

# TCTAP 2024

## Case 1: DCB in AMI

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# Disclosure

- I, JinHyun Lee, do not have any potential conflicts of interest.

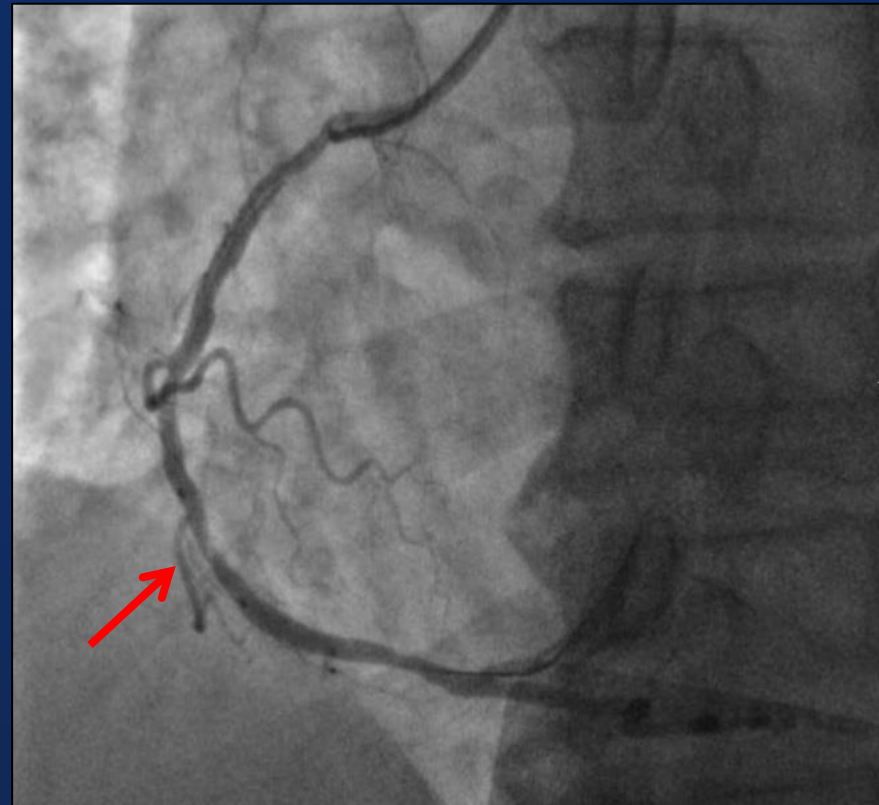
# Clinical History

- Male/57
- Smoker
- Diabetes ; HTN ; hyperlipidemia
  
- Presented with **inferior STEMI**

# Coronary Angiography

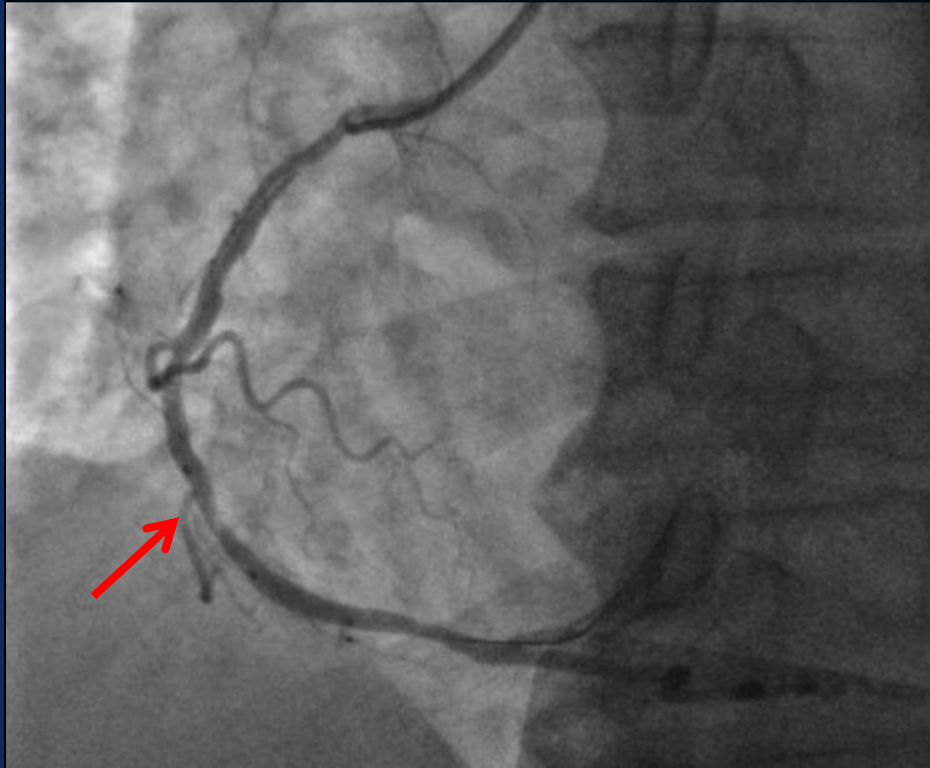


RCA - baseline



RCA – after POBA

# Coronary Angiography



Lesion site at mid RCA

Vessel size ~ 3.0 mm

RCA – after POBA

## What is your next step?

- A) Direct stenting
- B) POBA and stent
- C) Alternative approach

# Stenting in PPCI for STEMI

- Recent trials : COMFORTABLE AMI & EXAMINATION ,  
NORSTENT

ESC 2017 Class 1  **DES over BMS**  
EXAMINATION<sup>150, 151</sup>  
COMFORTABLE-AMI<sup>149</sup>, NORSTENT<sup>152</sup>

- No *difference in CVS death* between DES vs BMS  
but ↓TLR in DES

# Stent Thrombosis in STEMI

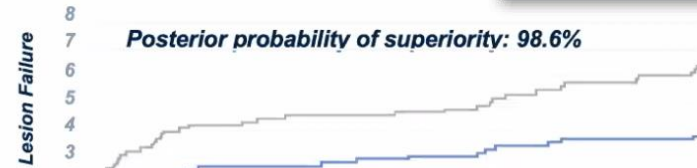
- **COMFORTABLE-AMI**
  - 0.9% (BES) vs 2.1% (BMS) at 1 year
  - 1.4 % (BES) vs 2.6 % (BMS) at 2 years
- **EXAMINATION-AMI**
  - 0.9% ( EES) vs 2.5% (BMS) at 1 year
- **ST Rate ~ 1 to 2.5%**



## Superior patient outcomes

### BIOSTEMI trial

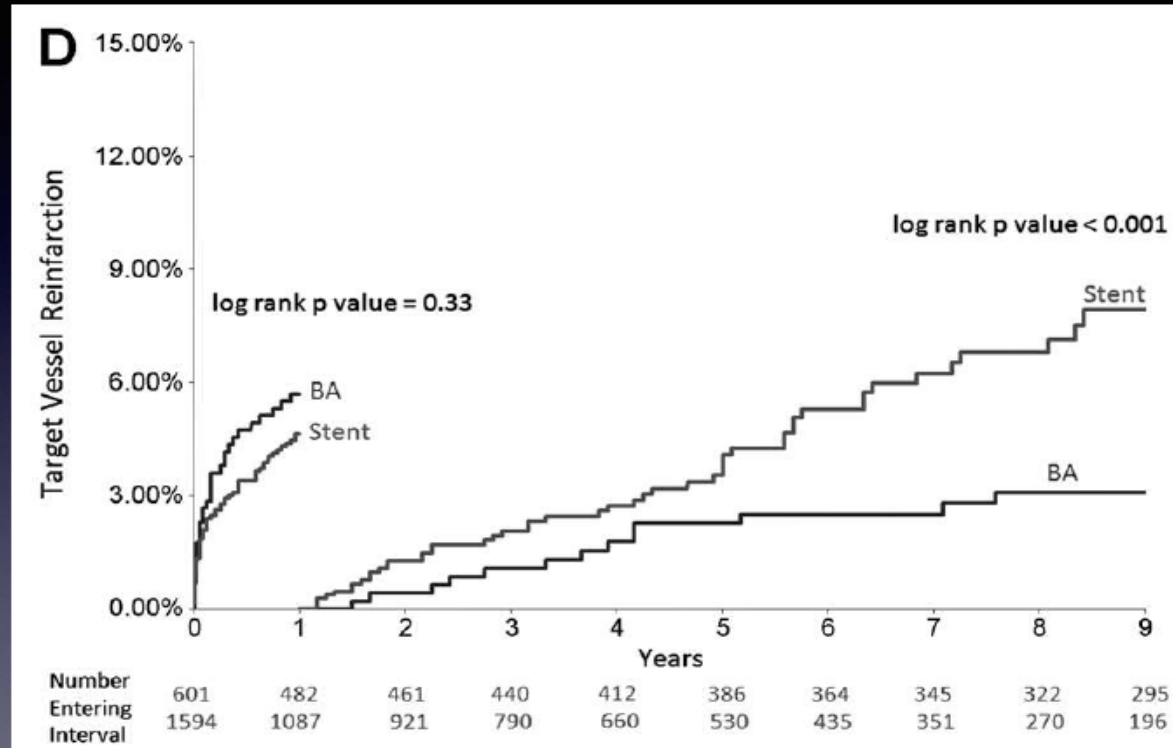
n=1,300, 1:1 Randomized, Superiority trial



- *Stent thrombosis rate* ~ 1-2% ( 1.7% at 1 year and 2% at 2 years for **Orsiro DES** in **BIOSTEMI**)
- Various factors : undersizing of stent ( vessels vasoconstrict during acute phase of STEMI), presence of thrombus, pro-inflammatory state leading to delayed arterial healing, etc
- Clinical need for *better treatment option* in STEMI

# Long Term Outcome after Stenting in AMI

Stenting for AMI is dangerous?  
A small early benefit is bought by a huge late hazard!



Brodie J Interv Card 2014;27:21

# Stent implantation in culprit STEMI lesion

Bleeding history

Aspirin allergy

Compliance to  
meds

1. Thrombotic lesion  
and thrombotic  
environment

2. Vasospasm

3. Safety – stent  
thrombosis vs  
bleeding risk

# Primary PCI in STEMI

Is it feasible to use DCB during PPCI?

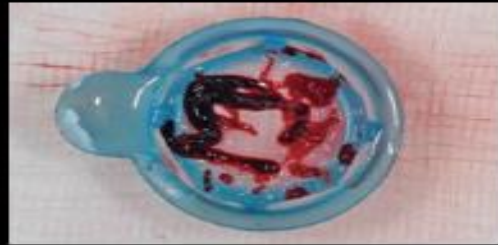
# \* Primary PCI Strategy for DCB

Step 1 :

*\*Aspirate*

+

Predilate



Dissection Type A-B

TIMI 3 flow

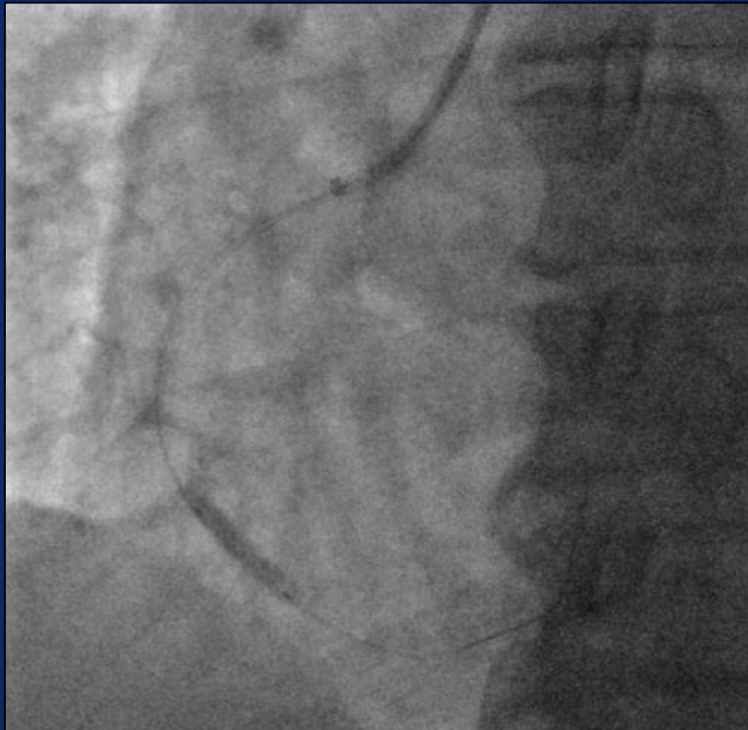
Residual stenosis  $\leq 30\%$

*TIMI thrombus grade 1-2*

Step 2:

DCB

# PCI of mid RCA

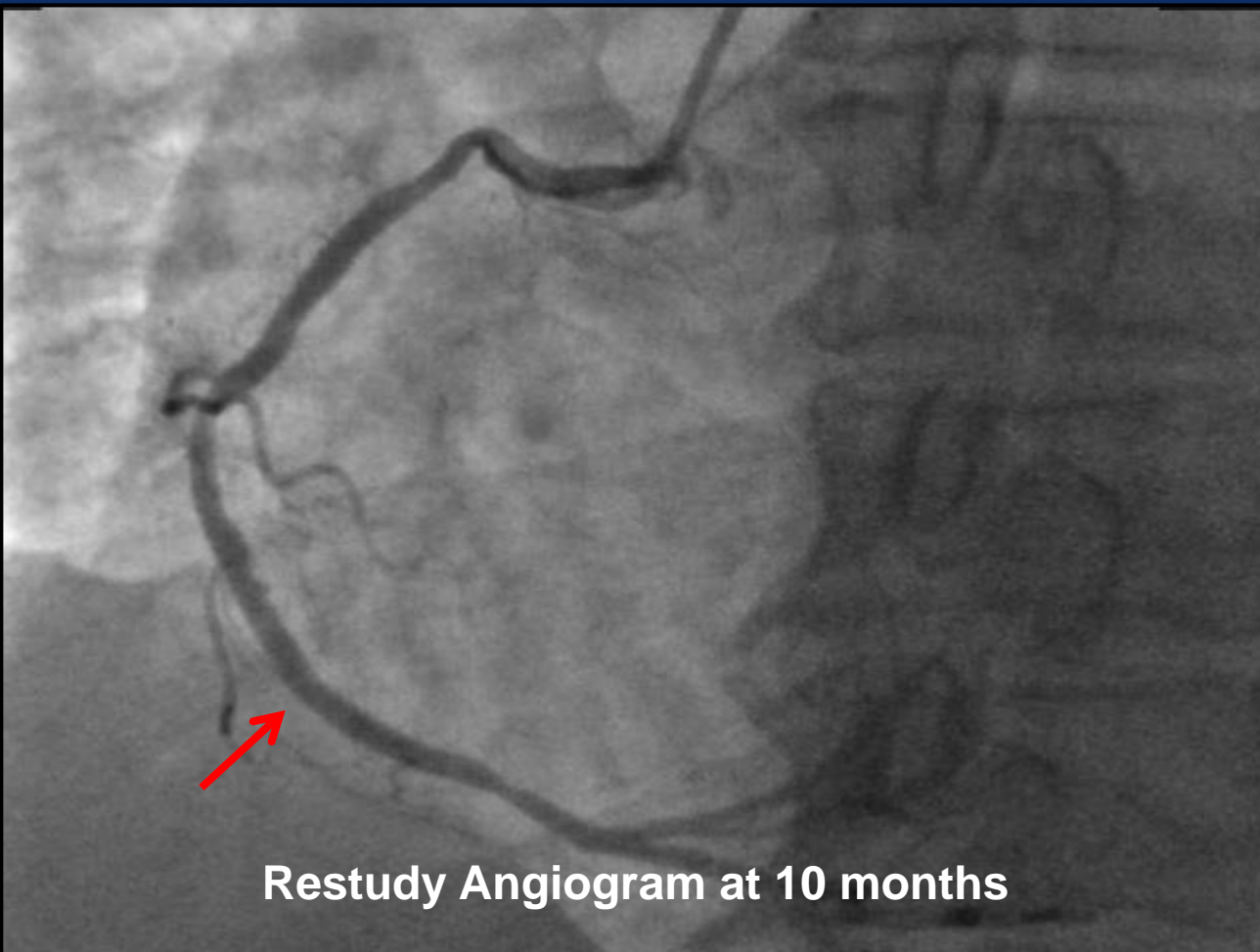


NC Scoreflex 2.5 x15 mm



RCA after lesion prep

# DCB Angioplasty of mid RCA





# REVELATION trial

## Paclitaxel-Coated Balloon Angioplasty Versus Drug-Eluting Stent in Acute Myocardial Infarction

**TABLE 3** Physiologic, Angiographic, and Clinical Follow-Up at 9 Months

	DCB	DES	p Value
Physiologic endpoint	(n = 35)	(n = 38)	
<u>Fractional flow reserve</u>	0.92 ± 0.05	0.91 ± 0.06	0.27
Angiographic endpoint	(n = 42)	(n = 42)	
Late luminal loss, mm	0.05 (−0.40 to 0.20)	0.00 (−0.16 to 0.10)	0.51
Reference vessel diameter, mm	3.28 ± 0.52	3.20 ± 0.48	0.35
Minimum lumen diameter post index procedure, mm	2.64 ± 0.42	2.88 ± 0.41	<0.01
Minimum lumen diameter at 9-months follow-up, mm	2.67 ± 0.68	2.86 ± 0.44	0.12
Clinical endpoints			
<u>MACE</u>			1.00*
Cardiac death	0/60 (0)	0/60 (0)	
Recurrent MI	0/58 (0)	0/54 (0)	
TLR	2/58 (3)	1/54 (2)	

2-year clinical outcome was excellent and comparable between the DCB and DES groups.

**CONCLUSIONS** In the setting of STEMI, the DCB strategy was noninferior to DES in terms of fractional flow reserve assessed at 9 months. Furthermore, it seemed to be a safe and feasible strategy. (Revascularization With Paclitaxel-Coated Balloon Angioplasty Versus Drug-Eluting Stenting in Acute Myocardial Infarction [REVELATION]; NCT02219802)



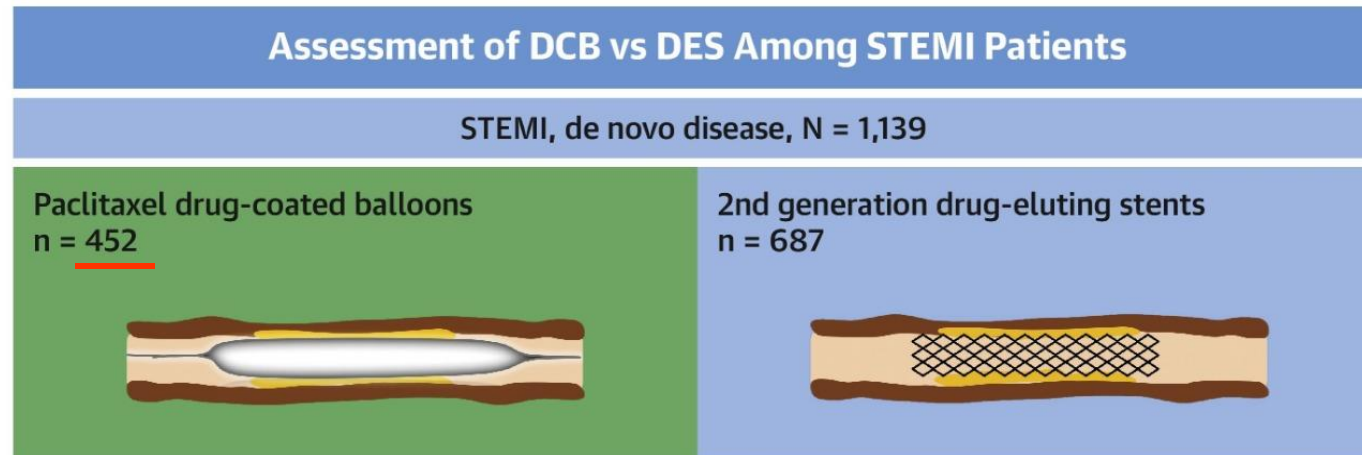
# REVELATION Trial @ 5 years

**TABLE 1** Clinical Endpoints at 5 Years' Follow-Up

	DCB Event Rate <sup>a</sup>			DES Event Rate <sup>a</sup>			P Value		
MACE	3/56 (5.4)			2/51 (3.9)			0.720		
Cardiac death	0/56 (0)			0/51 (0)					
Recurrent MI	1/56 (1.8)			1/51 (2.0)					
TLR	2/56 (3.6)			1/51 (2.0)					
	9 Months			2 Years			5 Years		
	DCB	DES	P Value	DCB	DES	P Value	DCB	DES	P Value
Timing of MACE after index procedure			1.00			0.34			0.72
Cardiac death	—	—		—	—		—	—	
Recurrent MI	—	—		1/56	—		—	1/51	
TLR	2/56	1/51		—	—		—	—	

# DCB vs 2<sup>ND</sup> G DES

## CENTRAL ILLUSTRATION: DCBs vs DES in STEMI



After 3-year follow-up (median) and propensity matching, no difference in all-cause mortality or net adverse cardiac events. No difference in:

- All-cause mortality
- Cardiovascular mortality
- Acute coronary syndrome
- Stroke / transient ischemic attack
- Major bleeding
- Unplanned target lesion revascularization

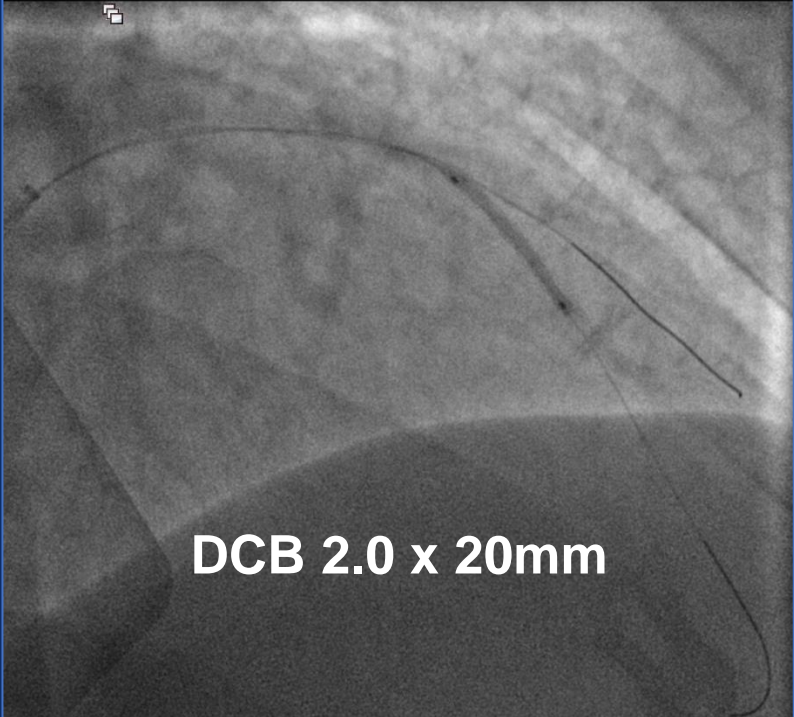
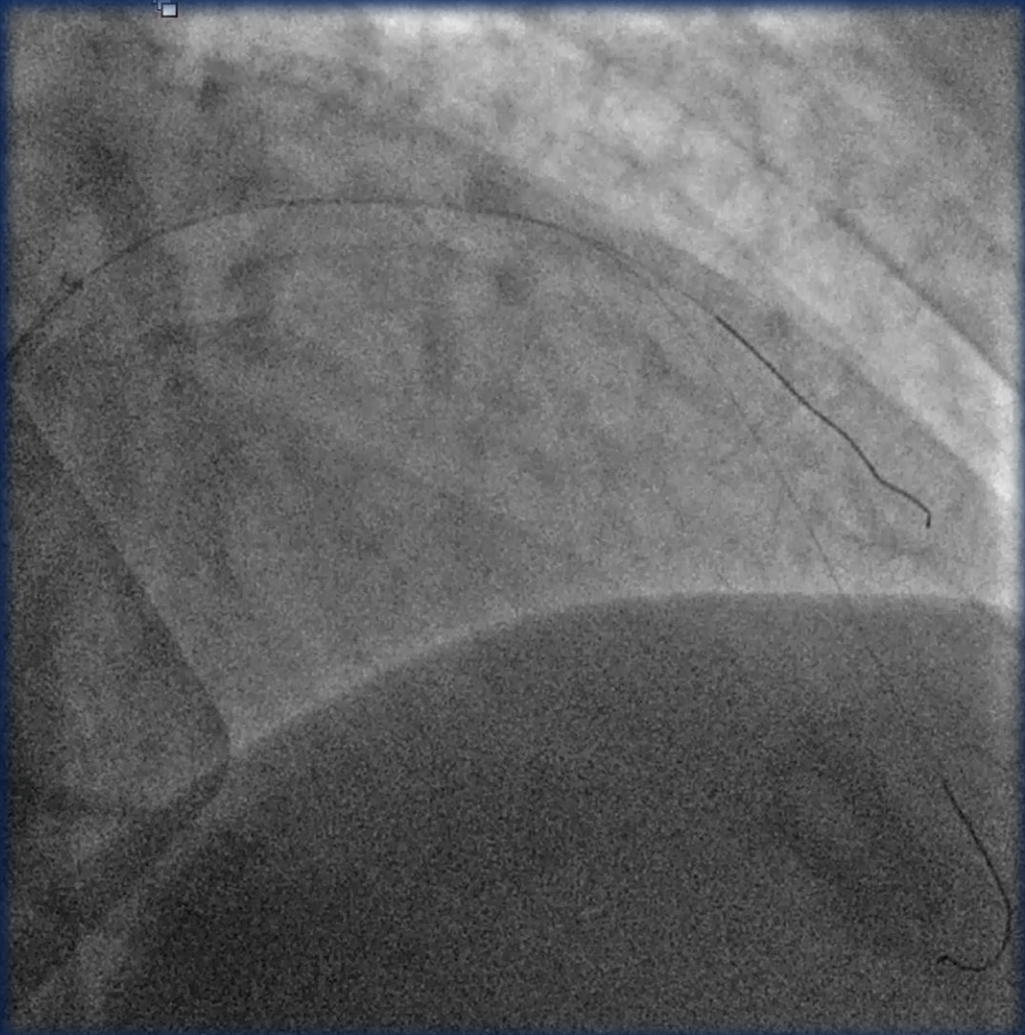
Merinopoulos I, et al. J Am Coll Cardiol Interv. 2023;16(7):771-779.

# Case : 42-year-old presents with anterior STEMI

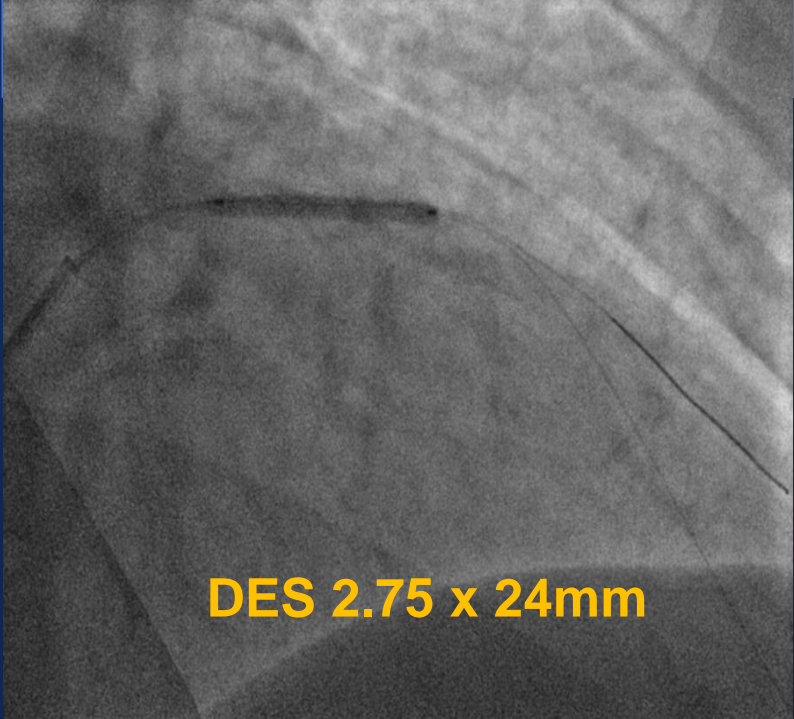




Predilatation using SC 2.0mm @18 atm  
and Scoreflex 2.0mm

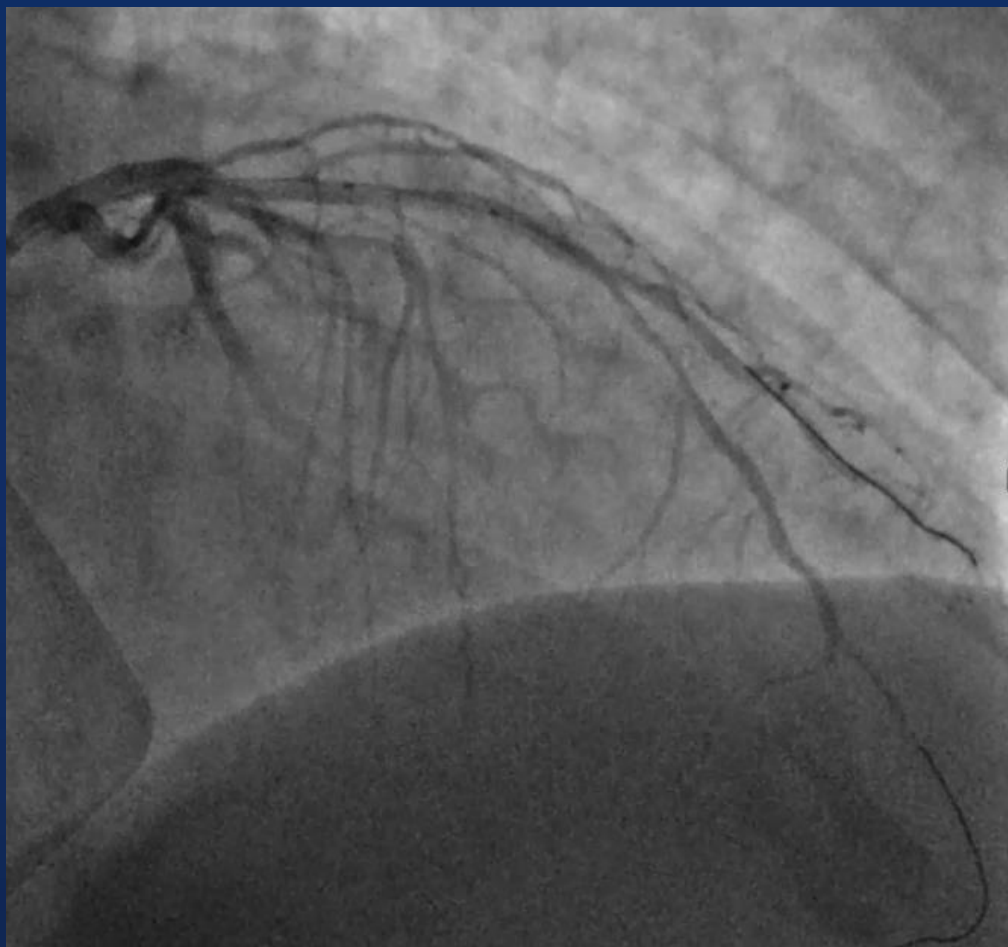


DCB 2.0 x 20mm



DES 2.75 x 24mm

Post POBA

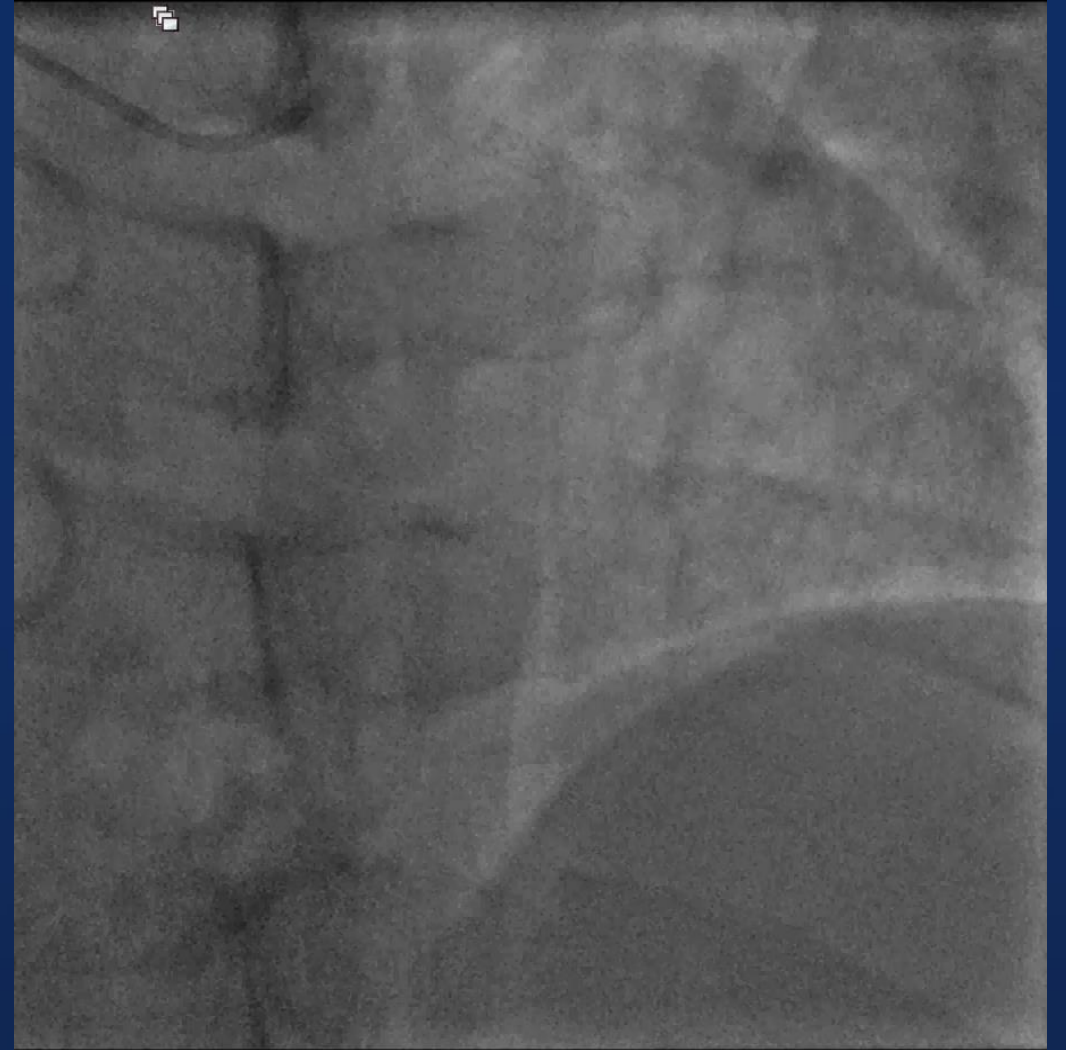


Final



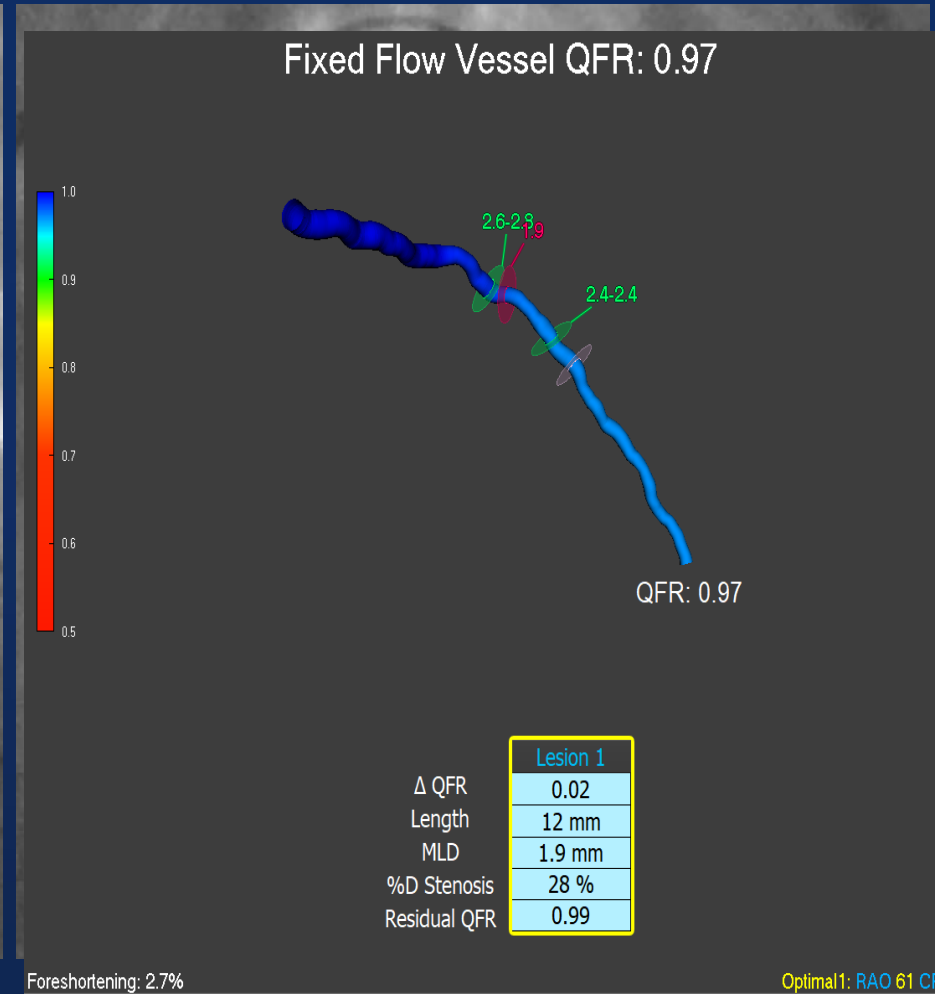
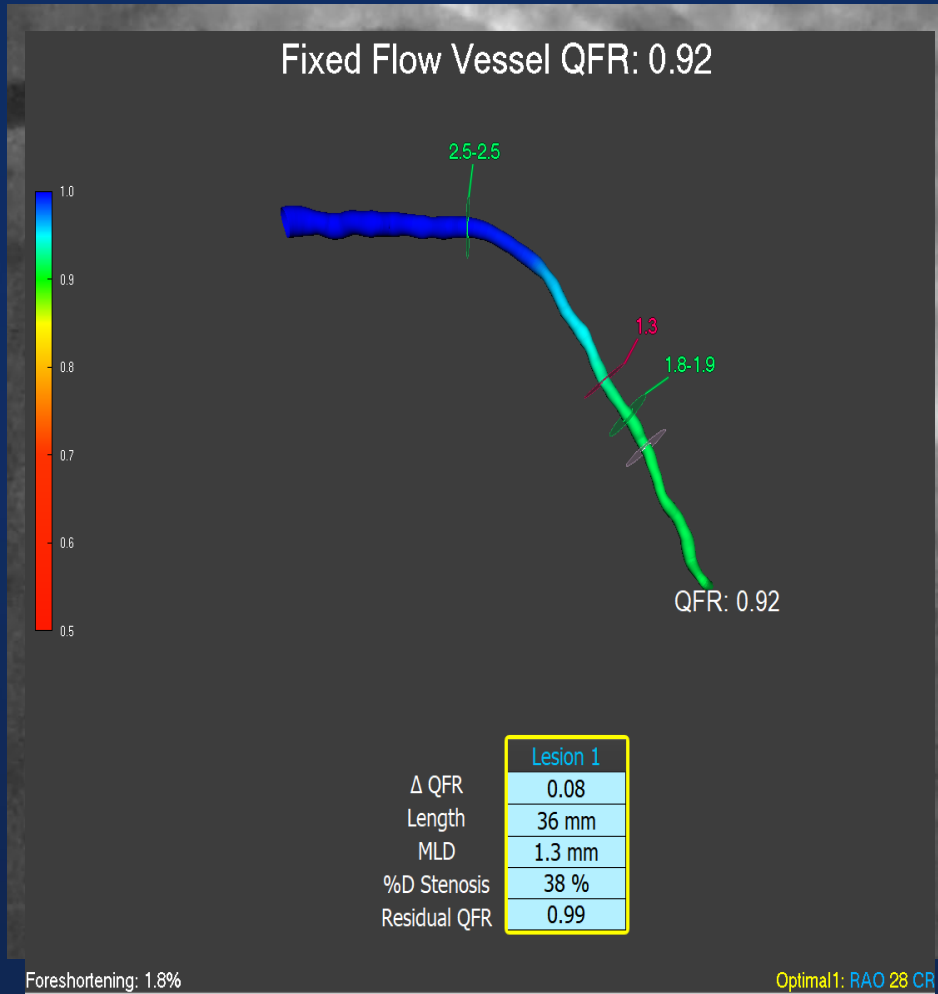


# Relook angiogram 4 months later

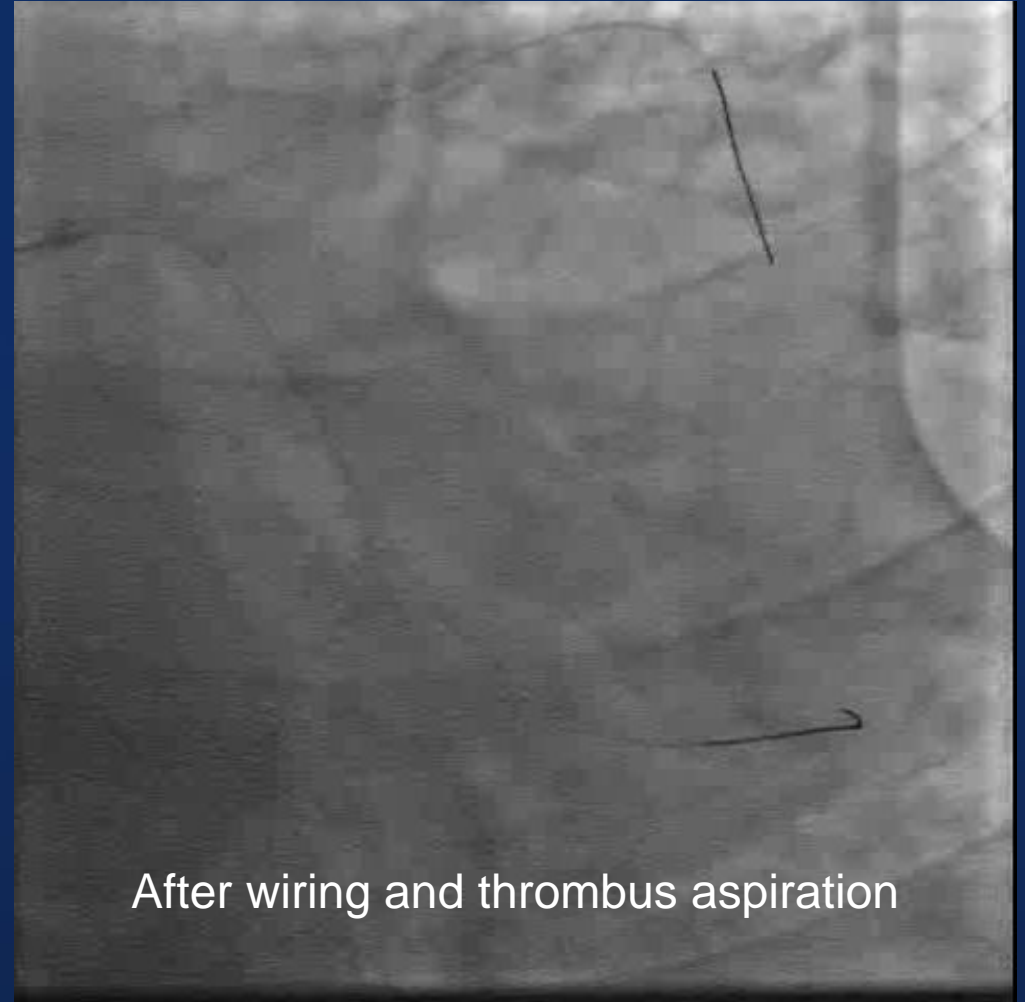
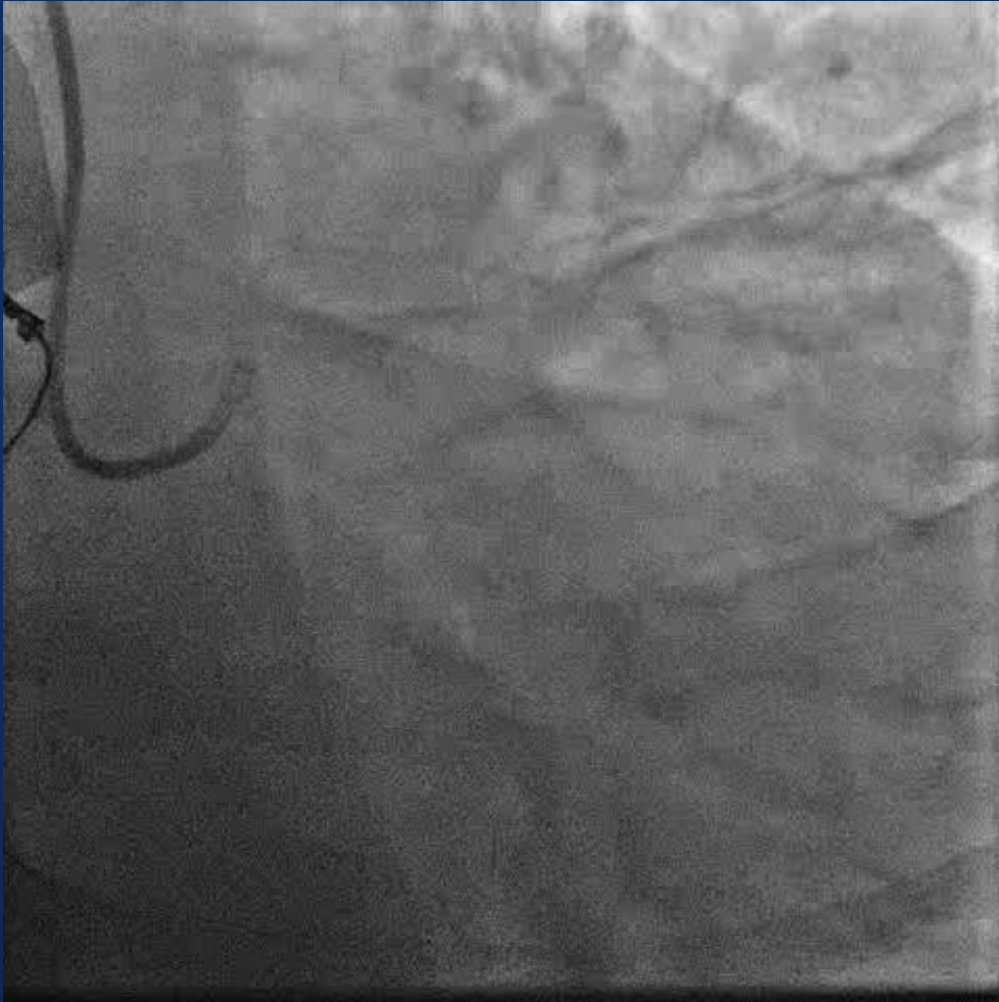


# @Immediate

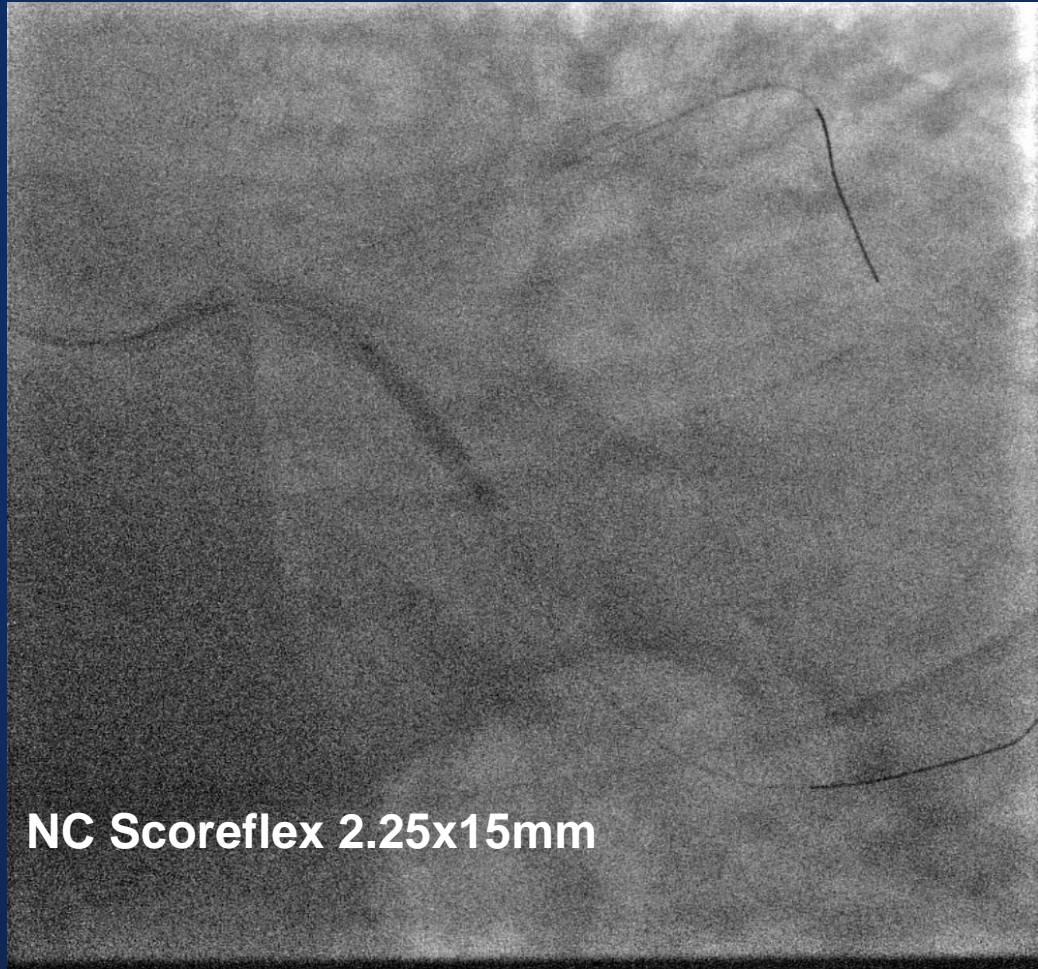
# @4 month



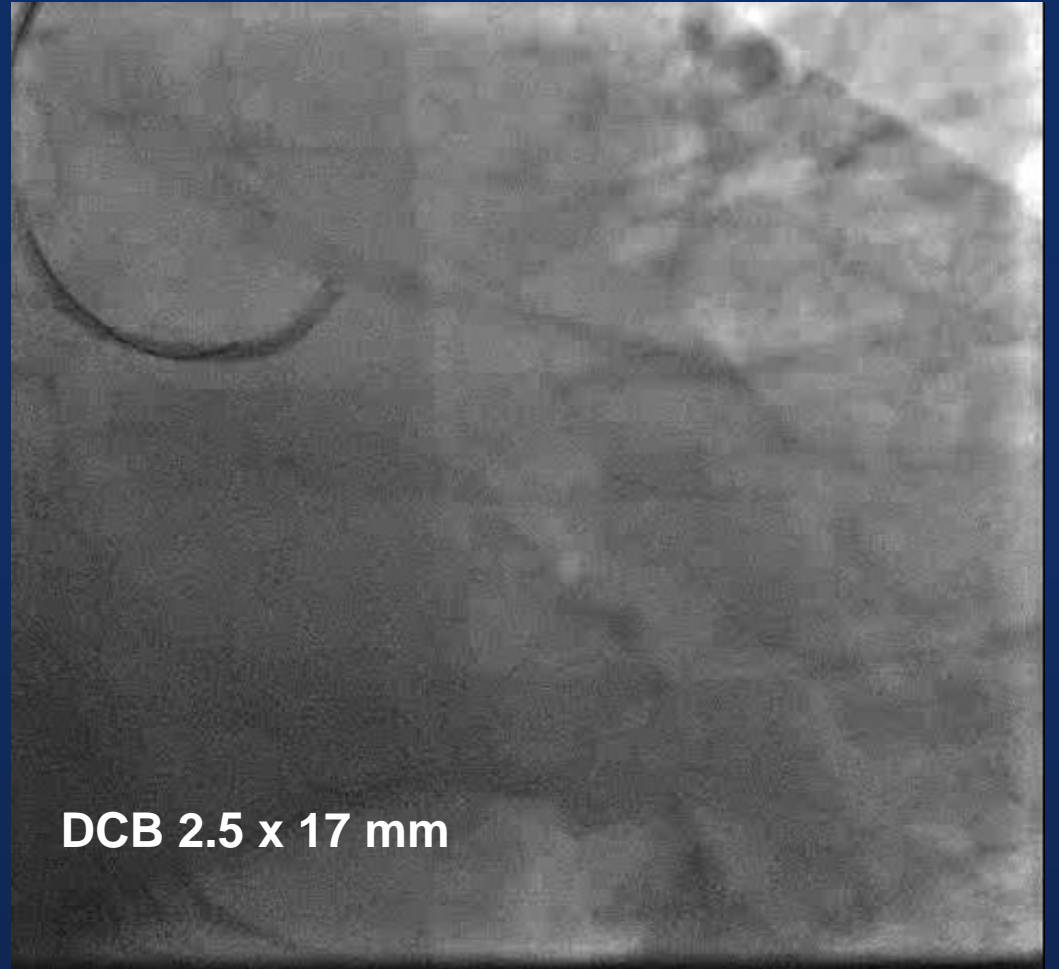
# Case : 53-year-old presents with posterior STEMI







**NC Scoreflex 2.25x15mm**



**DCB 2.5 x 17 mm**

**Acute Result**

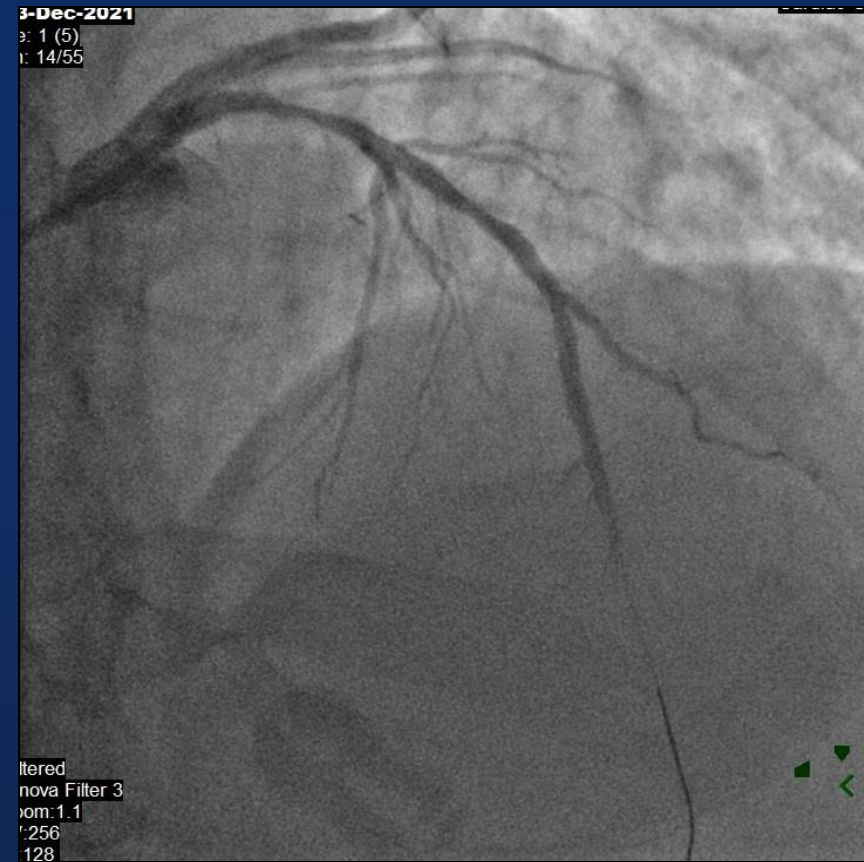
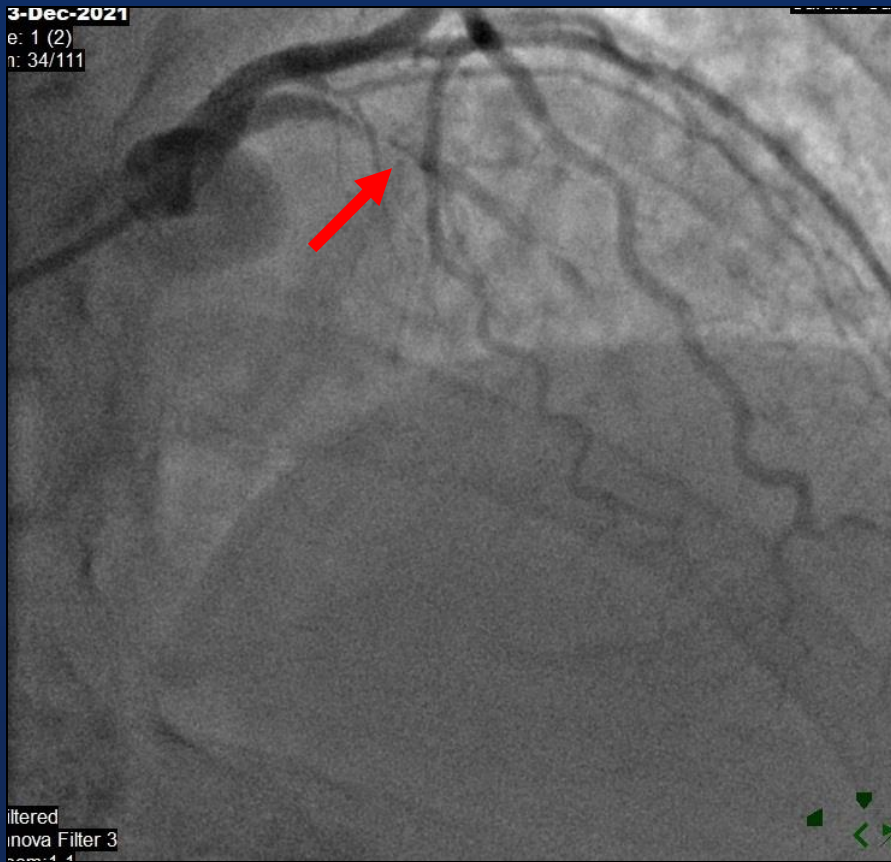


**21 months later**





# Challenging Ca+ Case in STEMI

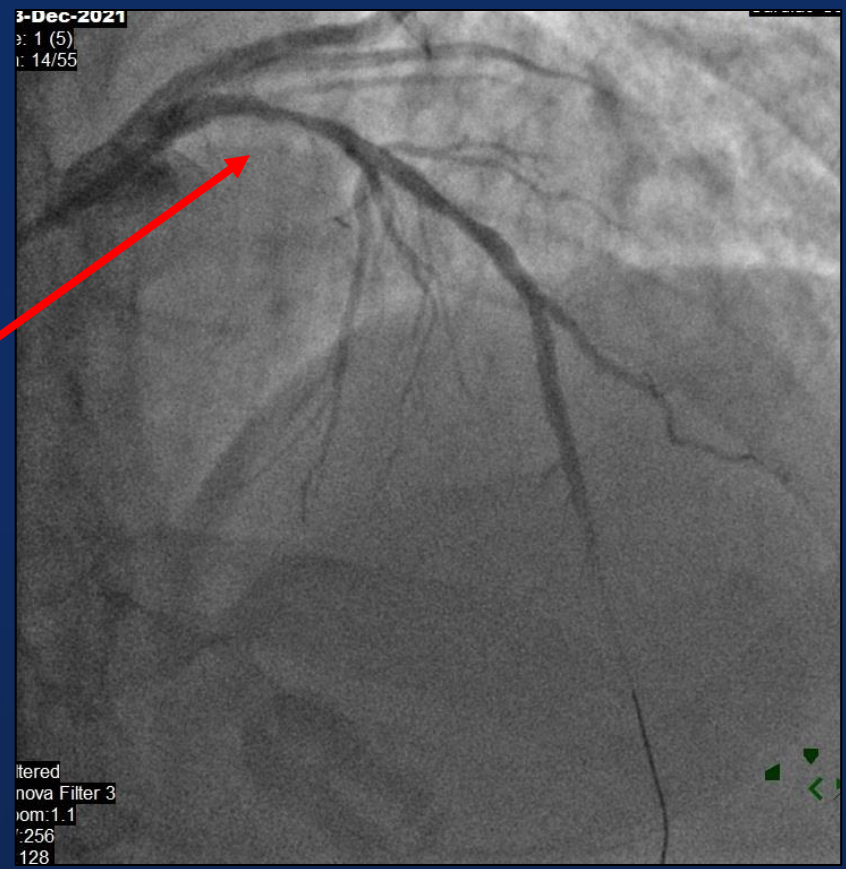
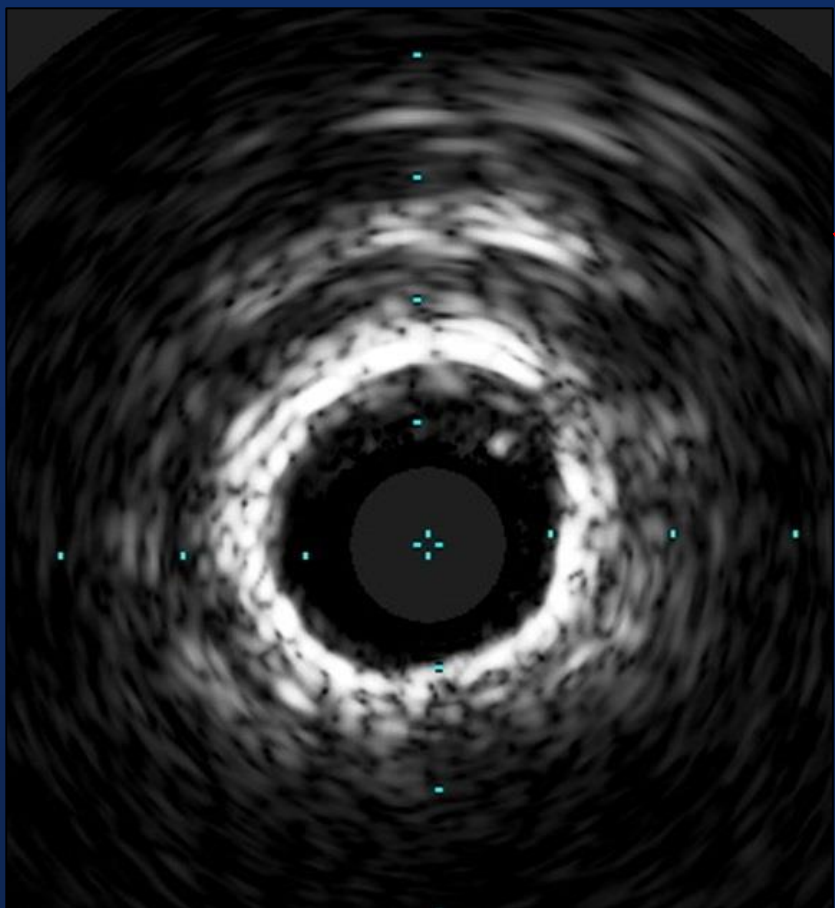


**M/72 Presented with anterior STEMI**

# Primary PCI of LAD

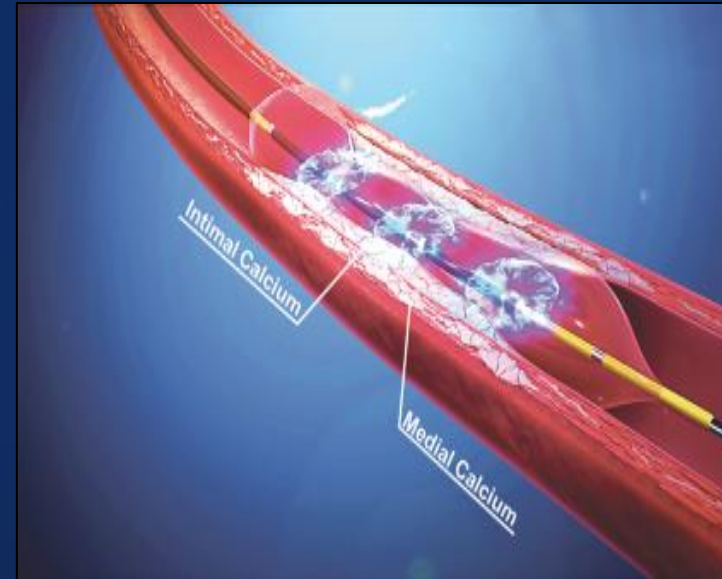


# IVUS of prox LAD





# Shockwave IVL Therapy

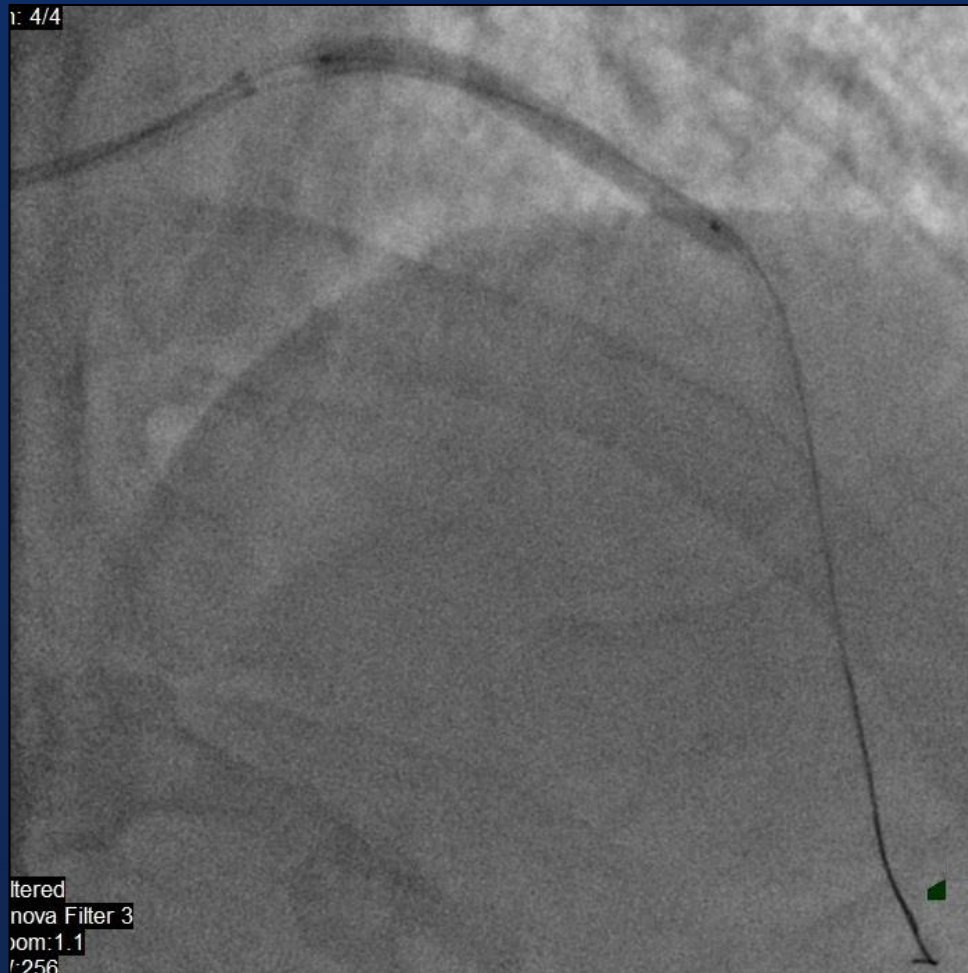


SW 3.5x12 mm ; 80 pulses

# IVUS of prox LAD ( post SW)



# DCB Angioplasty



# Final Result





# Conclusion

- Use of **DCB** in PPCI for **STEMI** (as primary therapy / adjunctive therapy) is safe and feasible with careful patient selection.
- Avoid stent related pitfall i.e. size mismatch and stent thrombosis as more frequently seen in PPCI
- Simplifies the DAPT regime

**Learn the Art of Drug Coated Balloon Angioplasty**

# 47 Years of Angioplasty No Stent is **Still** the Best Stent

1977



2024

