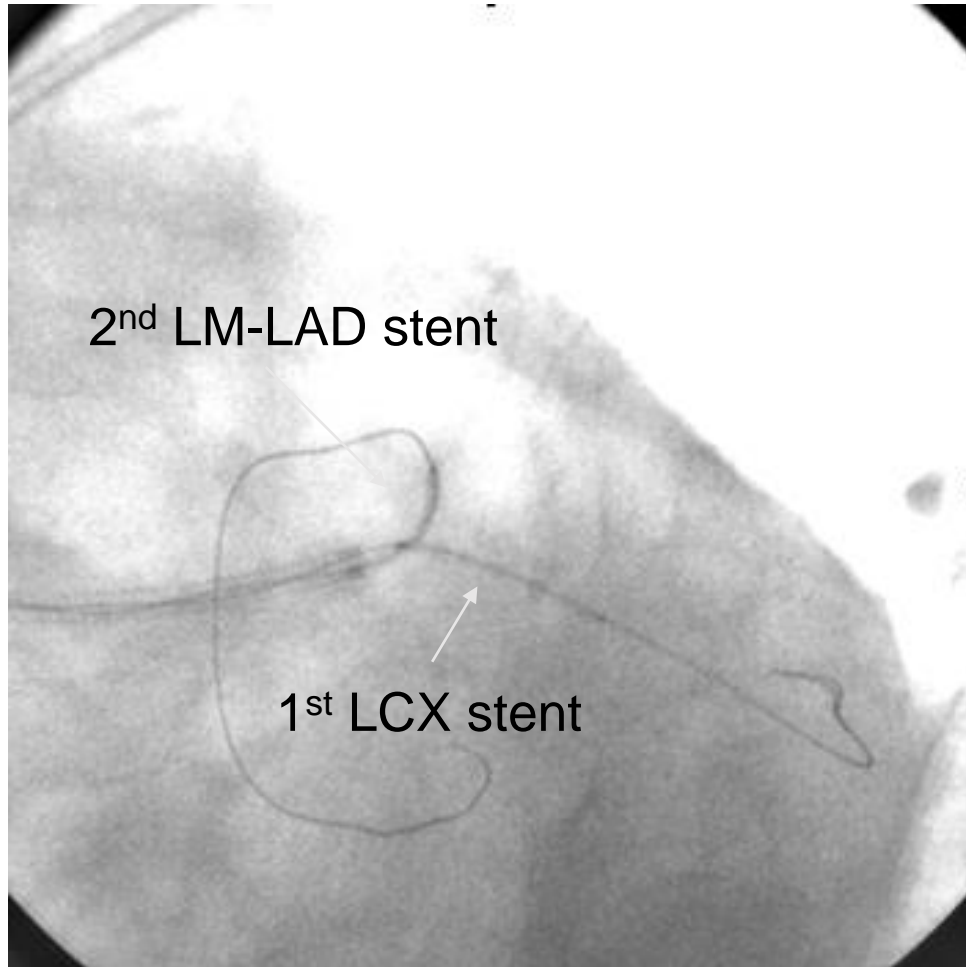
**True Bifurcation Disease (Medina 1,1,1)**  
**By IVUS**



LAD Ostium

LCX Ostium

# Mini-Crushing !

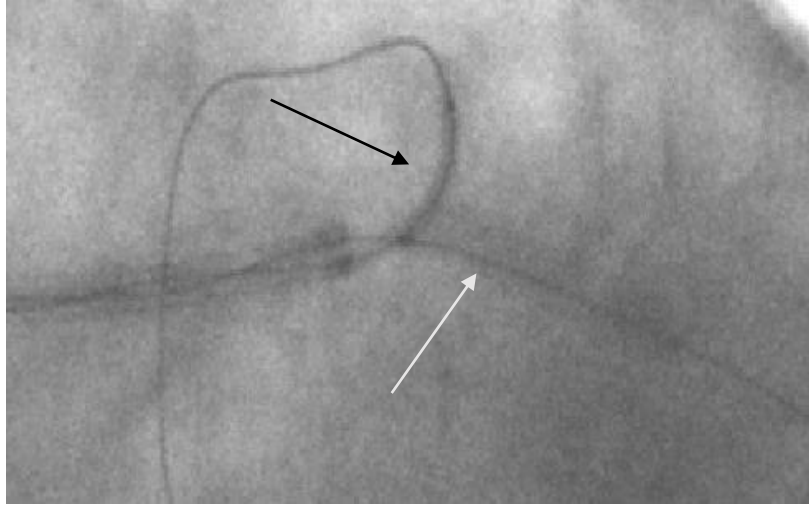


LCX Stenting first  
with DES 3.5x18mm

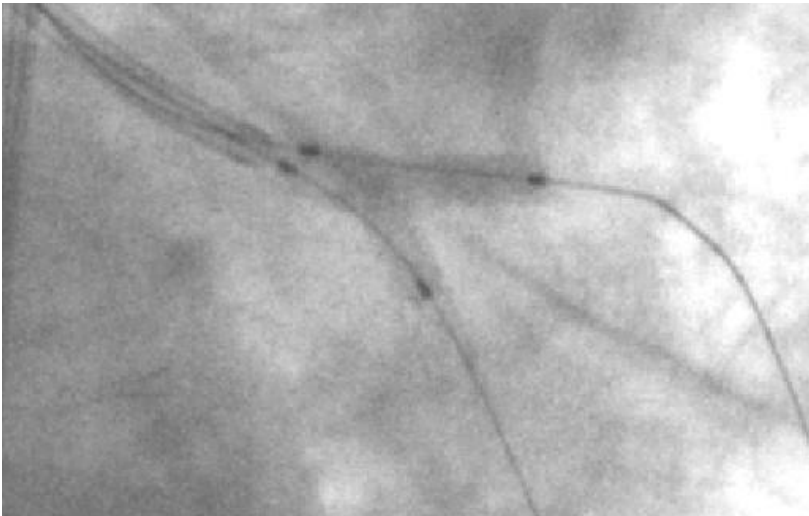


2<sup>nd</sup> LM-LAD stenting  
with DES 3.5x18mm

# Mini-Crushing !



Sequential  
High pressure inflation  
in Both LCX and LAD



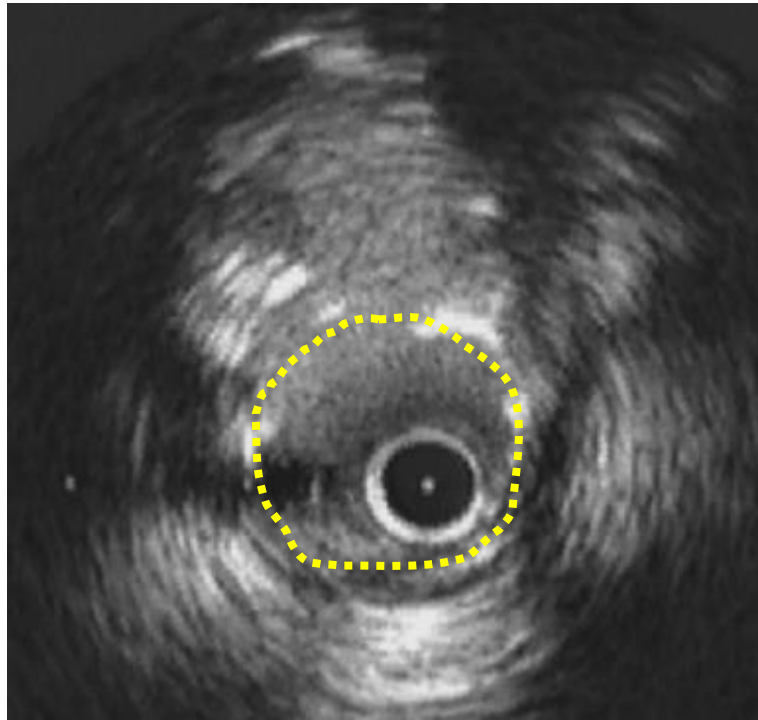
Final kissing balloon  
inflation with moderate  
pressure.

# Final Angiography

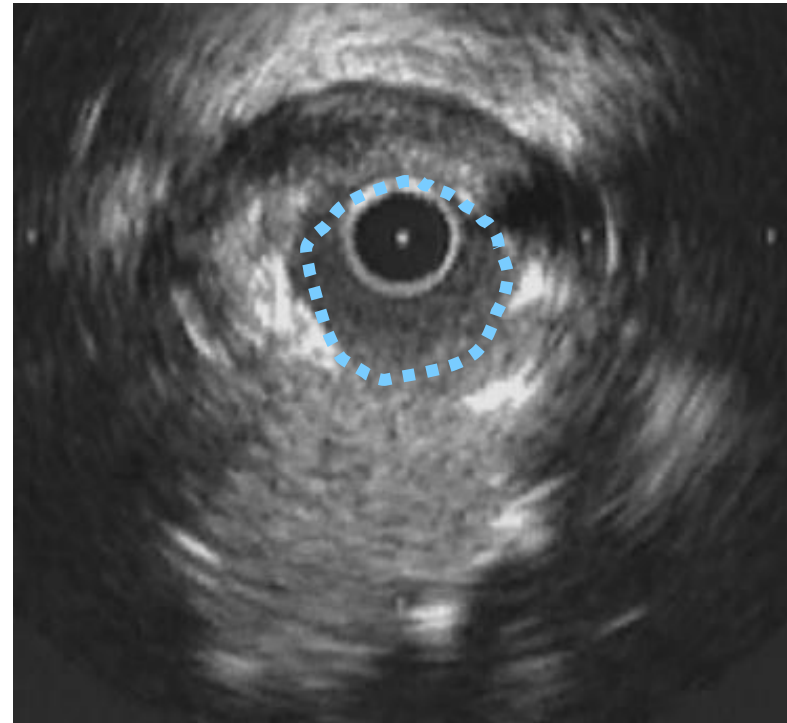


# Final IVUS

LAD Stent CSA :  
8.8 mm<sup>2</sup>

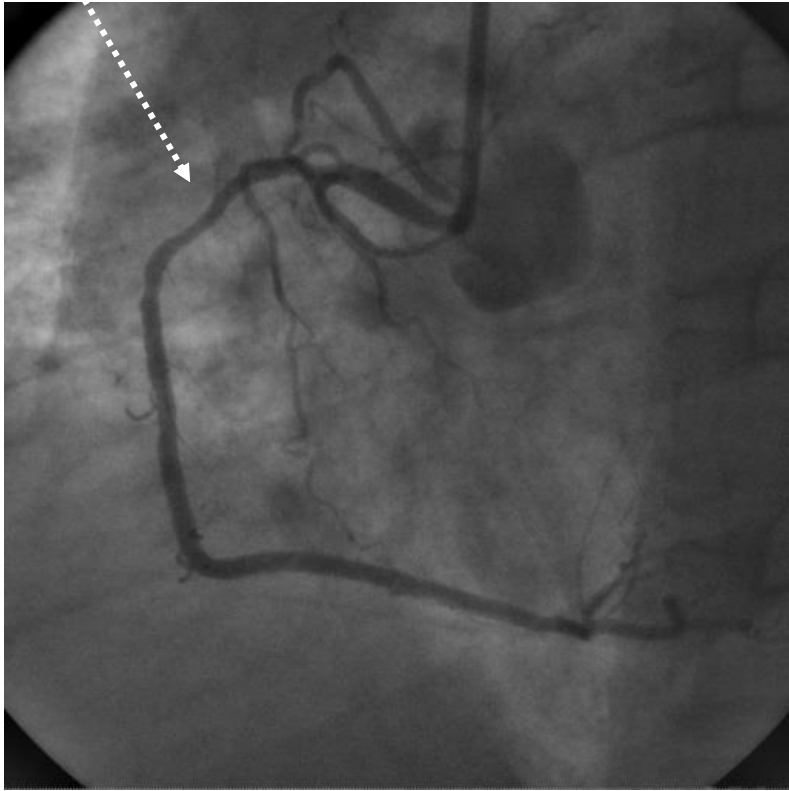


LCX Stent CSA :  
5.1 mm<sup>2</sup>

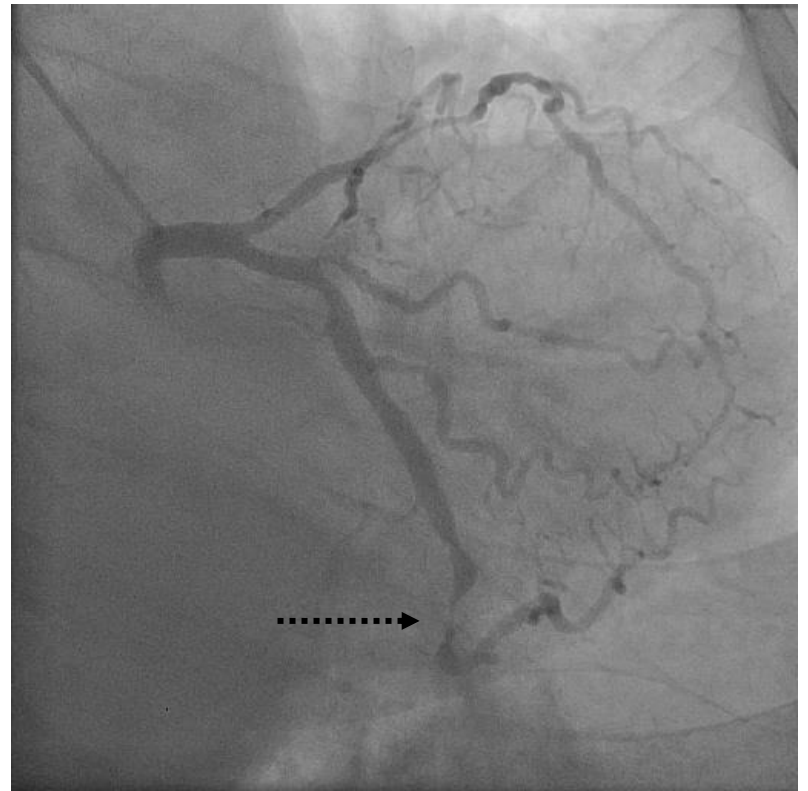
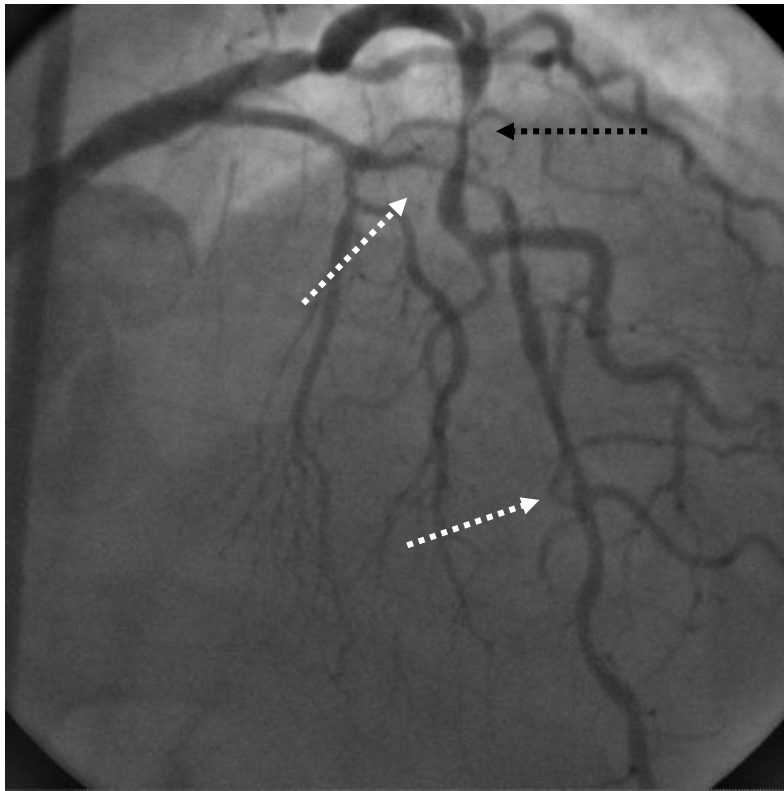


# **3-Vessel Disease**

72/M, Stable angina, 3 *Vessel-Disease*



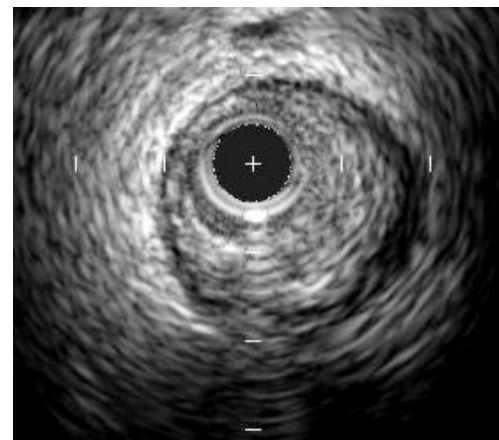
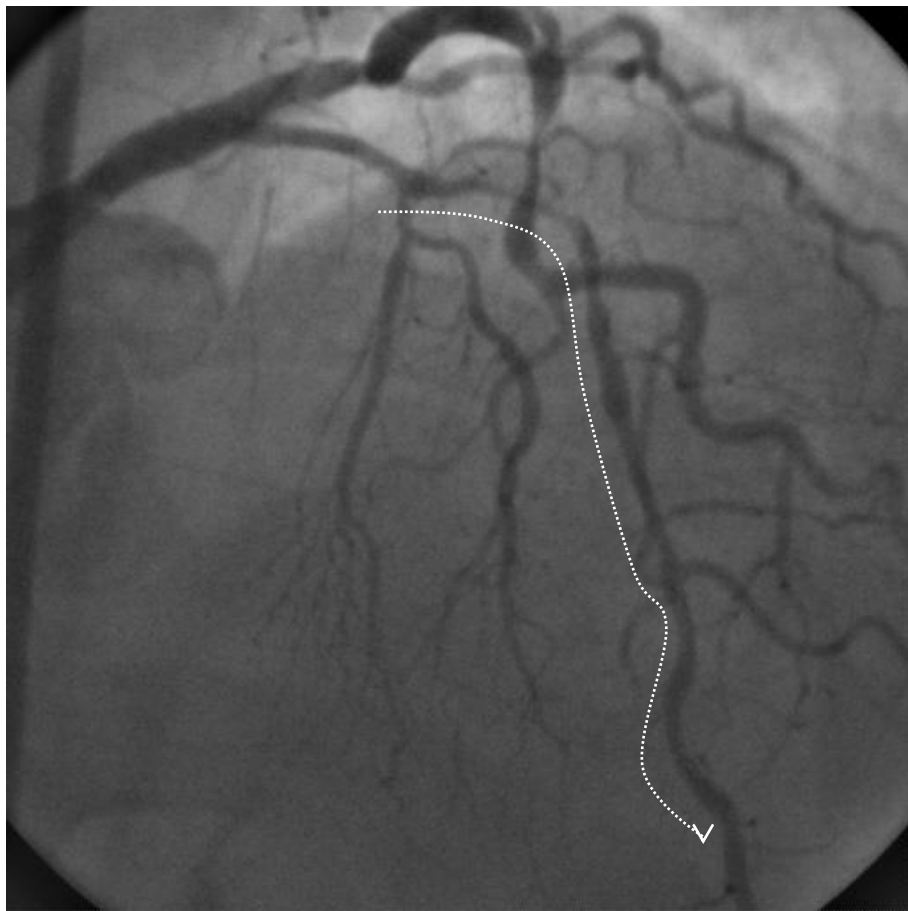
***FFR 0.90***



Distal Small Vessel Disease



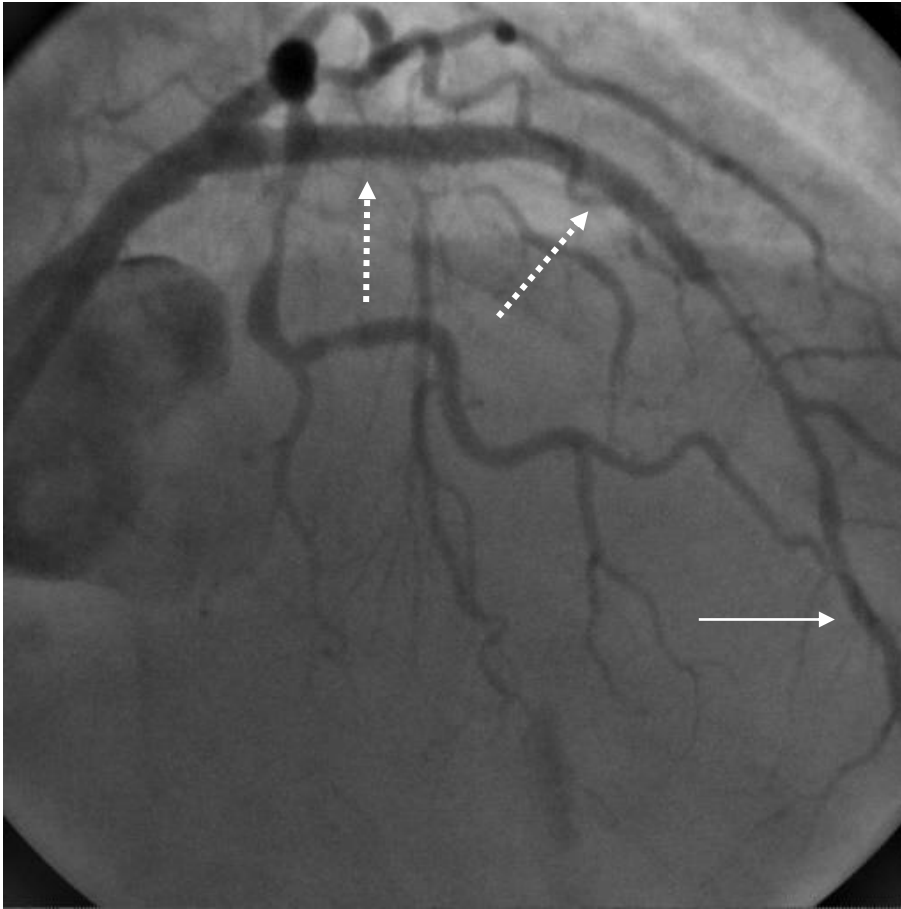
LAD



**Basically Diffuse Disease**



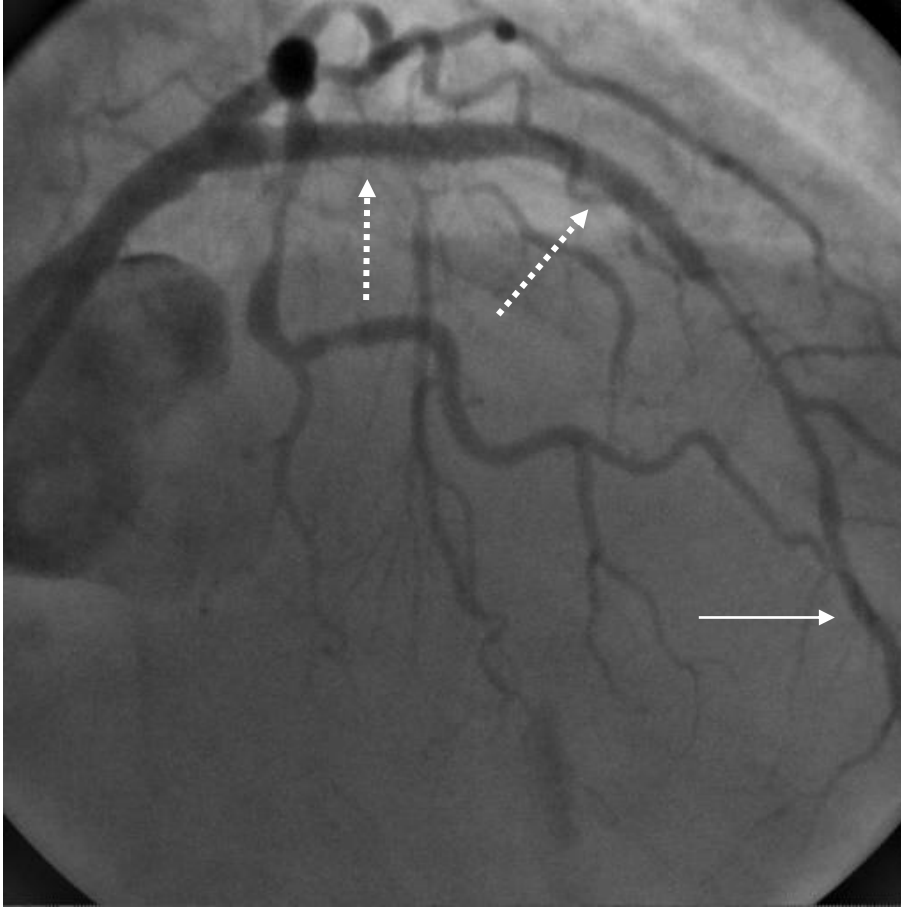
# LAD



**2 DESs;**  
**3.5\*23 + 3.0\*28 mm**



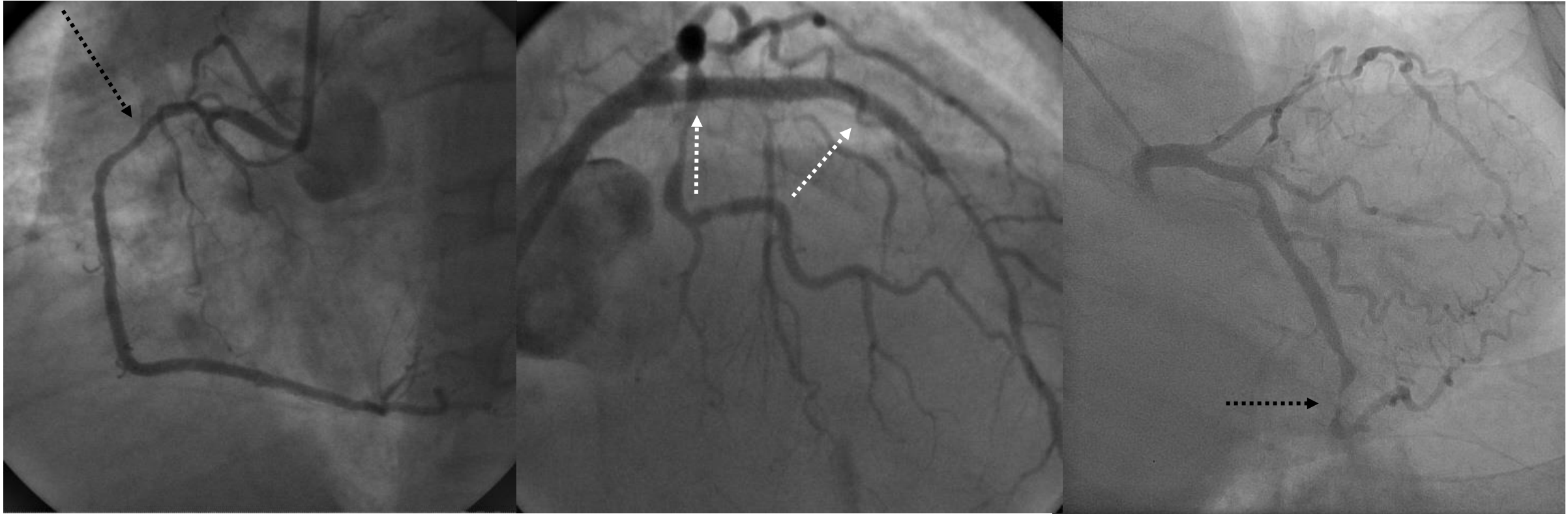
# LAD



**2 DESs;**  
**3.5\*23 + 3.0\*28 mm**

**Post Stent Distal FFR;**  
**0.91**

72/M, Stable angina, 3 *Vessel-Disease*



**Major Vessel, LAD PCI with Optimal Medical Therapy**

**2024**

**Changing Concept  
of LM and Multi-Vessel PCI**

- 1. Cotemporary PCI (Imaging and Physiology Supported PCI) Can Make a Better Clinical Outcomes.**
- 2. Major Vessel PCI with Optimal Medical Therapy Would be Appropriate Approach for MVD.**