



# System and Skill Dual Approach for PPCI and its complications

Dr Lam ho



## What is missed in STEMI guideline ?

# STEMI with Delay Presentation

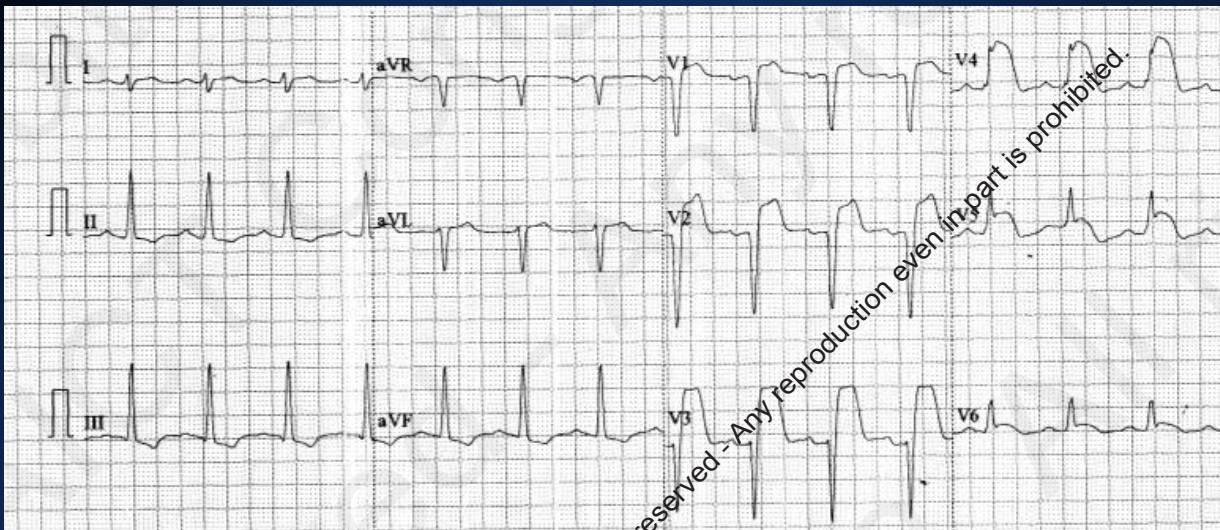
- ▶ **Type A – late presenter**
  - A. early late >6-12 hrs
  - B. > 12 -24 hours
  - C. > 24 hours
  - **D. Late on late presenter STEMI**
- ▶ **Type B – missed diagnosis**

# M/60s ex-smoker DM

▶ Chest Pain 4 days

▶ 9 AM → A&E @ 13:30am (4.5hrs)

Triage Category	<input type="radio"/> I <input type="radio"/> II <input checked="" type="radio"/> III <input type="radio"/> IV <input type="radio"/> V	by	at
Upgrade	<input checked="" type="radio"/> I <input type="radio"/> II <input type="radio"/> III <input type="radio"/> IV	by	at
GCS E V M	BP 158/116 mm Hg	RC	14d/92
1 <input type="radio"/> <input type="radio"/> <input type="radio"/>	Pulse 100/min (Ir)	RR	30
2 <input type="radio"/> <input type="radio"/> <input type="radio"/>	T°C 36.2 (O/R/A)	O <sub>2</sub> : Venturi-mask	%
3 <input type="radio"/> <input type="radio"/> <input type="radio"/>	RR 16 /min	NC/ Simple mask/	CRT sec
4 <input type="radio"/> <input type="radio"/> <input type="radio"/>	SpO <sub>2</sub> 97 % on BA/O <sub>2</sub>	Non-rebreather mask	Limbs: warm / cold
5 <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/> Continue O <sub>2</sub> fr Amb ___L/min	Rt Pupil Size	Informant: Self / Son / Daughter
6 <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/> O <sub>2</sub> by Triage Nurse ___L/min	Lt Pupil Size	Incident Date:
Consciousness	<input checked="" type="radio"/> A <input type="radio"/> V <input type="radio"/> P <input type="radio"/> U	NR R / NR	Location:
Triage Note	<input checked="" type="checkbox"/> Fever <input checked="" type="checkbox"/> Travel - Chest pain x 4/7 <input checked="" type="checkbox"/> Occup - ↑ pain today <input checked="" type="checkbox"/> Contact - SOB <input type="checkbox"/> Cluster <input type="checkbox"/> Rash <input type="checkbox"/> Referral <input type="checkbox"/> Am Record Allergy Hx: NKA/allergy PHN: NAD		
Hx:	- Chest pain x 4/7 - ↑ pain some pain today - radiation shoulder + SOB		



Door to Balloon Time = 70 mins (5.5hrs)

OT Start on: 25/05/2017 at 14:17 OT End on: 25/05/2017 at 15:26 Duration:

Pat. Spec.: CCU OT Suite: CCL2| Ward: D1CC

User Spec.: MED Div./Team: Disease Group:

Type: Emergency Magnitude: Ultra Major



# System

## Complications mx start before patient arrive Cath lab

**Delay present Case:**  
**Prepare adenosine and inotrope**  
(high risk for no reflow and reperfusion shock)

PCI Call Activated - Clinical Information Record appendix 1

Information from A&E Nurse / Doctor

PPCI call received @: 13:40 Date: 25/5/2017

Cardiographer @: 1400 (Non-office hr) 5003 (RR)  
Radiographer a/v @: (Non-office hr) 6517 (TR1)  
Radiographer phone nos: 5161 (Non-office hr) 6519 (TR2)

CT Angiogram Ext: 5181

Reply to CCU MO / e-PCI on-call MO @: 1400  
Inform Chief Operator @: 1335  
Inform A&E for patient transfer @: 14:00

Dx: STEMI EP R+ 2

BP: 121/116 mmHg HR: 96/min SpO2: 99% O2 Mask: % Nasal Cannula: L/min  
Chest Pain: Yes/No 1/0 ECG change STT V2-V5

Intubation / IPPV required: Yes/No  
ABP required: Yes/No  
Temp Pacing: Yes/No

Medication given in ambulance: Aspirin 100 mg  
Medication given in A&E: Aspirin 120 mg Ticagrelor 180 mg Heparin IV 4000 I.U.  
IVF: NS / 1/2: 1/2 sol'n / NA Nitrates: TNG infusion: NA ml/hr  
Inotropic: Dopamine / Dobutamine / Adrenaline / Nor-adrenaline  
Others:

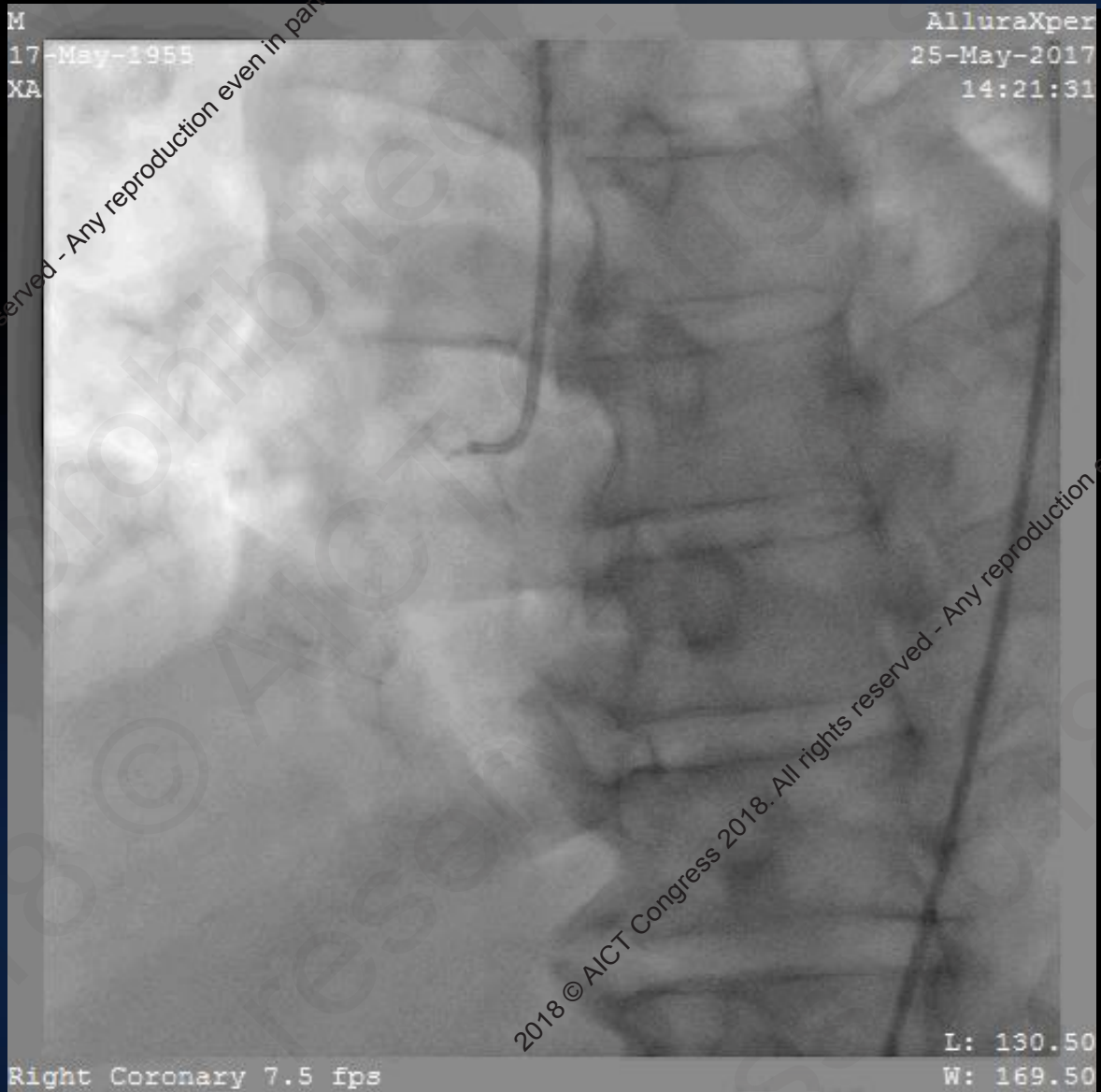
Patient arrived in CCL @

Denture: No / Yes Upper x Lower x  
Patient property: No / Yes To CCU lease nurse: Yes / No





# Coro: RCA CTO

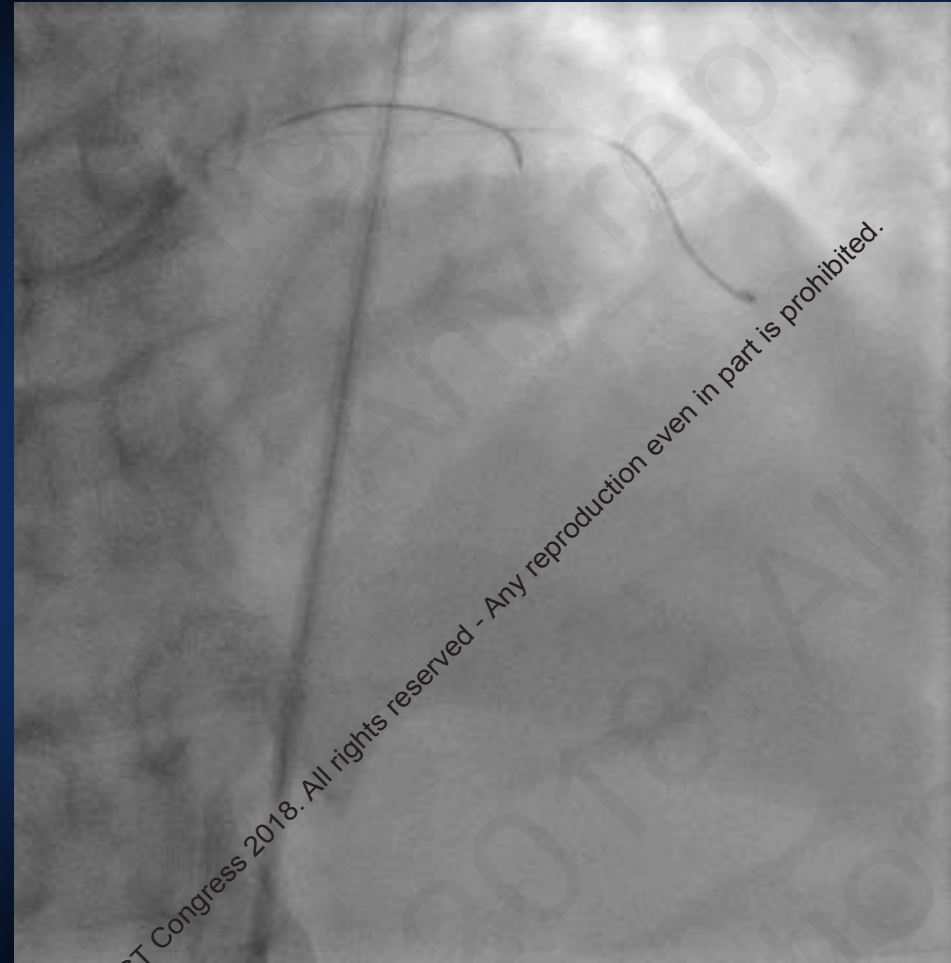




# Coro: LAD occluded

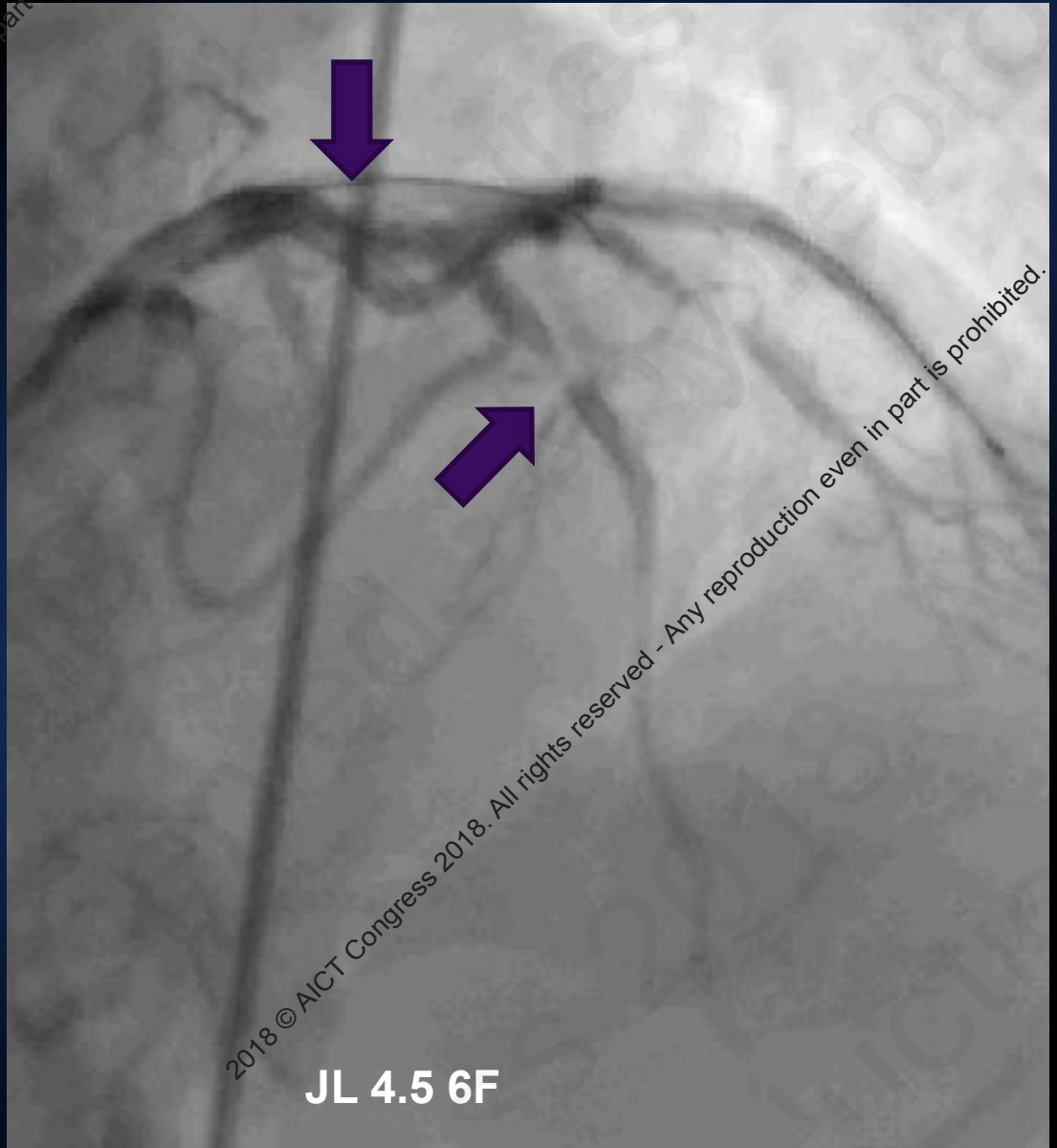
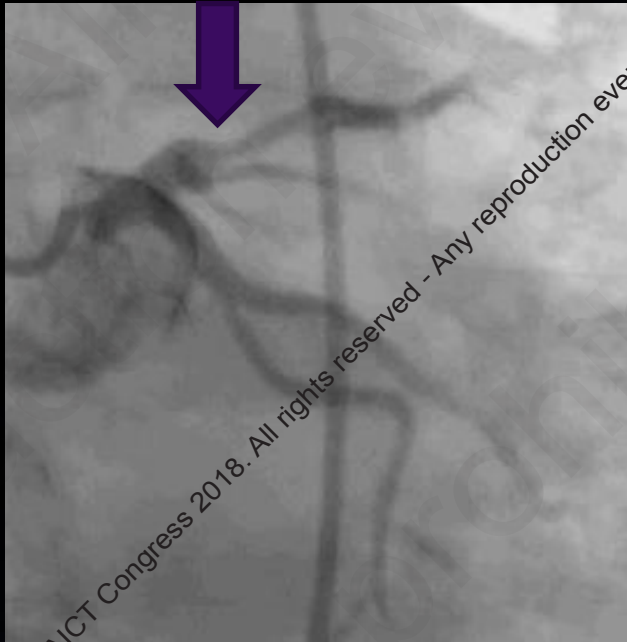


pLAD 80% lesion



mLAD 95% lesion TIMI I-II flow

# What would u do to minimize no reflow?



**How did I treat ?**

- 1. Stent Separately**
- 2. Avoid Post Stent High Pressure**

**What is the size of LAD ?**

**JL 4.5 6F**



# Coro after 2.0 balloon at 6 ATM

M  
17-May-1955  
XA

AlluraXper  
25-May-2017  
14:38:01

**A. 2.75mm stent**

**B. 3.00mm stent**

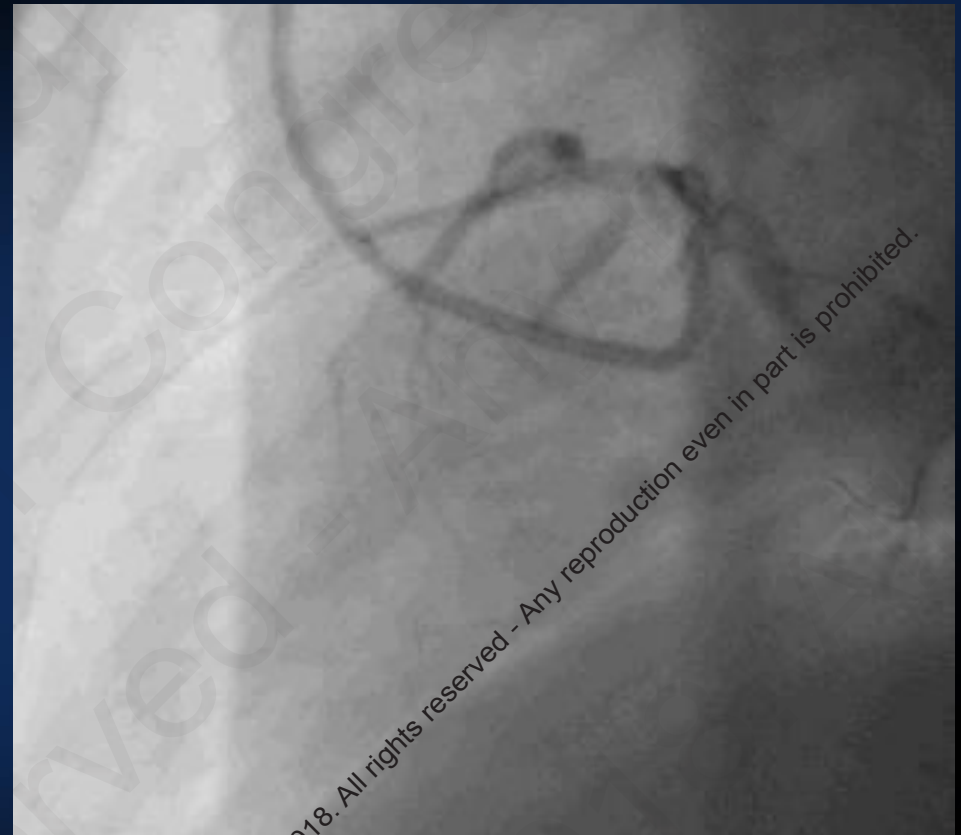
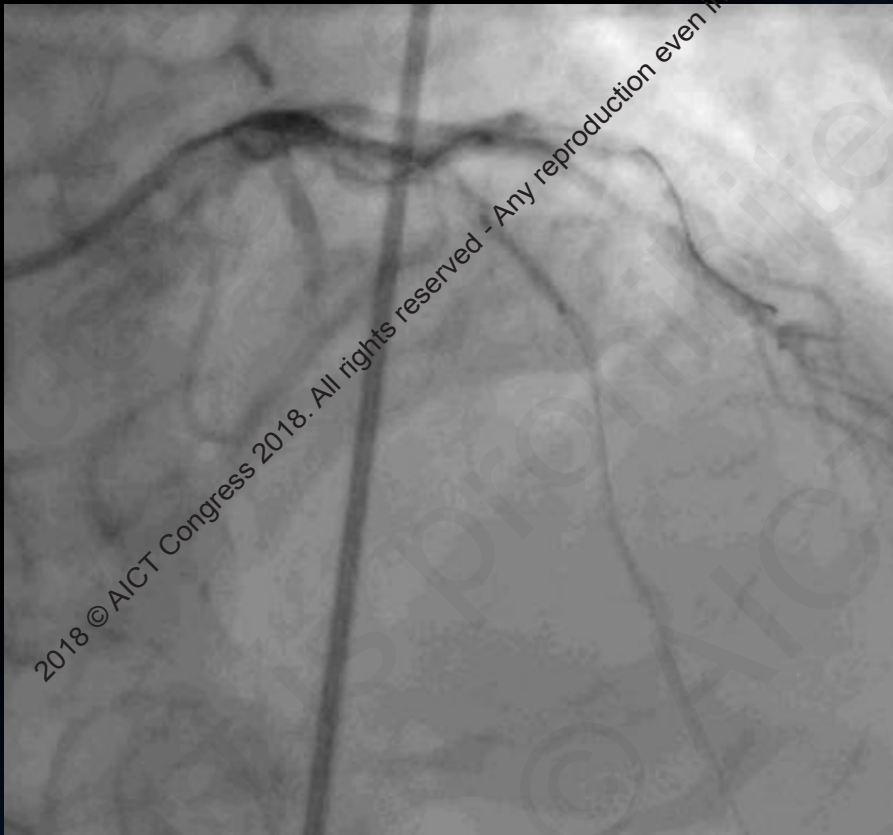
**C. 3.5 mm stent**

L: 130.50





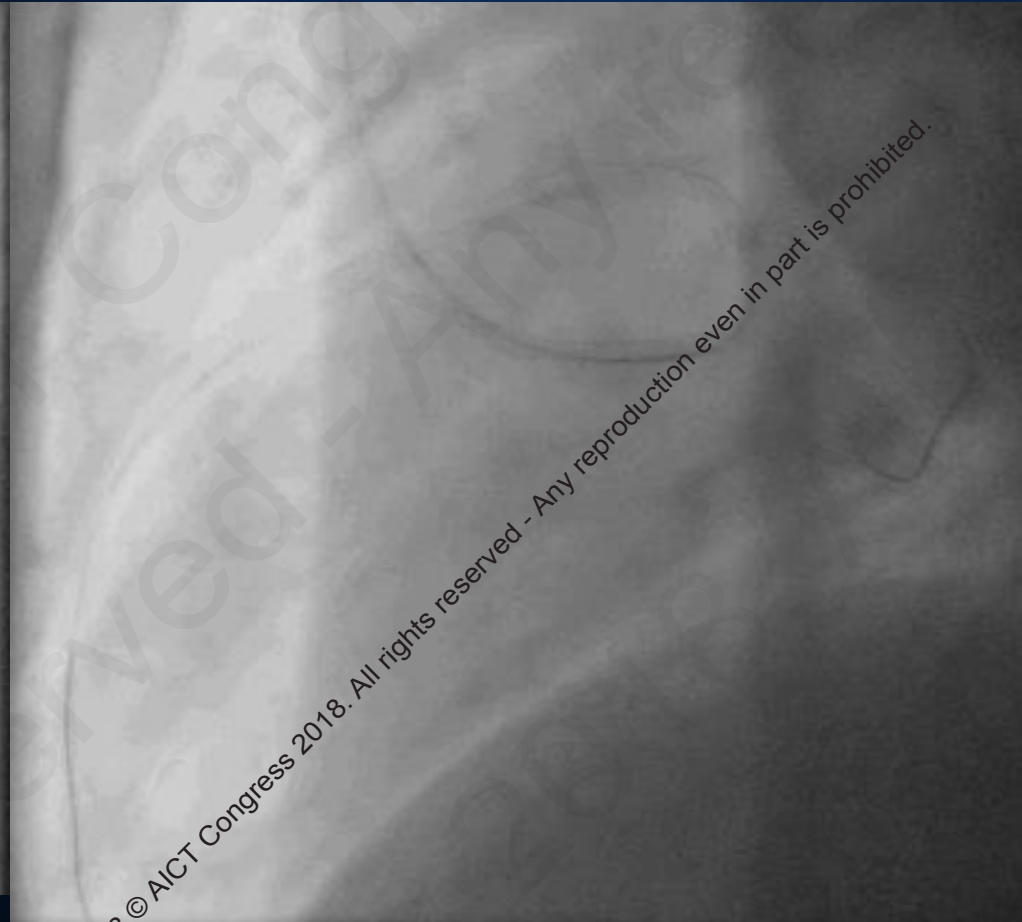
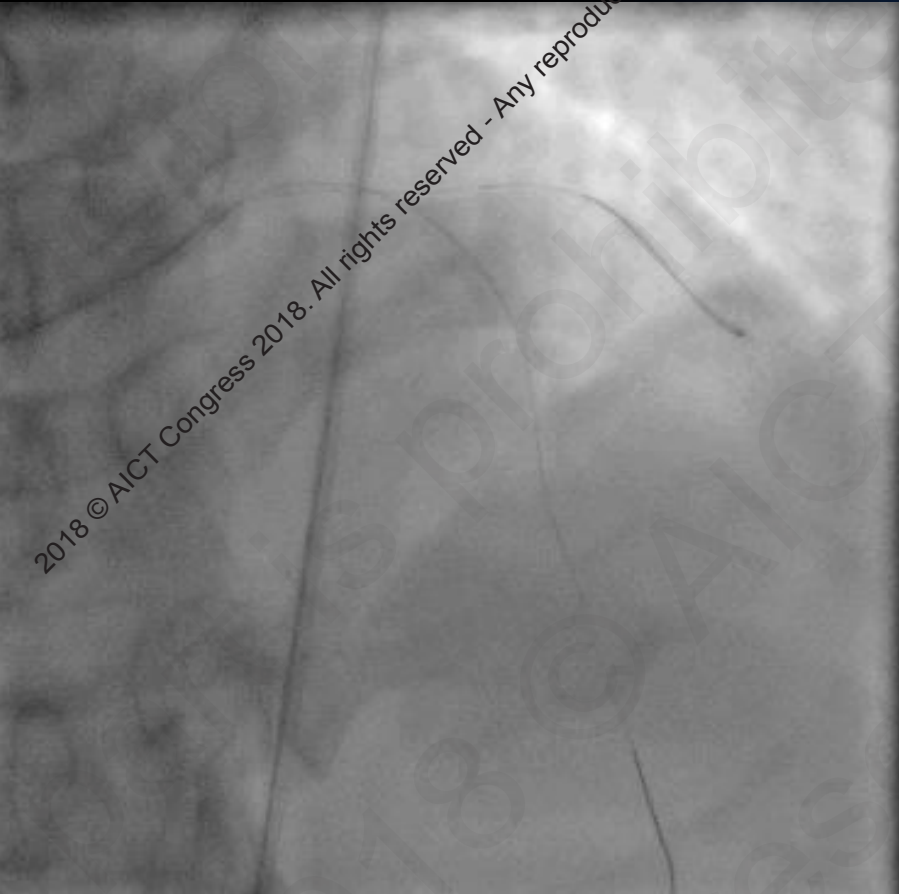
# Stenting : **Xience 3.5 x 15** at 10 ATM





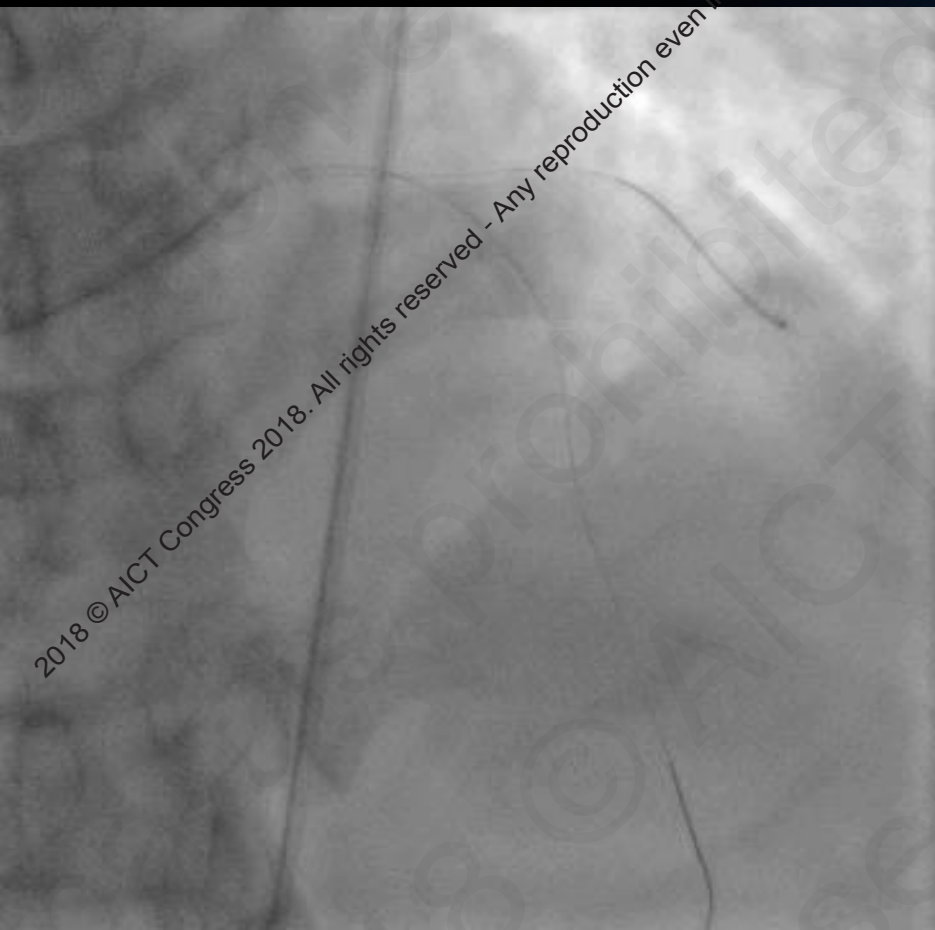
# NO Reflow and BP drop !!!!!

- ▶ Remember RCA is CTO, supplied by LAD !

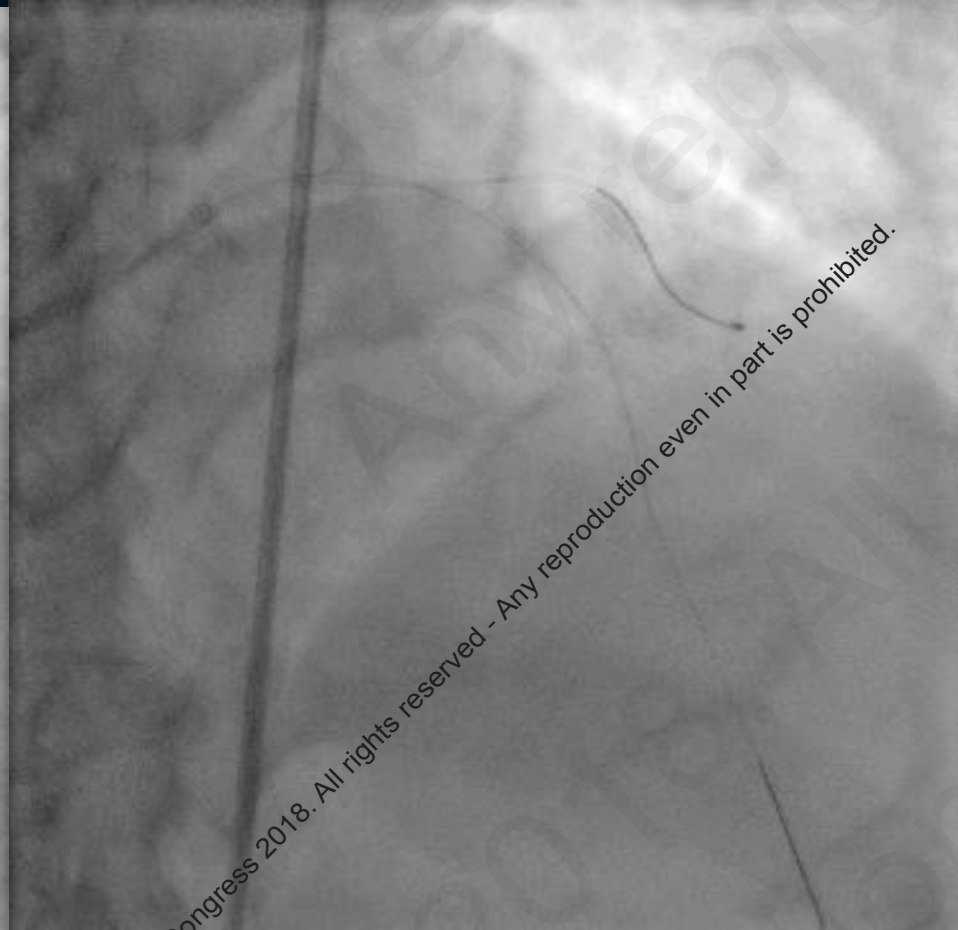




# Adenosine is a/v before no reflow



Usual IC Adenosine : **No USE**

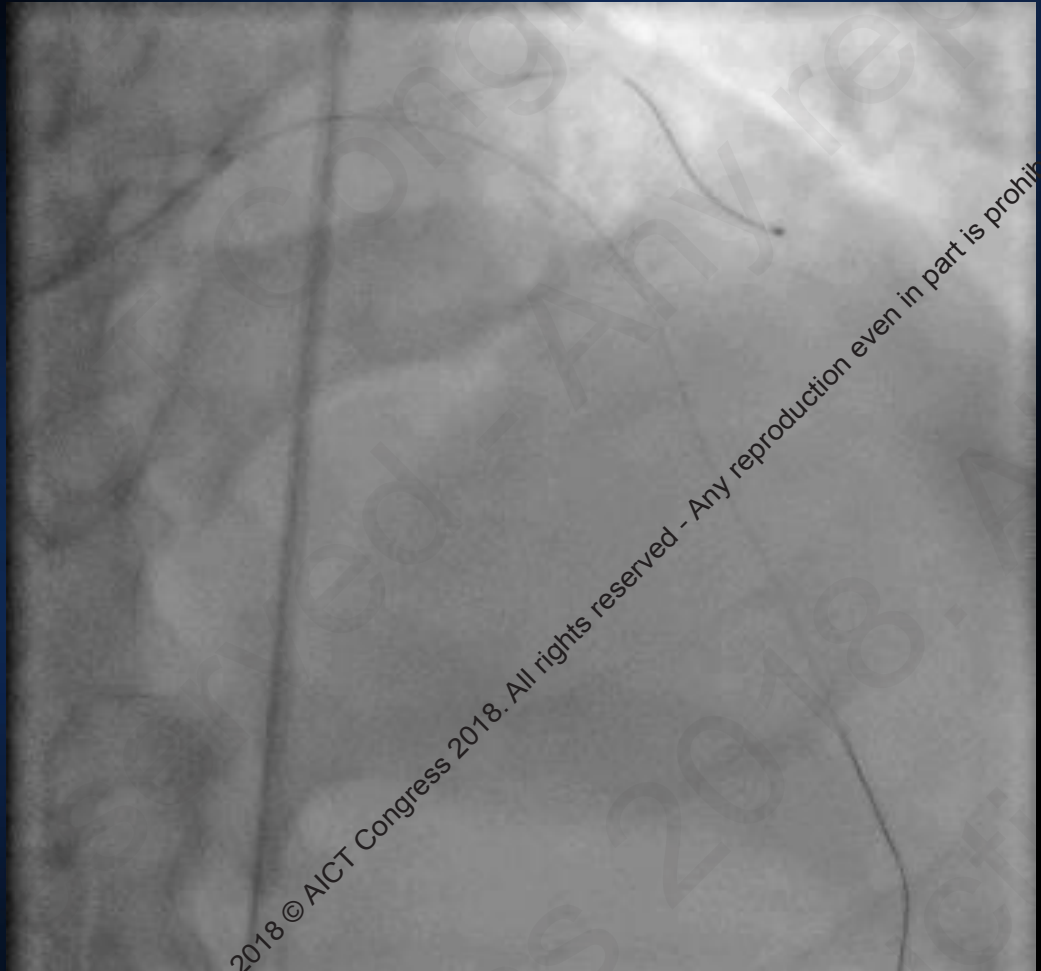


**Crusade for distal injection**

# Flow recover quickly

- ▶ **What if we need 3 mins to prepare Adenosine?**  
**(RCA CTO)**

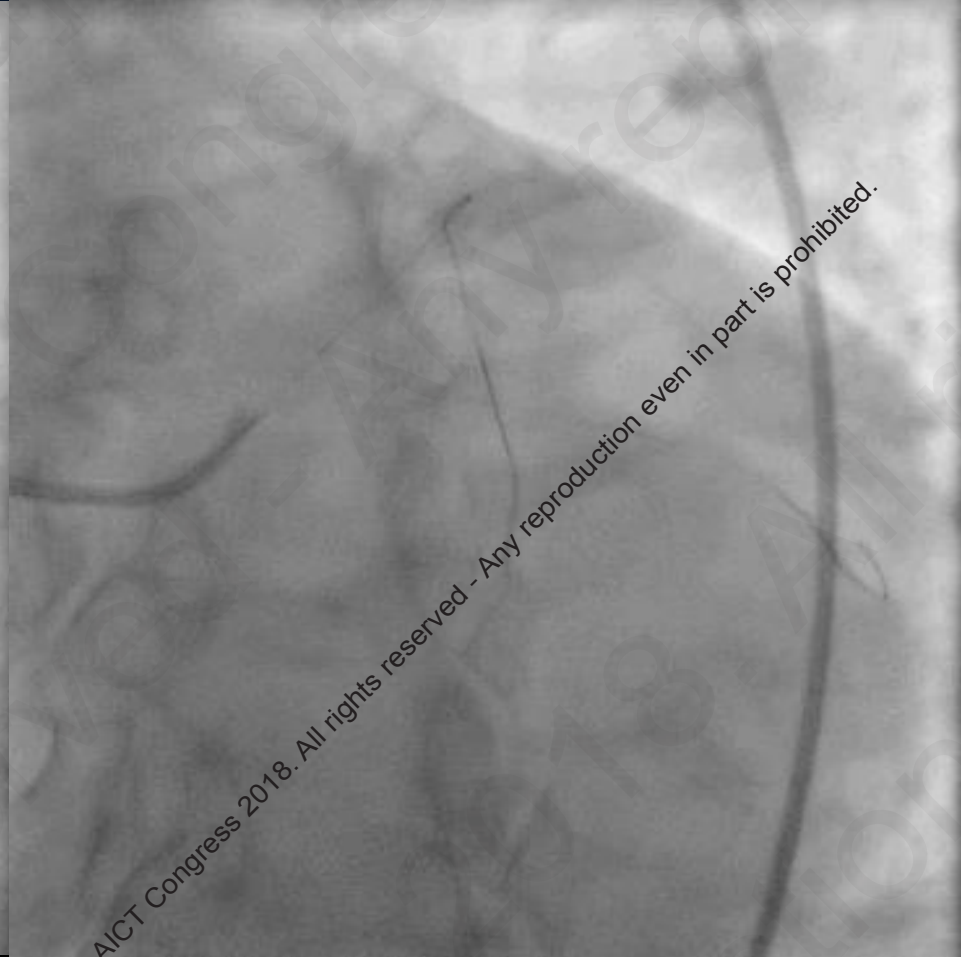
Remark: nipride is not good for low BP case







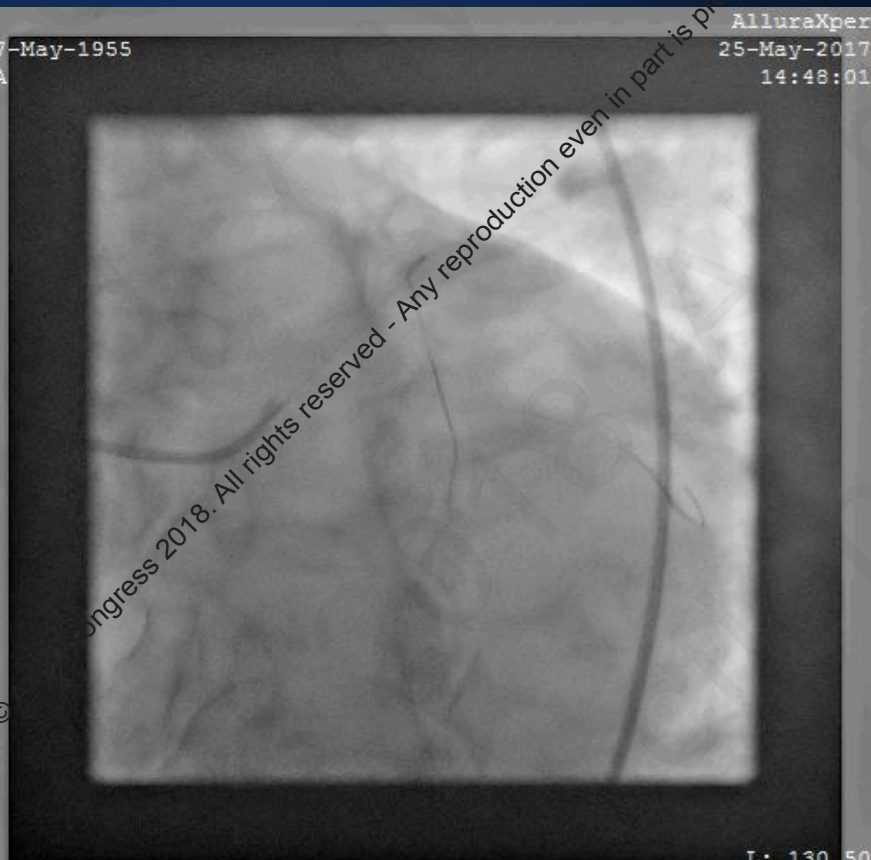
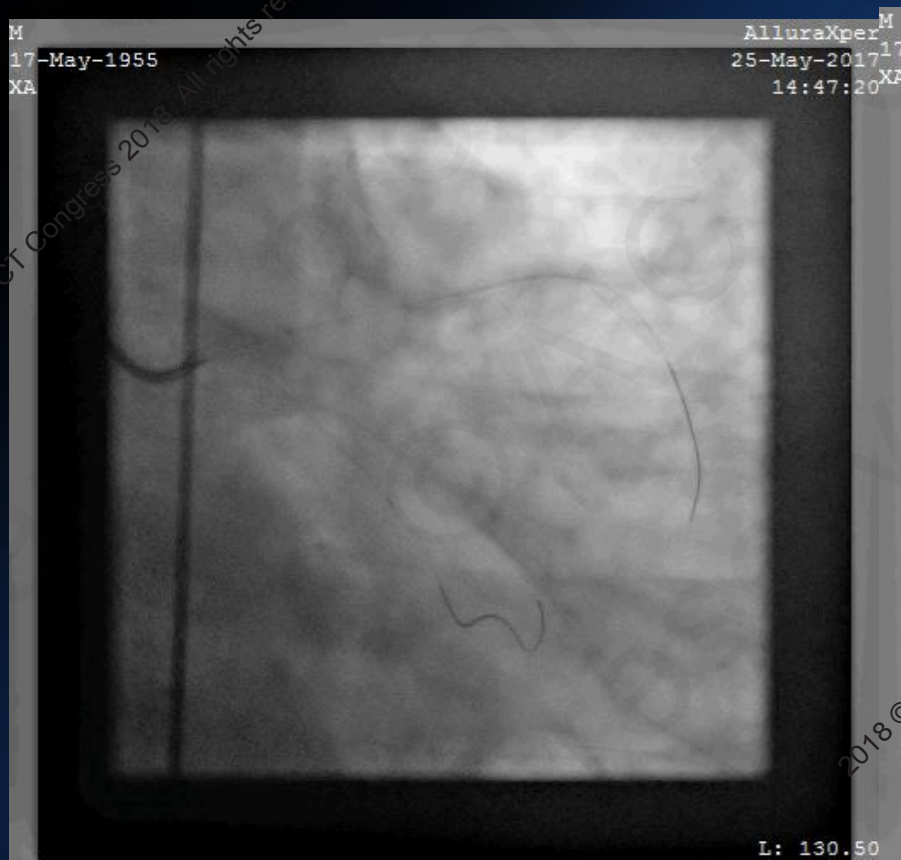
# Defer or Treat ?



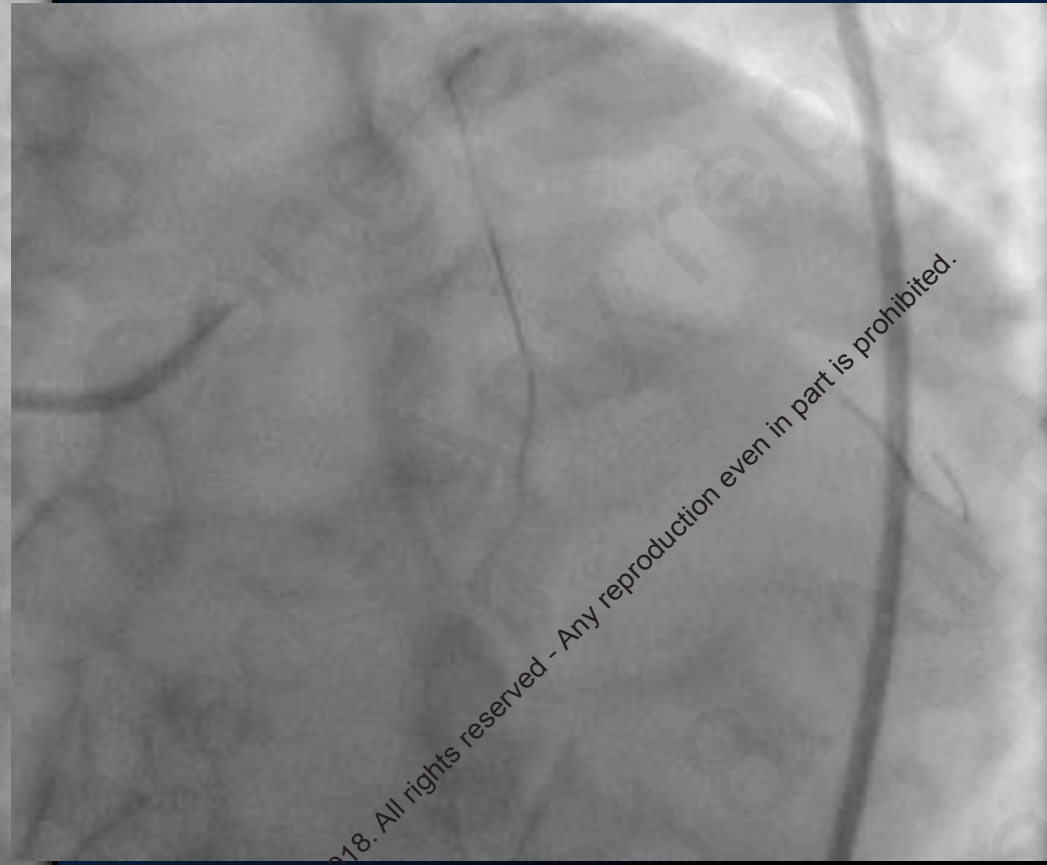
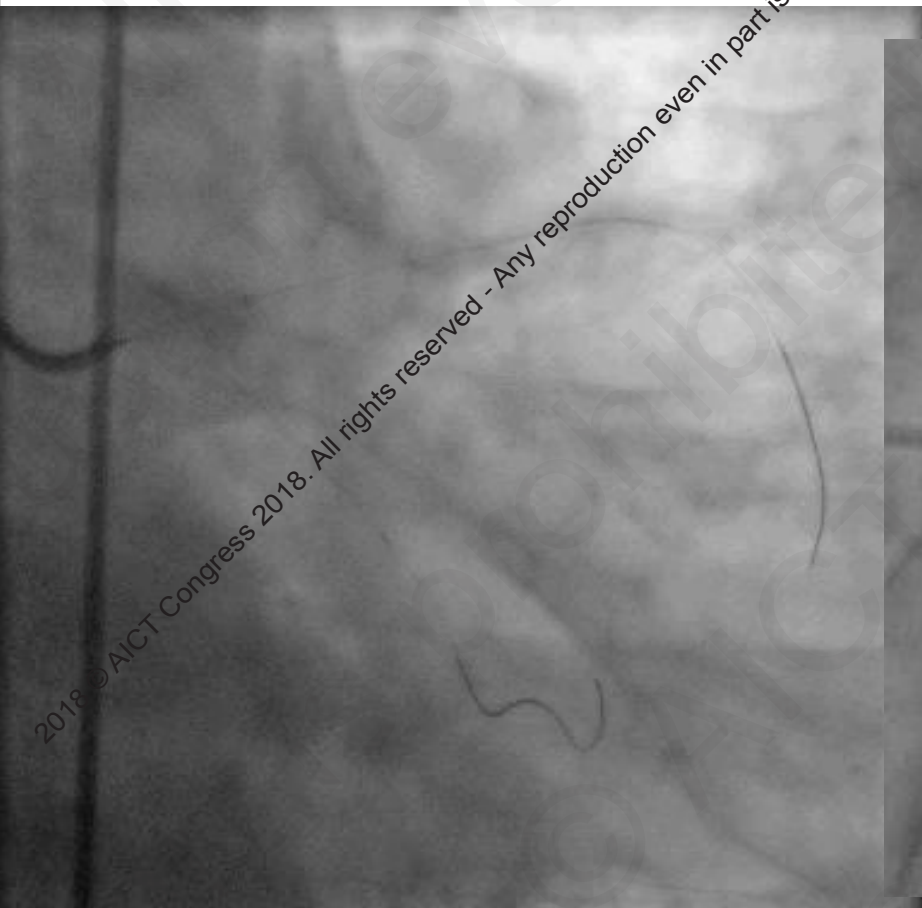
# Think patient a whole from history to lesion

- ▶ Recurrent chest pain for 4 days, max 9am
- ▶ Coro: 1. hot lesion - **clot**, 2. RCA CTO

**Imp: Double culprit in LAD**



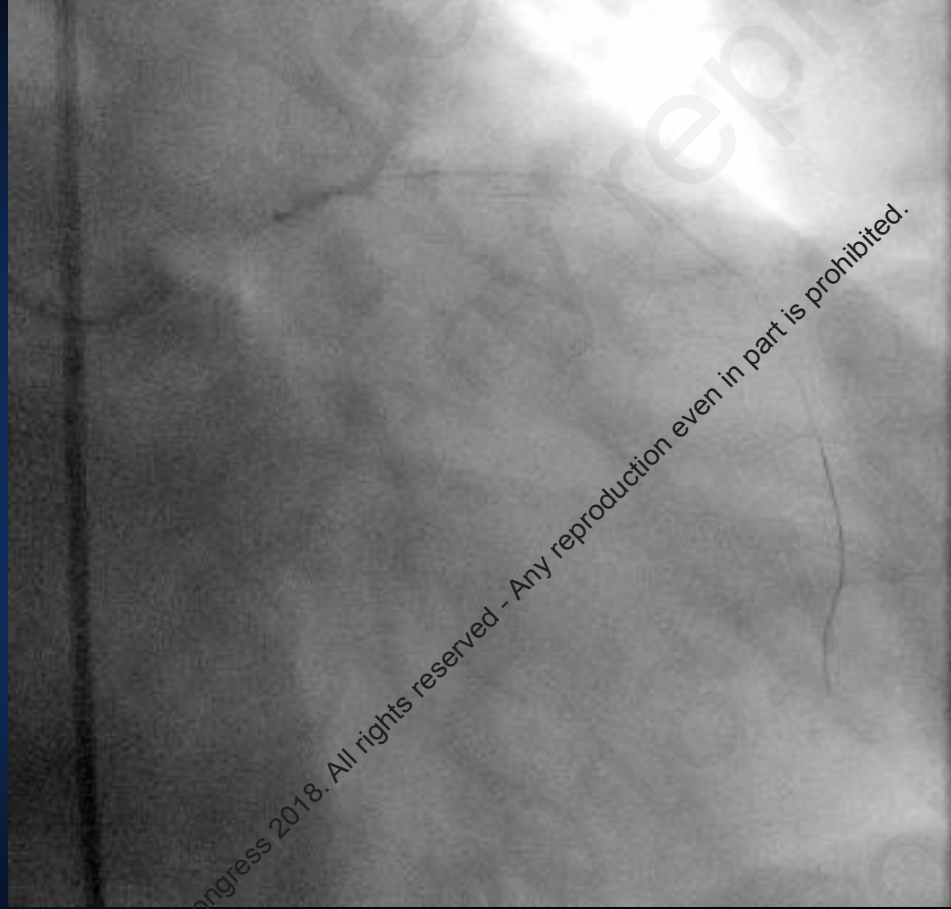
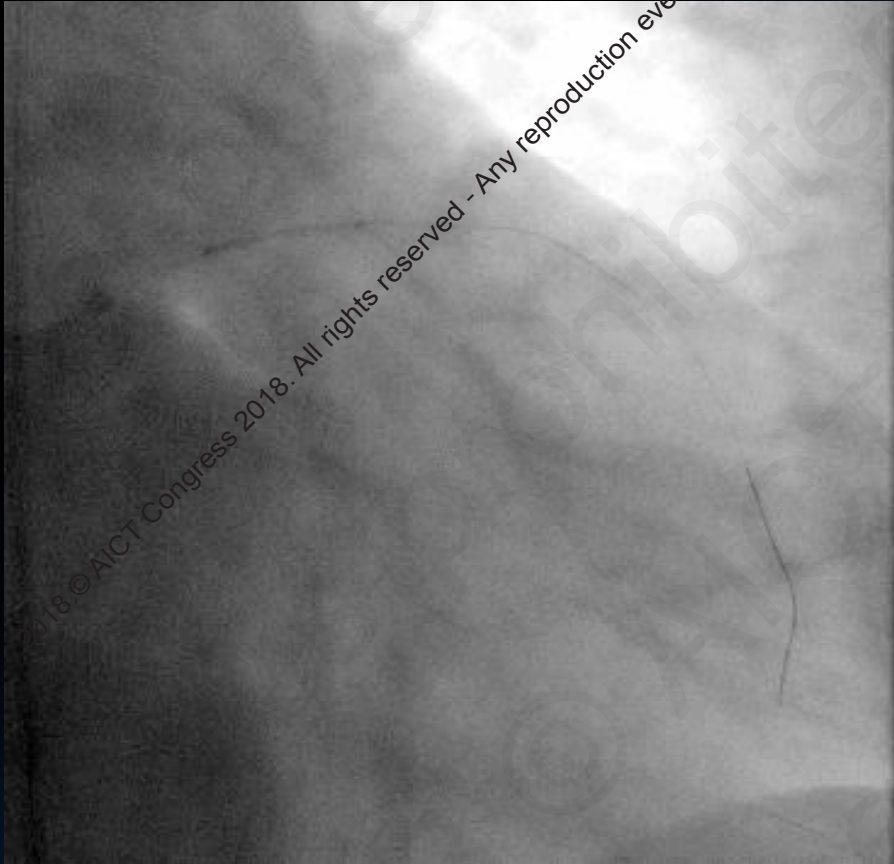
# What is the size of LAD ?



pLAD is **6mm**

How can you avoid post stent high pressure?

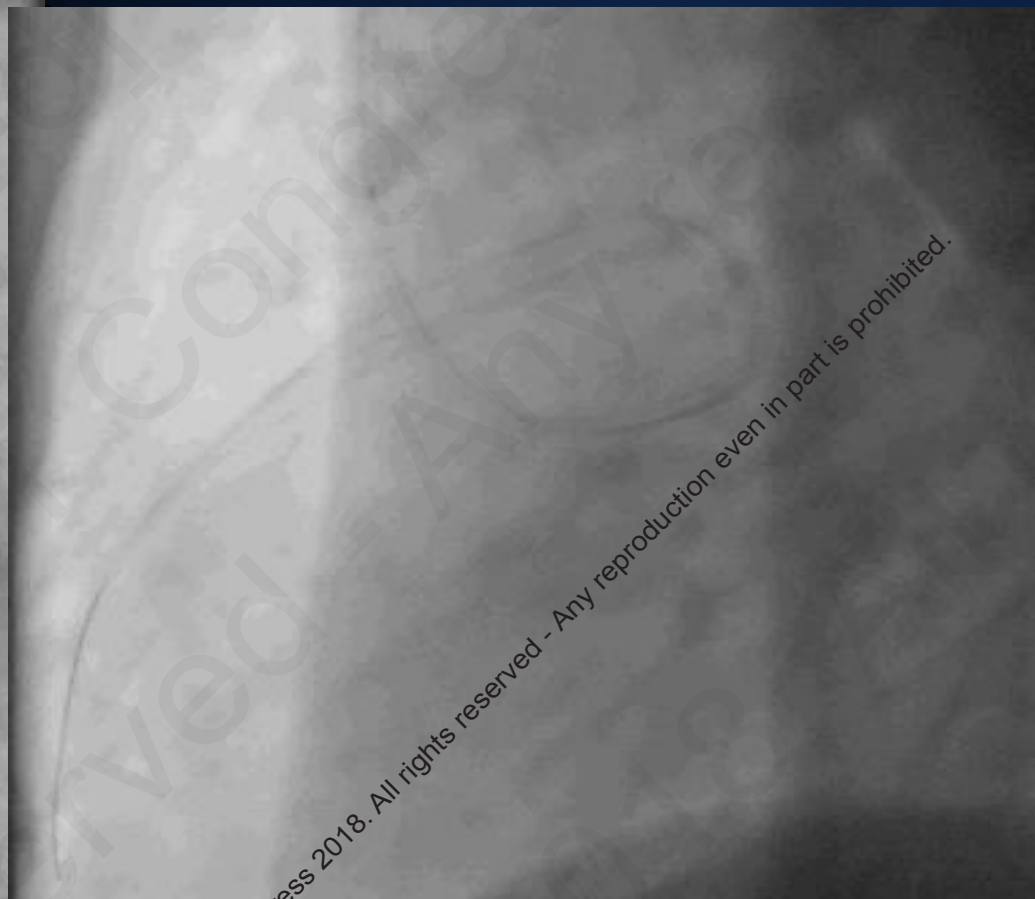
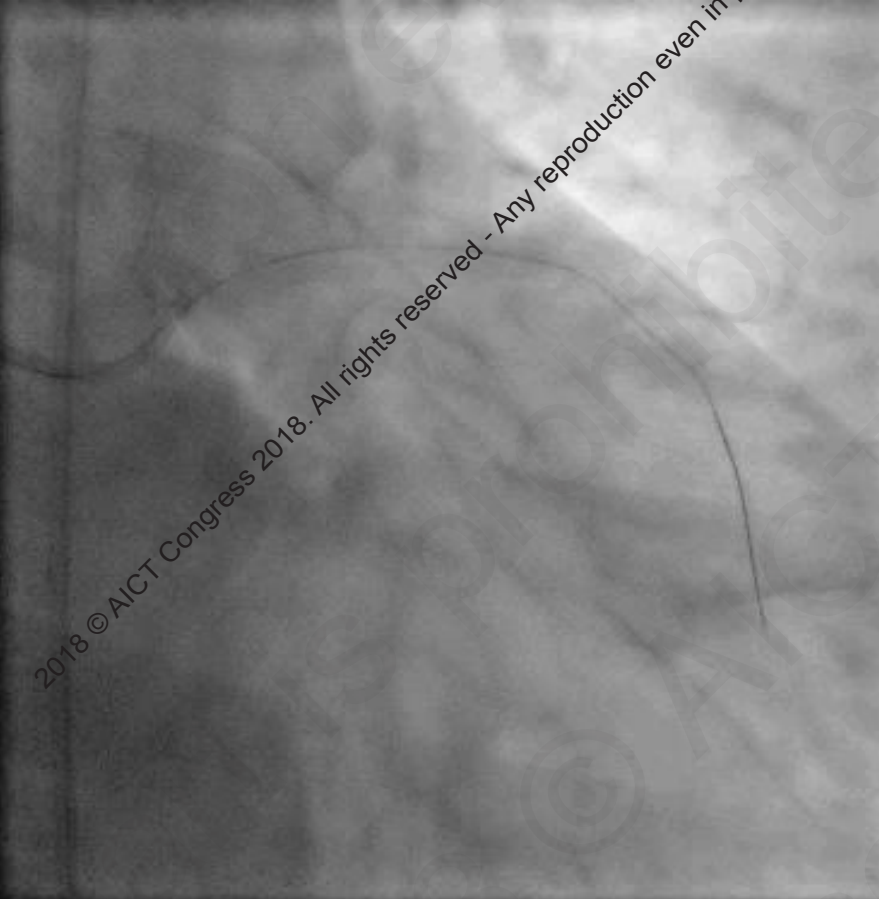
# Stentys self apposing stent 3.5 x 17



**3.5mm in size at 10 ATM but can grow to 6mm as clot dissolve**



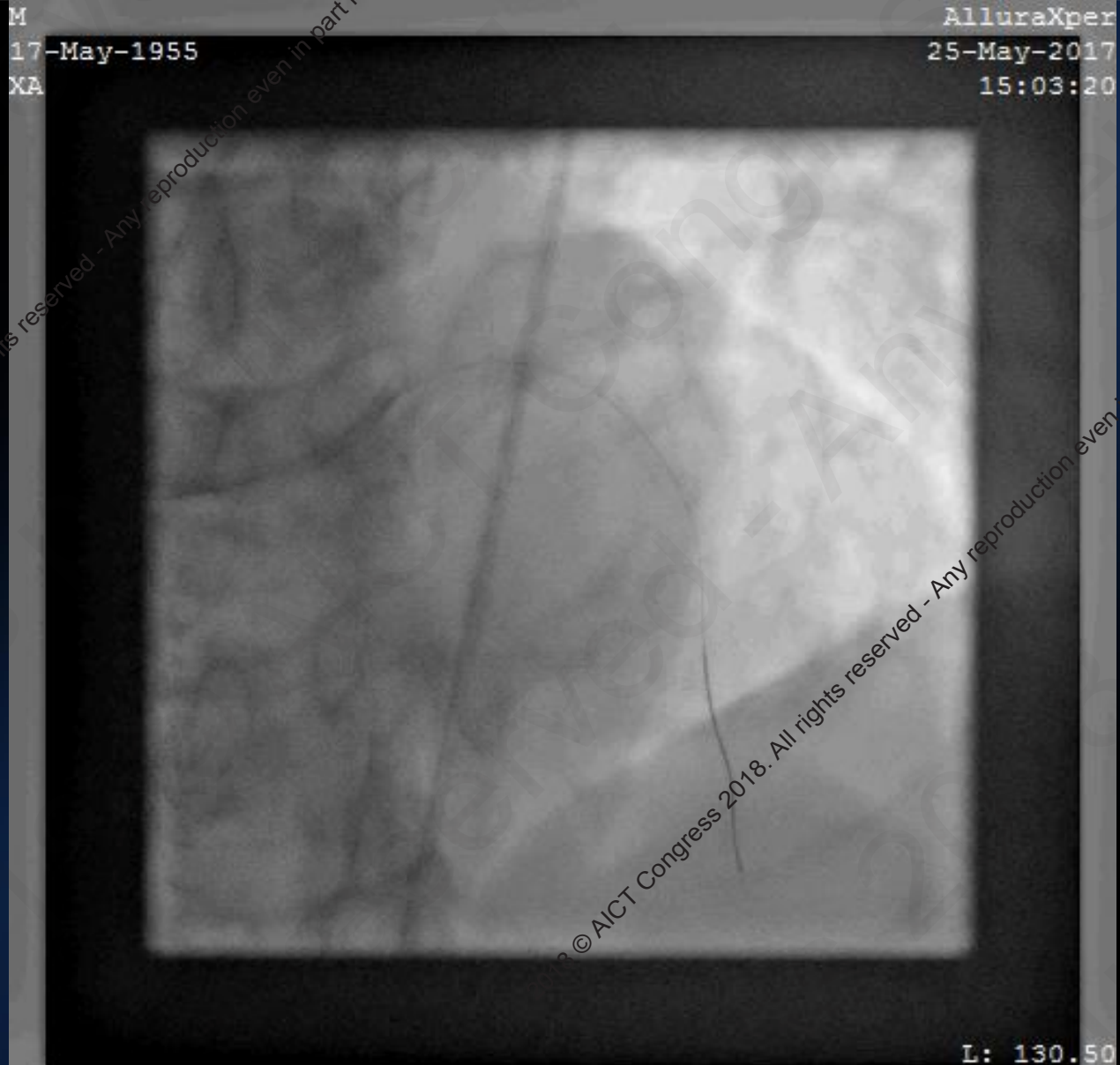
# No reflow again as expected



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# Crusade aided adenosine injection



# Think patient as whole from history to lesion

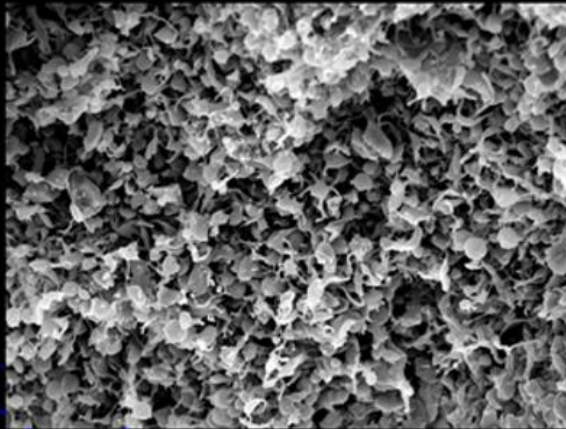
## Chest pain to stent : ~6 hr

► **>6hrs** thrombus response poor to **IIb/IIIa** and lytic

Symptoms Onset to First Medical Contact

**EARLY <3H**

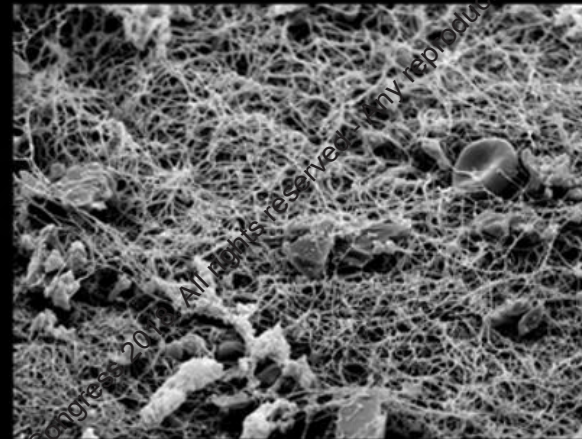
Platelets ++ Fibrin + Lysis ++



Lytic good  
Glyco IIb/IIIa good

**LATE >6H**

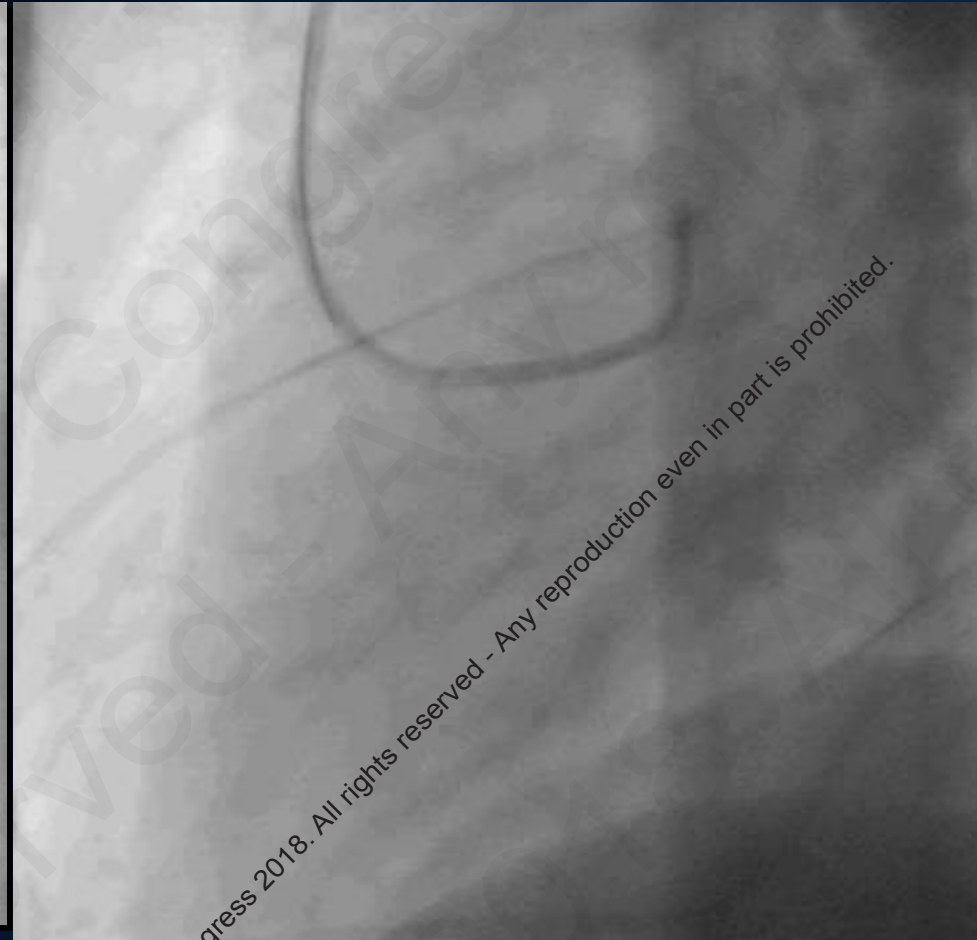
Platelets + Fibrin +++ Rigidity (FXIII)



Lytic no use  
Glyco IIb/IIIa ?? Use



# Final coro



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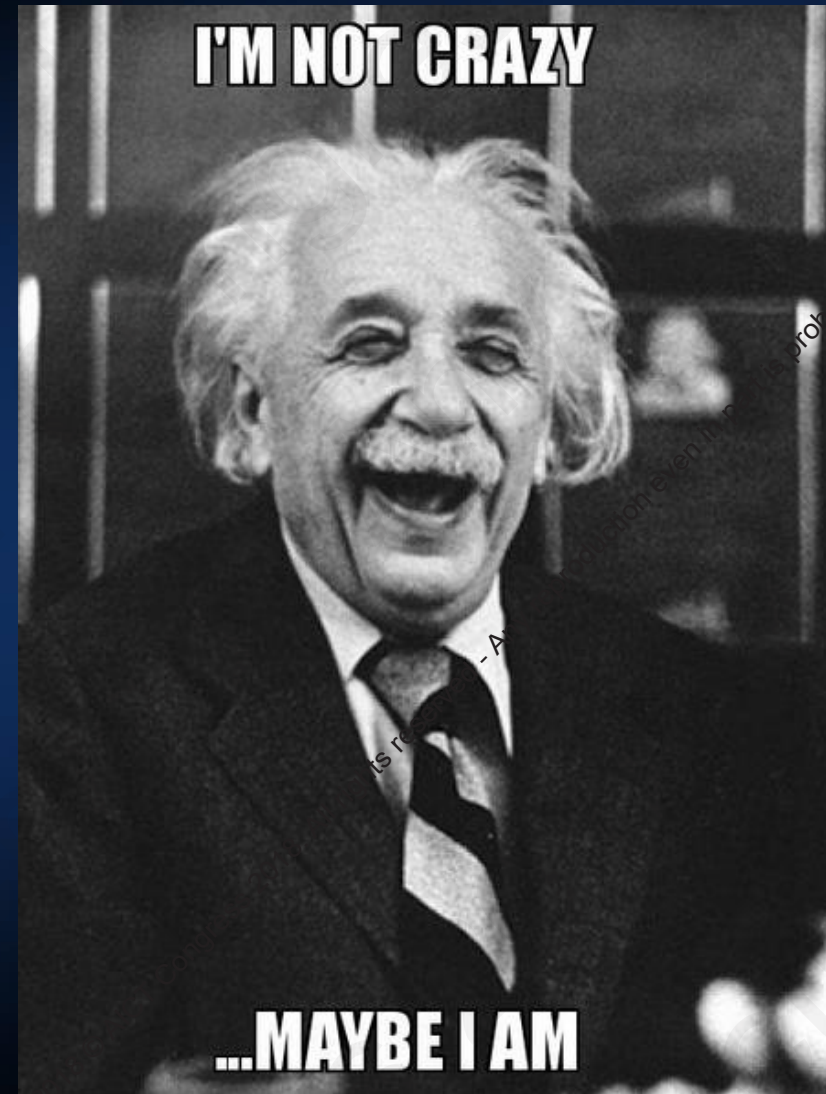




**The presenter is crazy !!!**

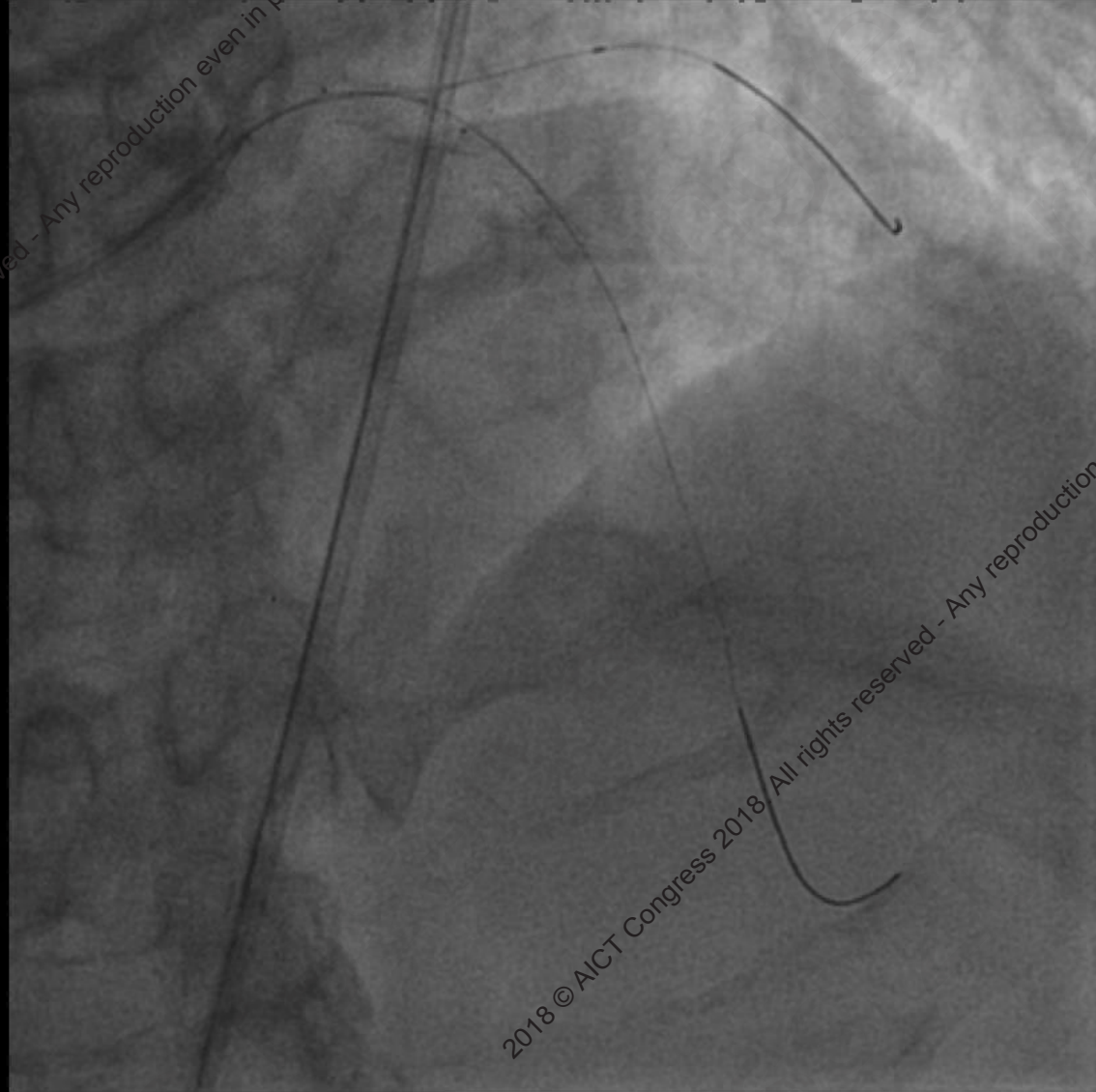
**?3.5 mm & 6mm**

**?Xience mixed with stentys**



# Stage PCI to LAD for optimization and RCA CTO 4 weeks later

Lossy Compression - not intended for diagnosis



# IVUS confirmed I am not Crazy



I'M NOT CRAZY

...MAYBE I AM

Lossy Compression - not intended for diagnosis

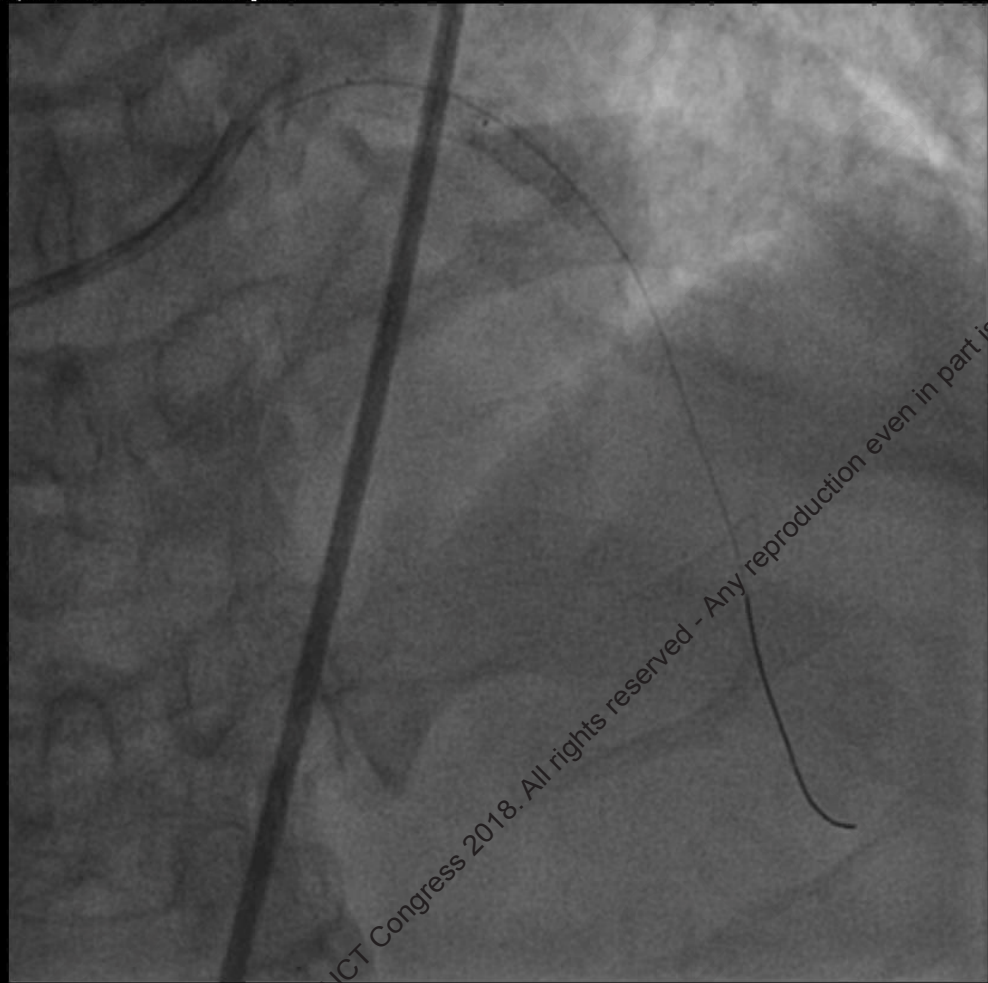






# 4.5 NC and one more stent in LAD

Lossy Compression - not intended for diagnosis



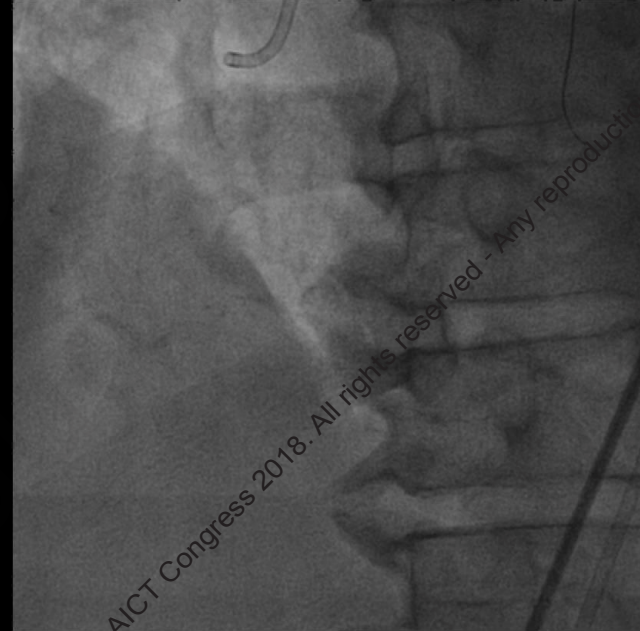
Lossy Compression - not intended for diagnosis



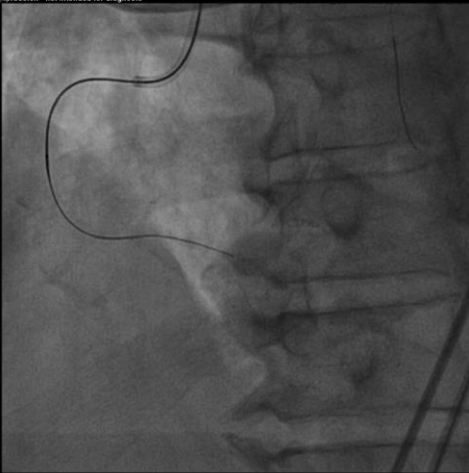


# PCI to RCA CTO

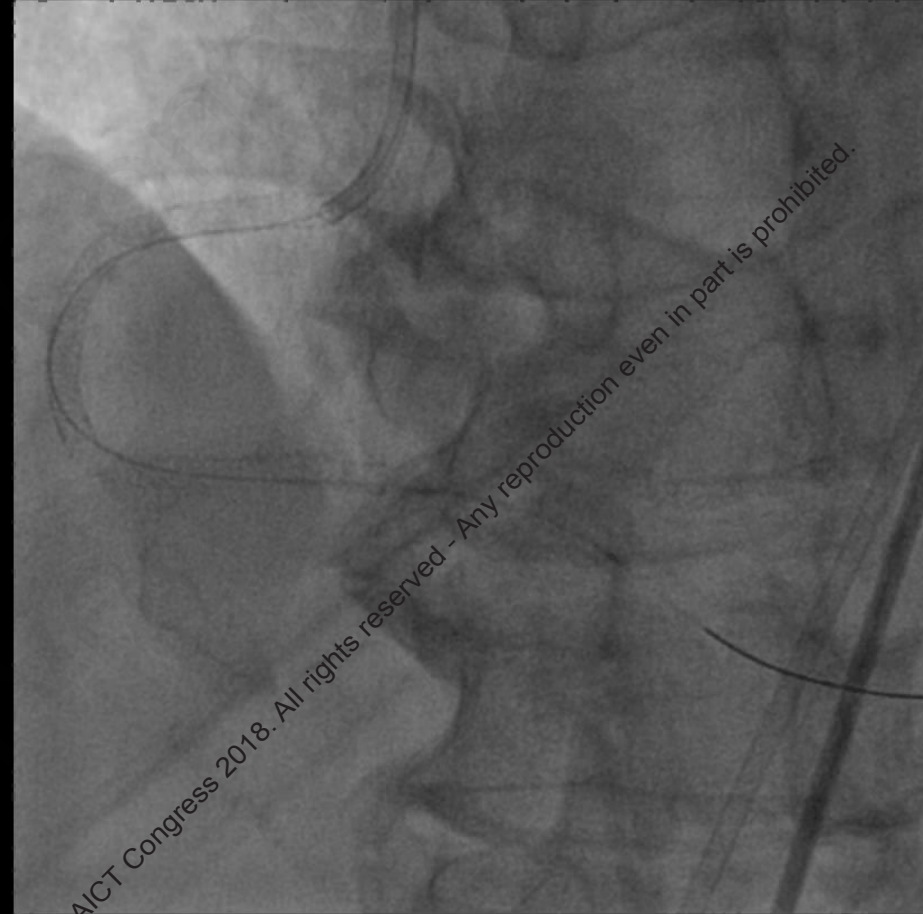
Compression - not intended for diagnosis



Lossy Compression - not intended for diagnosis



Lossy Compression - not intended for diagnosis



# Is it the end ? **NO !!!!!!!**

## ► What if adenosine is not a/v in 3 mins?

- **System** – continuously review
- > 60% need adenosine
- Now → prepare adenosine routinely for all PPCI

Procedure Data															
Date	No. of PCI vessel	Post stent high pressure	Intravascular imaging (IVUS/OCT)	Thrombus aspiration	Contrast (ml)	IABP	Ventilator/ BiPAP/ 100% O2	Temp pacing	Pericardial drain/ chest drain	Embolization/ Cover Stent	CPR	Iib/III/iv /	Adenosine	Nitro	Adrenaline
2016/08/03	1	Y			85		Ventilator								
2016/08/11	1	Y			110			Y				Y	Y		
2016/08/17	1	Y	IVUS		57										
2016/08/22	1				75	Y	Ventilator				Y	Y			Y
2016/09/01	1	Y			330							Y	Y		
2016/09/19	1	Y	IVUS		125							Y	Y	Y	
2016/09/22	1		IVUS		50		100% O2					Y			
2016/09/29	3	Y	IVUS	Y	85							Y	Y		
2016/10/12	2	Y			135		100% O2					Y	Y		
2016/10/19	1				70							Y	Y		
2016/10/19	1			Y	63	Y	Ventilator	Y (TCP)				Y	Y		
2016/10/31	1	Y			70								Y		
2016/11/16	1	Y			75										
2016/11/21	1	Y			85										
2016/12/09	1				80							Y	Y		Y
2016/12/12	1	Y			125							Y	Y		
2016/12/15	1	Y		Y	100							Y	Y		
2016/12/23	2	Y			180									Y	
2016/12/30	1	Y			90							Y			



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# System and Skill Dual Approach for PPCI and its complication

## ▶ System is Science.

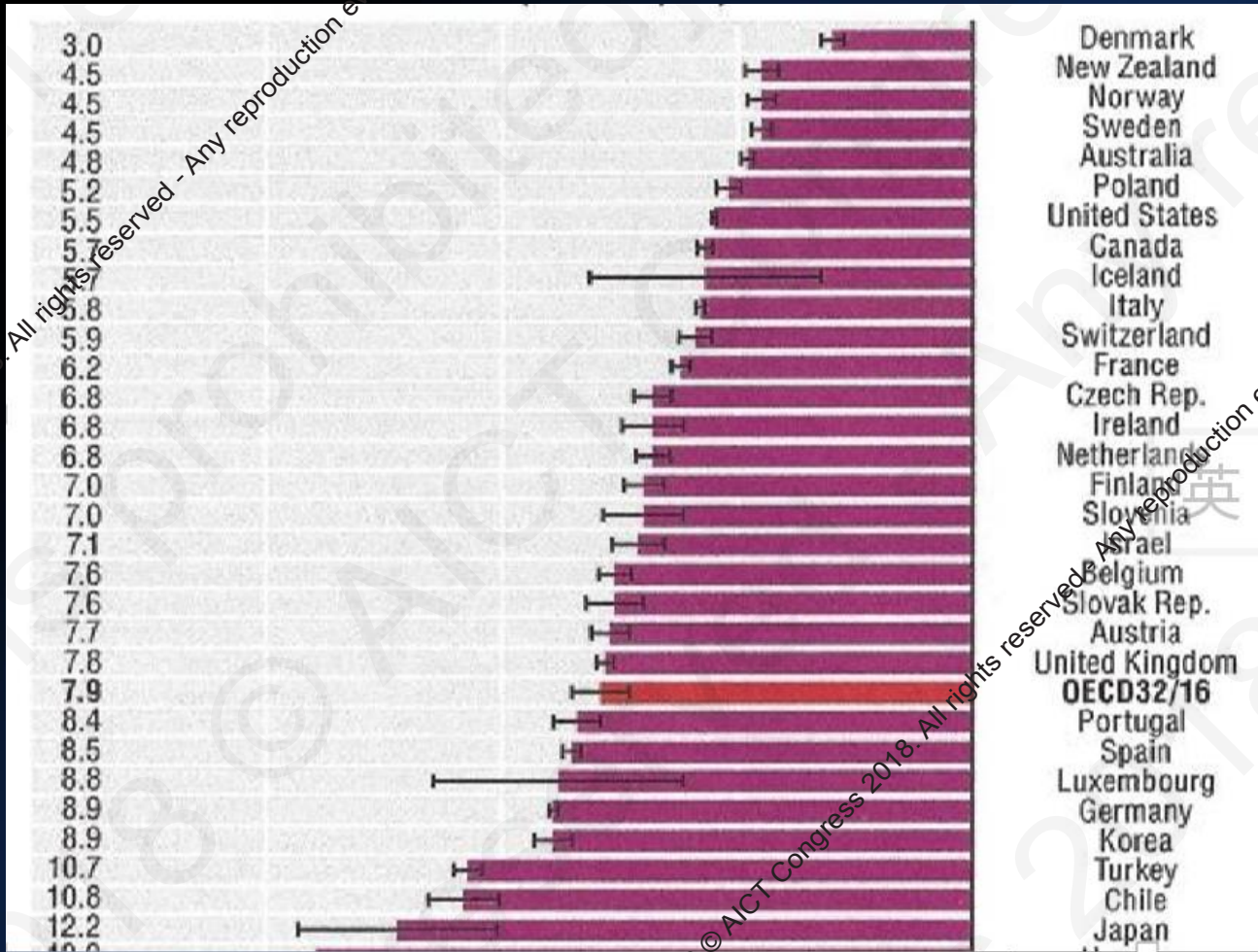
- Be objective
- Precise data and act accordingly

## ▶ Skill is Art.

- Think patient a whole from history to lesion
- Individualize based on your patient

# Why?

## PPCI 30 days Mortality Worldwide





14<sup>th</sup>

# AICT

ASIAN INTERVENTIONAL CARDIOVASCULAR THERAPEUTICS  
THE OFFICIAL CONGRESS OF APCC

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