



# Trattamento percutaneo del tronco comune: imaging sempre!

**FRANCESCO BURZOTTA**

# CONFLICTS TO BE DISCLOSED



I received speaker's fees from Abiomed, Abbott, Terumo, Medtronic

# MY PERSPECTIVE ON IMAGING



# MY PERSPECTIVE ON IMAGING



THE OLD  
(Angio)

THE GOLD  
STANDARD  
(intravascular  
imaging)



# LM PCI: IS ANGIO-GUIDE AS SAFE AS IMAGING?

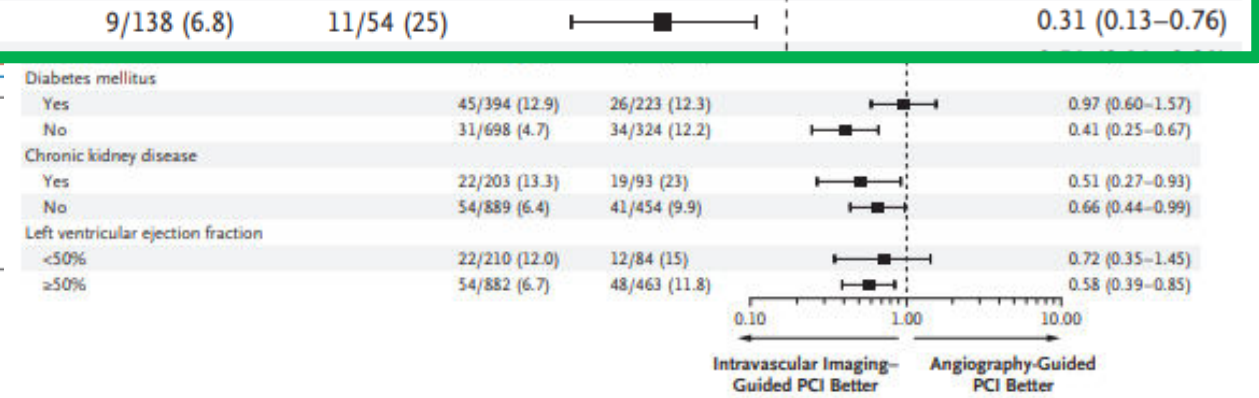
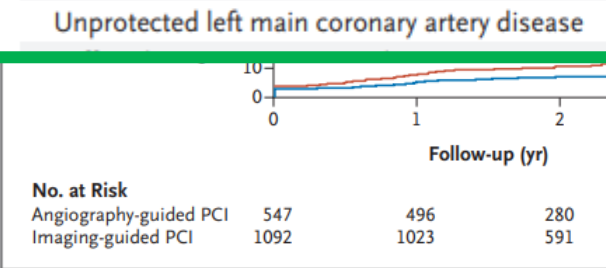
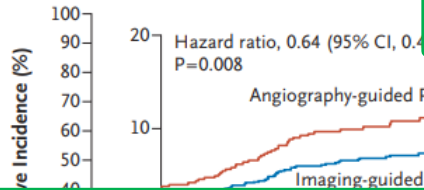
ORIGINAL ARTICLE

## Intravascular Imaging-Guided or Angiography-Guided Coronary Intervention

J.M. Lee, K.H. Choi, Y.B. Song, J.-Y. Lee, S.-J. Lee, S.Y. Lee, J.Y. Cho, C.J. Kim, H.-S. Ahn, C.-W. Nam, H.-J. Yoon, Y. J.-O. Jeong, P.S. Song, J.-H. Doh, S.-H. Jo, C.-H. Yoon, M. K.Y. Lee, Y.-H. Lim, Y.-H. Cho, J.-M. Cho, W.J. Jang, K. T.K. Park, J.H. Yang, S.-H. Choi, H.-C. Gwon, and the RENOvATE-COMPLEX-PCI Investigators

Subgroup	Intravascular Imaging-Guided PCI no. of events/total no. of patients (cumulative incidence, %)	Angiography-Guided PCI no. of events/total no. of patients (cumulative incidence, %)	Hazard Ratio (95% CI)
Overall	76/1092 (7.7)	60/547 (12.3)	0.64 (0.45-0.89)
Type of imaging devices			
Intravascular ultrasonography	59/800 (8.0)	60/547 (12.3)	0.66 (0.46-0.95)
Optical coherence tomography	17/292 (5.8)	0/0 (0.0)	0.47 (0.27-0.83)
Type of complex coronary lesions			
True bifurcation	23/233 (10.3)	13/126 (11.8)	0.97 (0.49-1.93)
Chronic total occlusion	9/220 (5.0)	13/99 (14)	0.30 (0.13-0.71)
Unprotected left main coronary artery disease	9/138 (6.8)	11/54 (25)	0.31 (0.13-0.76)
Diffuse long coronary-artery lesion	36/617 (6.5)	31/281 (11.9)	0.52 (0.32-0.83)
Multivessel PCI involving ≥2 major coronary arteries	36/409 (9.5)	22/213 (11.7)	0.84 (0.50-1.44)
Lesion necessitating use of ≥3 stents	16/208 (8.1)	6/97 (6)	1.24 (0.49-3.18)
Lesion with in-stent restenosis	22/158 (15.6)	12/78 (17)	0.90 (0.45-1.82)
Severely calcified lesion	11/157 (7.3)	11/74 (17)	0.46 (0.20-1.06)
Ostial lesions of major coronary artery	8/182 (4.4)	9/69 (16)	0.33 (0.13-0.85)
Initial presentation			
Stable ischemic heart disease	25/532 (5.0)	27/275 (10.4)	0.46 (0.27-0.80)
Acute coronary syndrome	51/560 (10.4)	33/272 (14.6)	0.74 (0.48-1.15)
Age			
<65 yr	36/517 (7.8)	23/238 (10.6)	0.72 (0.42-1.21)
≥65 yr	40/575 (7.4)	37/309 (13.6)	0.57 (0.36-0.88)
Diabetes mellitus			
Yes	45/394 (12.9)	26/223 (12.3)	0.97 (0.60-1.57)
No	31/698 (4.7)	34/324 (12.2)	0.41 (0.25-0.67)
Chronic kidney disease			
Yes	22/203 (13.3)	19/93 (23)	0.51 (0.27-0.93)
No	54/889 (6.4)	41/454 (9.9)	0.66 (0.44-0.99)
Left ventricular ejection fraction			
<50%	22/210 (12.0)	12/84 (15)	0.72 (0.35-1.45)
≥50%	54/882 (6.7)	48/463 (11.8)	0.58 (0.39-0.85)

### A Target-Vessel Failure

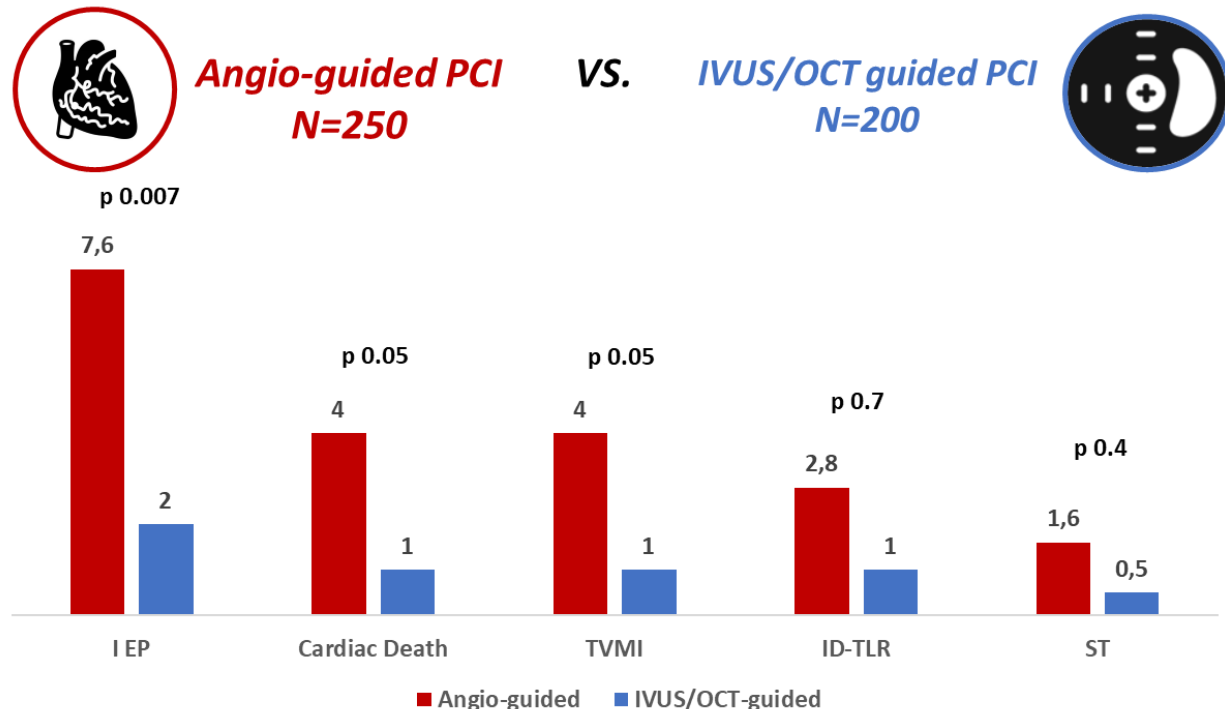


# LM PCI: IS ANGIO-GUIDE AS SAFE AS IMAGING?

**A large, prospective, multicentre study of left main PCI using a latest-generation zotarolimus-eluting stent: the ROLEX study**

Giuseppe Tarantini<sup>1\*</sup>, MD, PhD; Luca Nai Fovino<sup>1</sup>, MD, PhD; Ferdinando Varbella<sup>2</sup>, MD; Daniela Trabattoni<sup>3</sup>, MD, PhD; Giuseppe Caramanno<sup>4</sup>, MD; Carlo Trani<sup>5</sup>, MD, PhD; Nicoletta De Cesare<sup>6</sup>, MD; Giovanni Esposito<sup>7</sup>, MD, PhD; Matteo Montorfano<sup>8</sup>, MD, PhD; Carmine Musto<sup>9</sup>, MD; Andrea Picchi<sup>10</sup>, MD; Imad Sheiban<sup>11</sup>, MD; Valeria Gasparetto<sup>11</sup>, MD; Flavio L. Ribichini<sup>12</sup>, MD; Francesco Cardaioli<sup>1</sup>, MD; Salvatore Saccà<sup>13</sup>, MD; Enrico Cerrato<sup>14</sup>, MD, PhD; Massimo Napodano<sup>1</sup>, MD, PhD; Matteo Martinato<sup>15</sup>, MSc, PhD; Danilo Marco Caruso<sup>18</sup>, MD; Roberta Rossini<sup>16</sup>, MD; Stefano Rigattieri<sup>22</sup>, MD, PhD; Dario Francesco Burzotta<sup>5</sup>, MD

## PRESPECIFIED SUBANALYSES #2

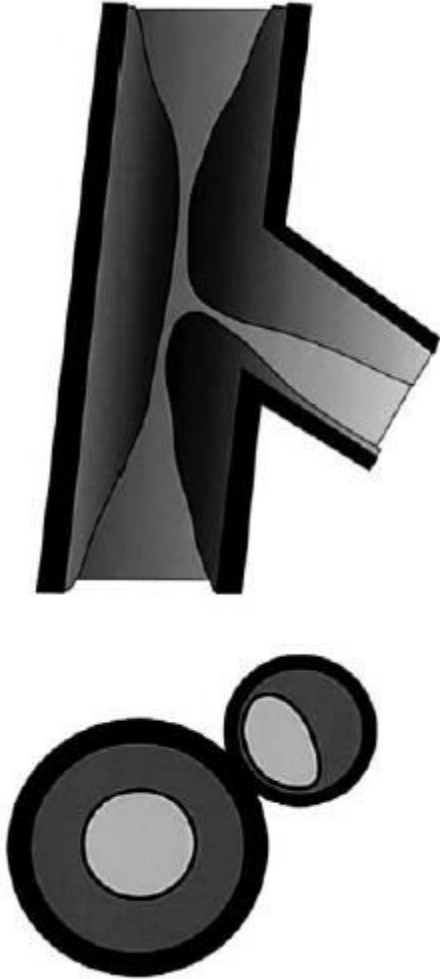


TLF: Target lesion failure; TV-MI: Target vessel MI; ID-TLR: Ischemia driven target lesion revascularization

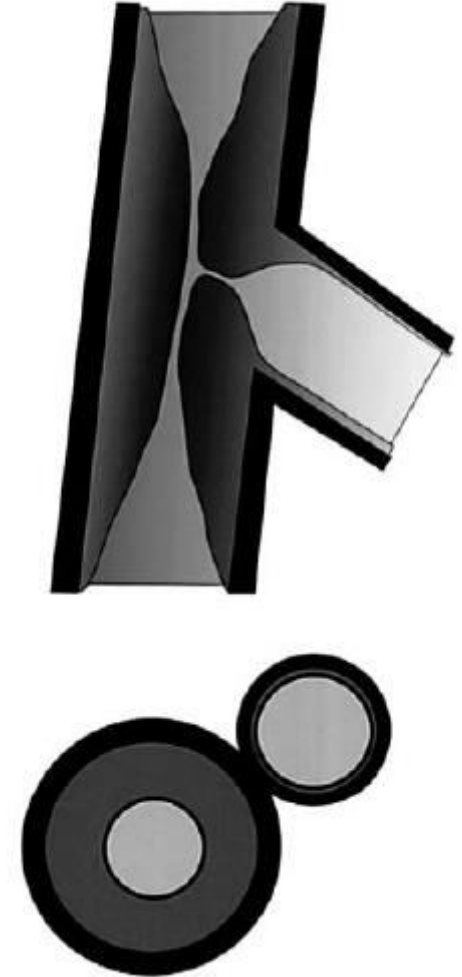
# WHICH DOUBTS CANNOT BE SOLVED WITHOUT INTRAVASCULAR IMAGING IN LEFT MAIN BIFURCATIONS ?

# SB INVOLVEMENT

SB INVOLVED

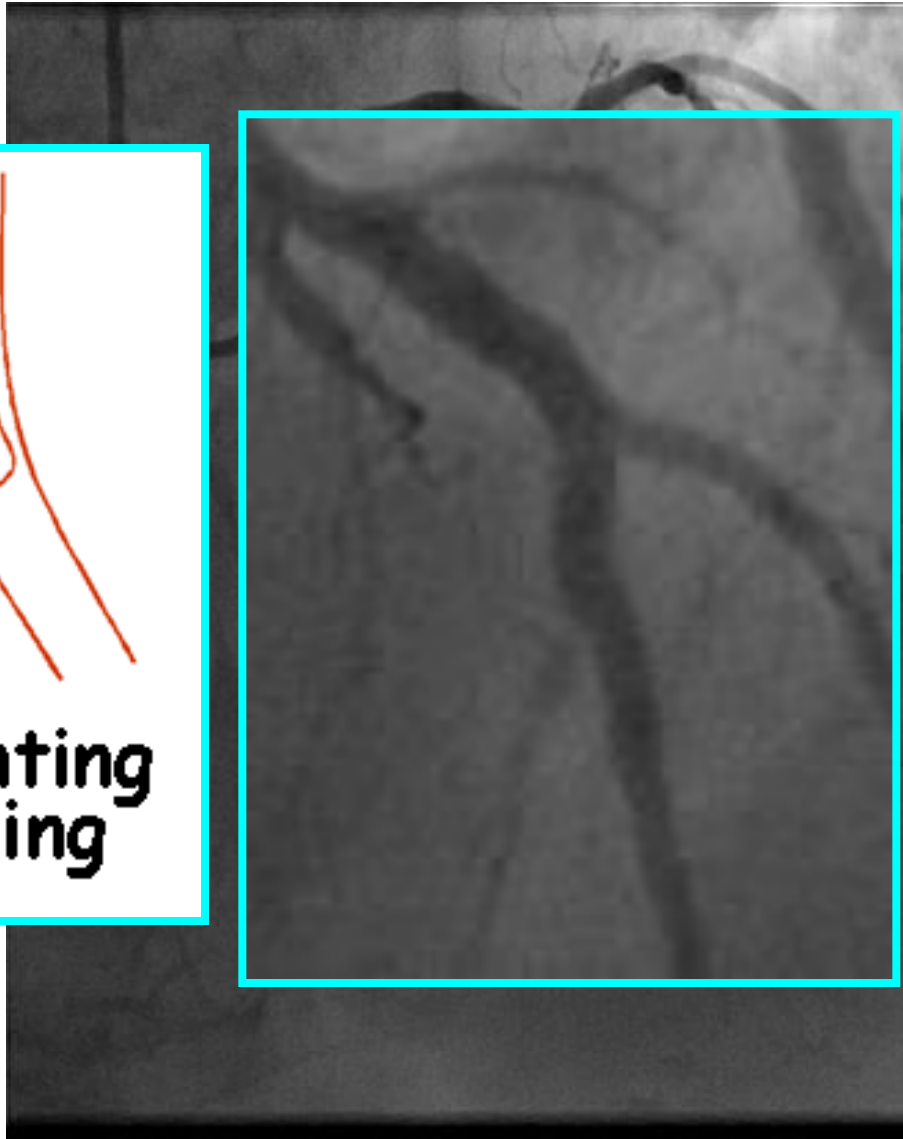


SB NOT INVOLVED



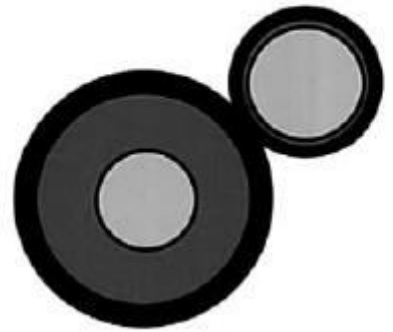
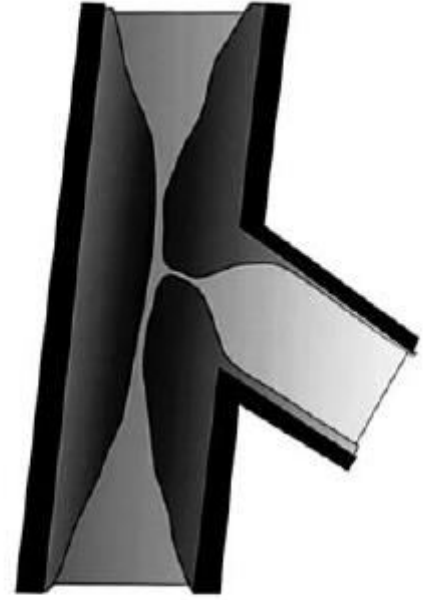


# SB INVOLVEMENT



**MB stenting  
+ kissing**

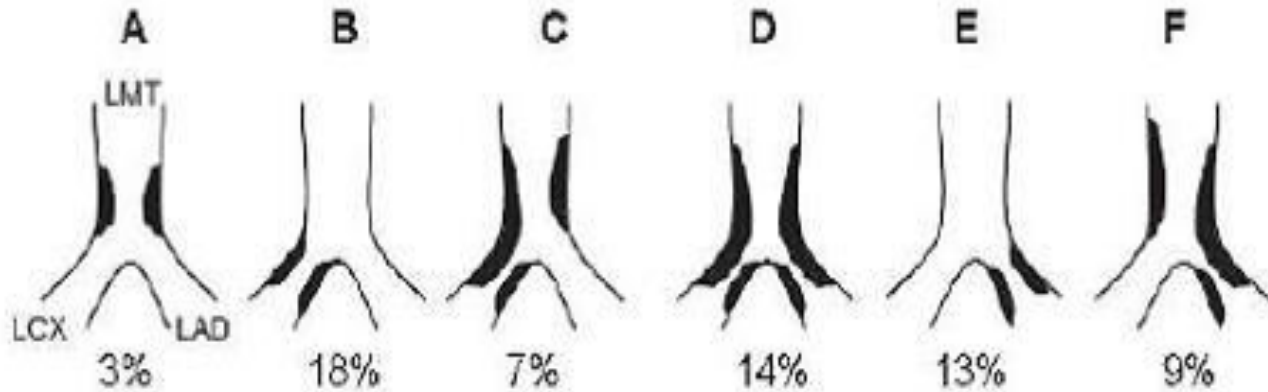
**SB NOT INVOLVED**



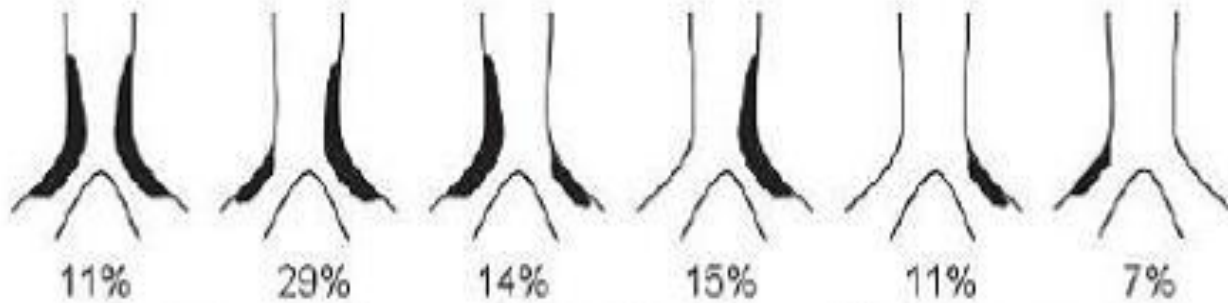
# LM PLAQUE DISTRIBUTION

IVUS of 140 LM bifurcations

## Angiographic Classification (Duke)

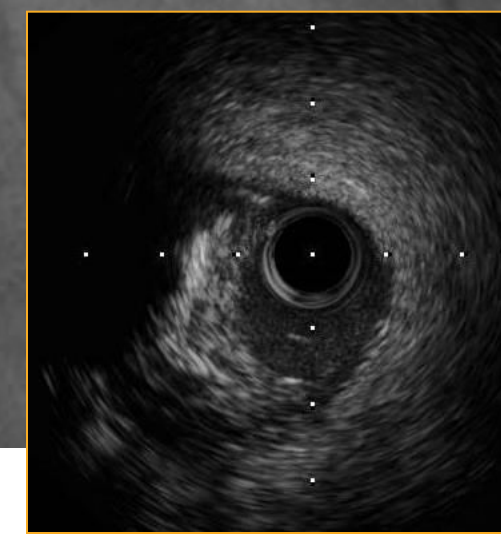
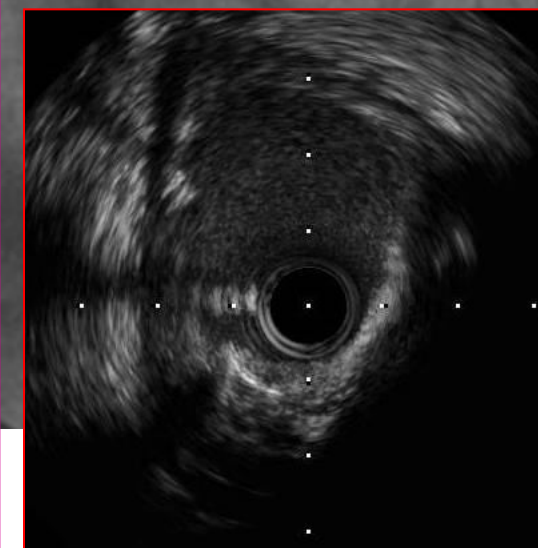
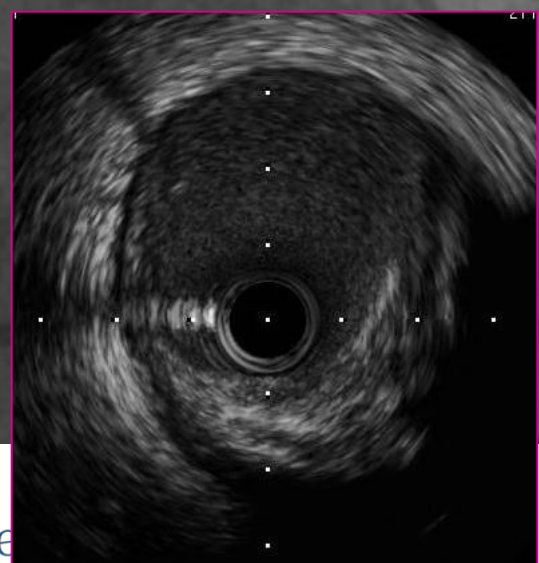
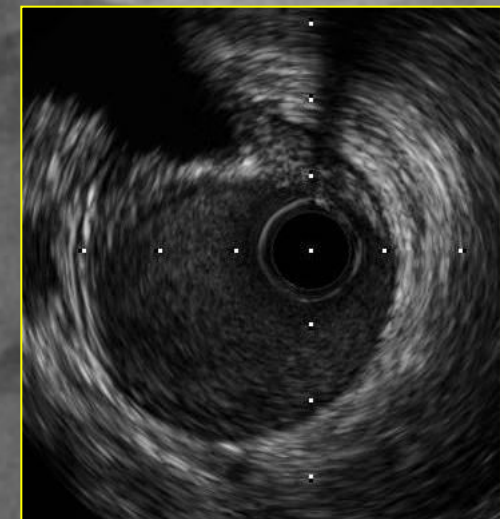
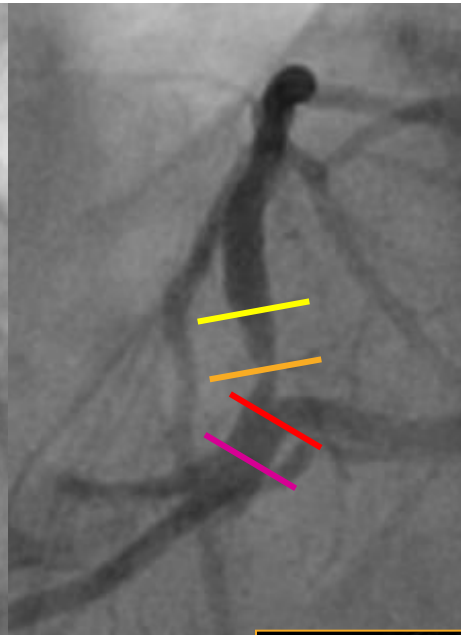
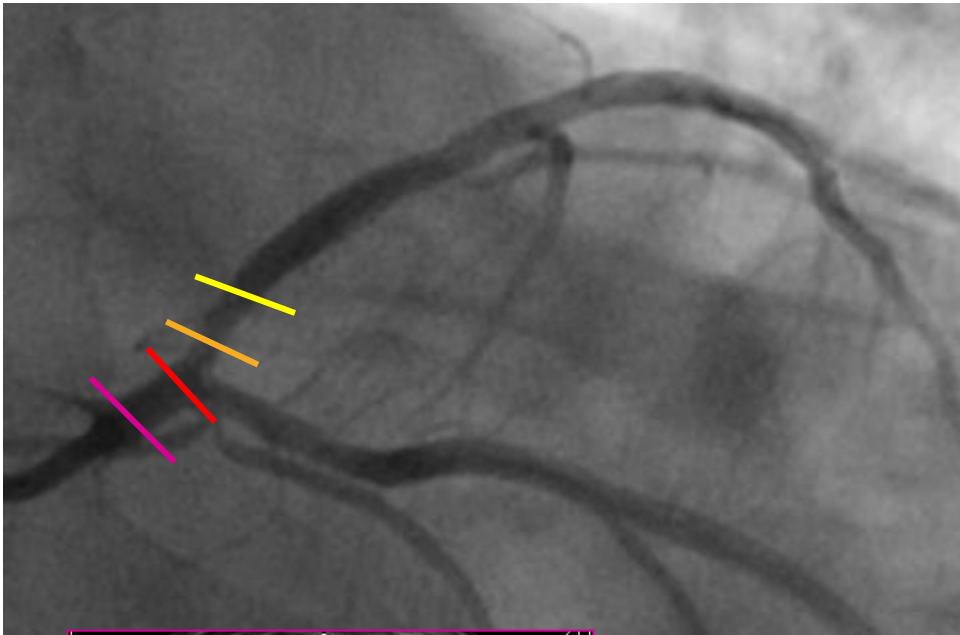


## IVUS Plaque Distribution



**90% of LM  
to LAD  
involvement!**

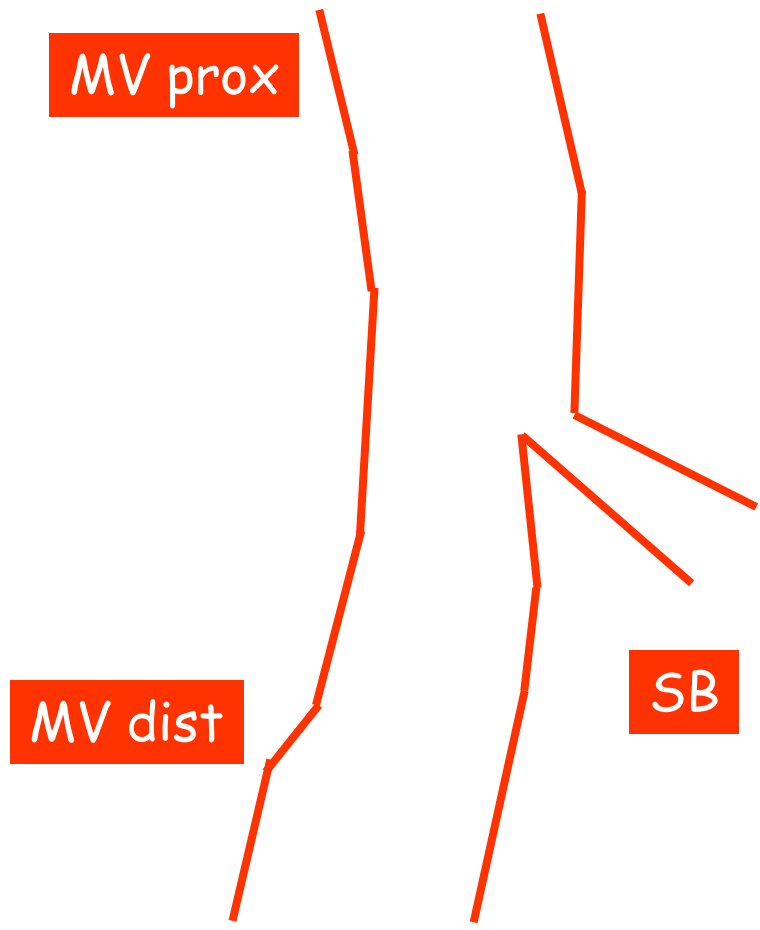
# LM PLAQUE DISTRIBUTION



# SIDE-BRANCH COMPROMISE PREDICTION



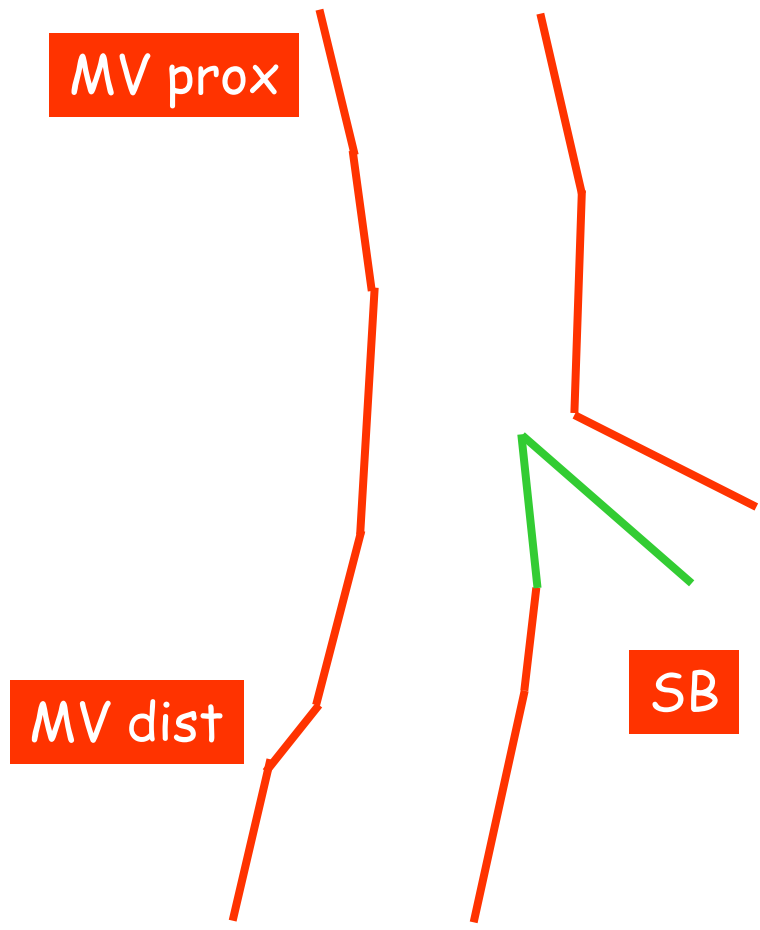
# SIDE-BRANCH COMPROMISE PREDICTION



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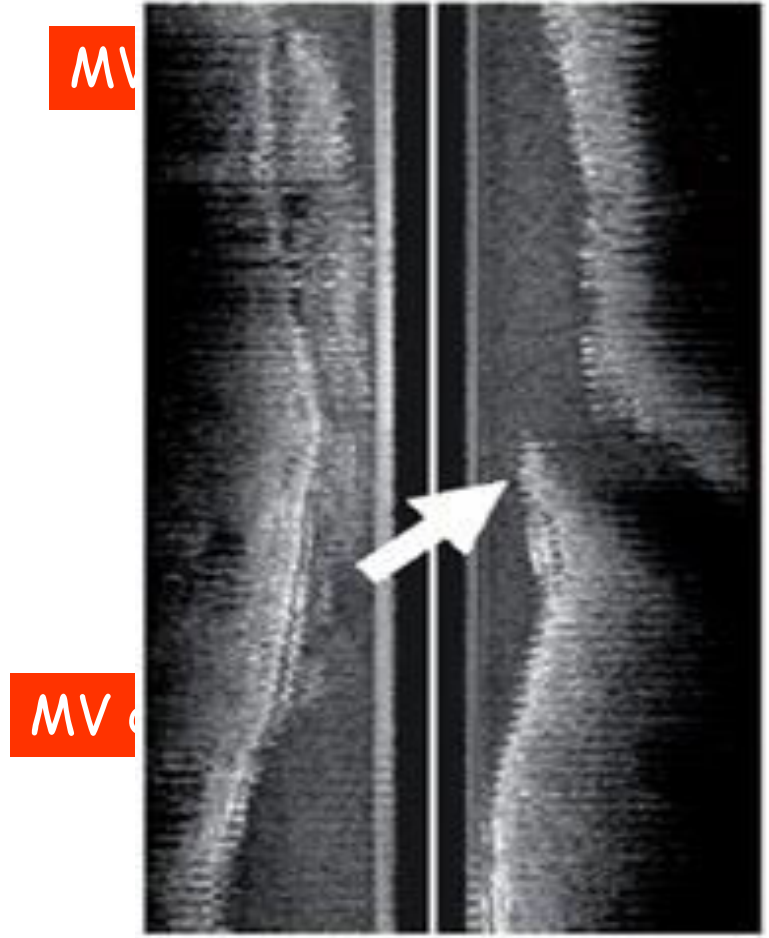
CARINA: A CRITICAL POINT OF BIFURCATED LESIONS



# SIDE-BRANCH COMPROMISE PREDICTION



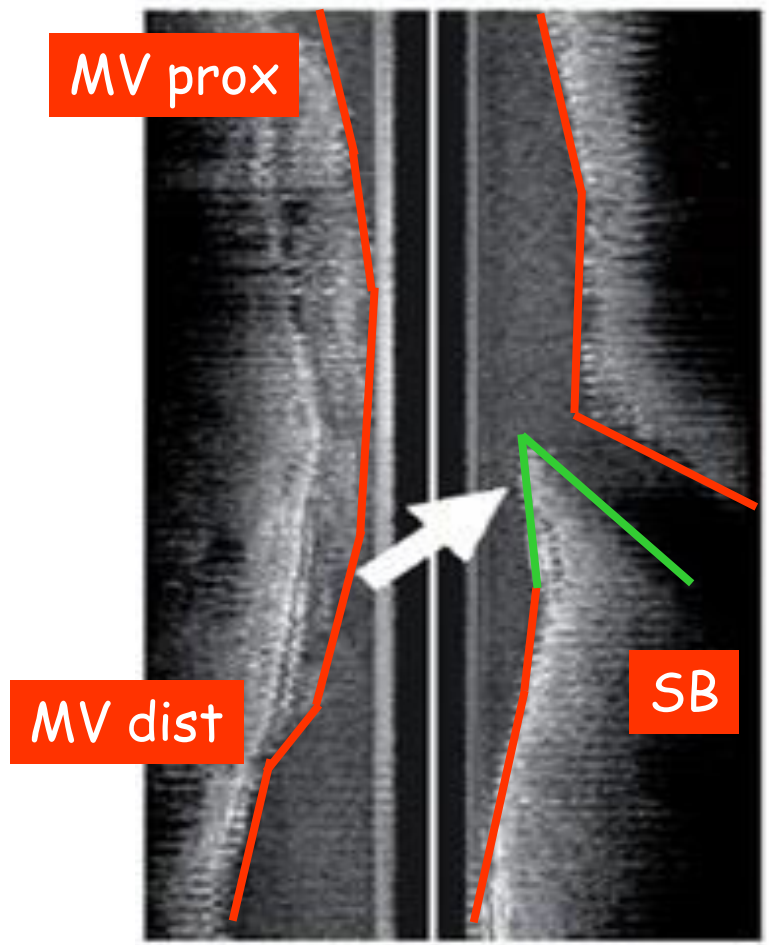
CARINA: A CRITICAL POINT OF BIFURCATED LESIONS



# SIDE-BRANCH COMPROMISE PREDICTION

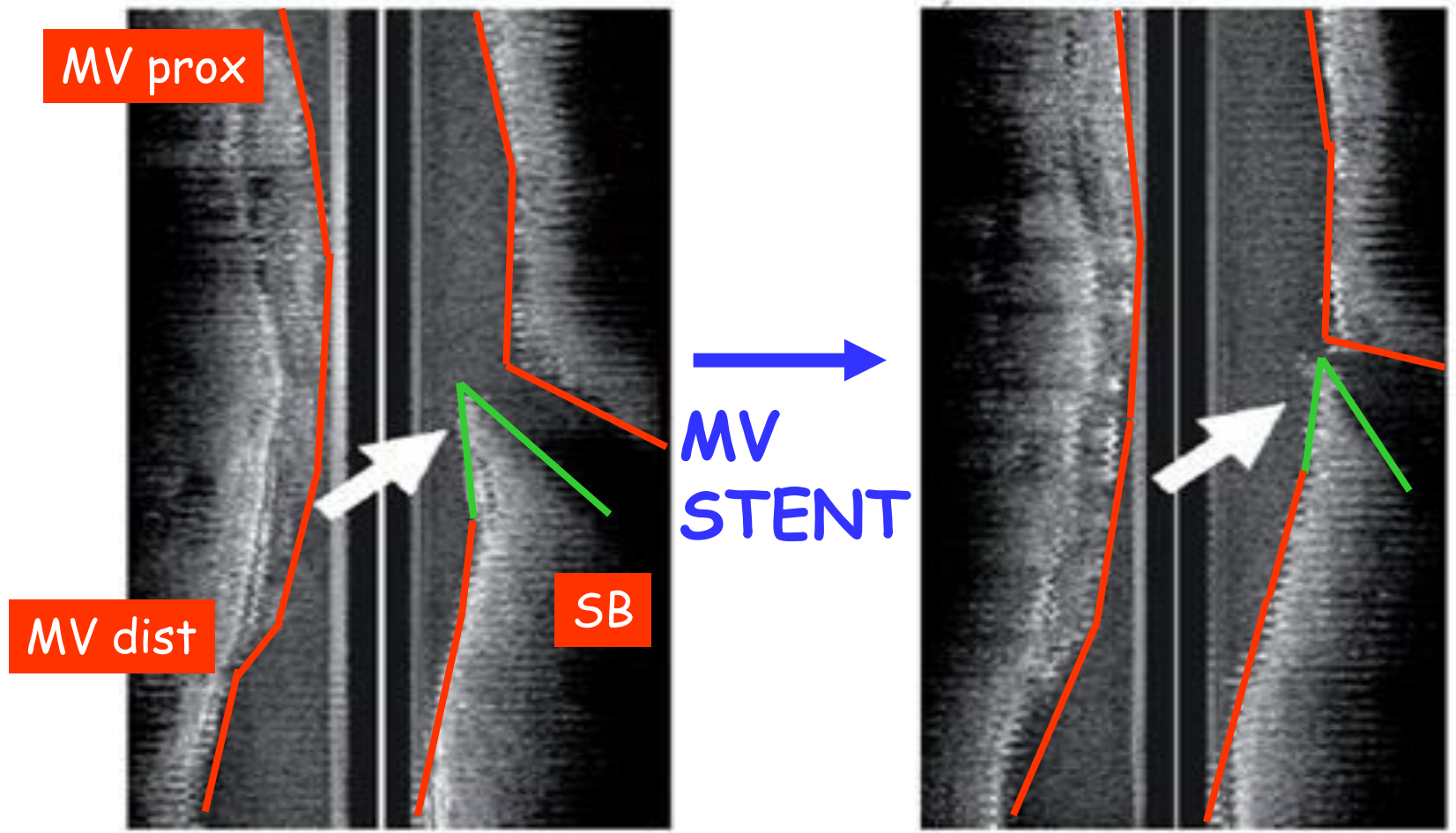


CARINA: A CRITICAL POINT OF BIFURCATED LESIONS





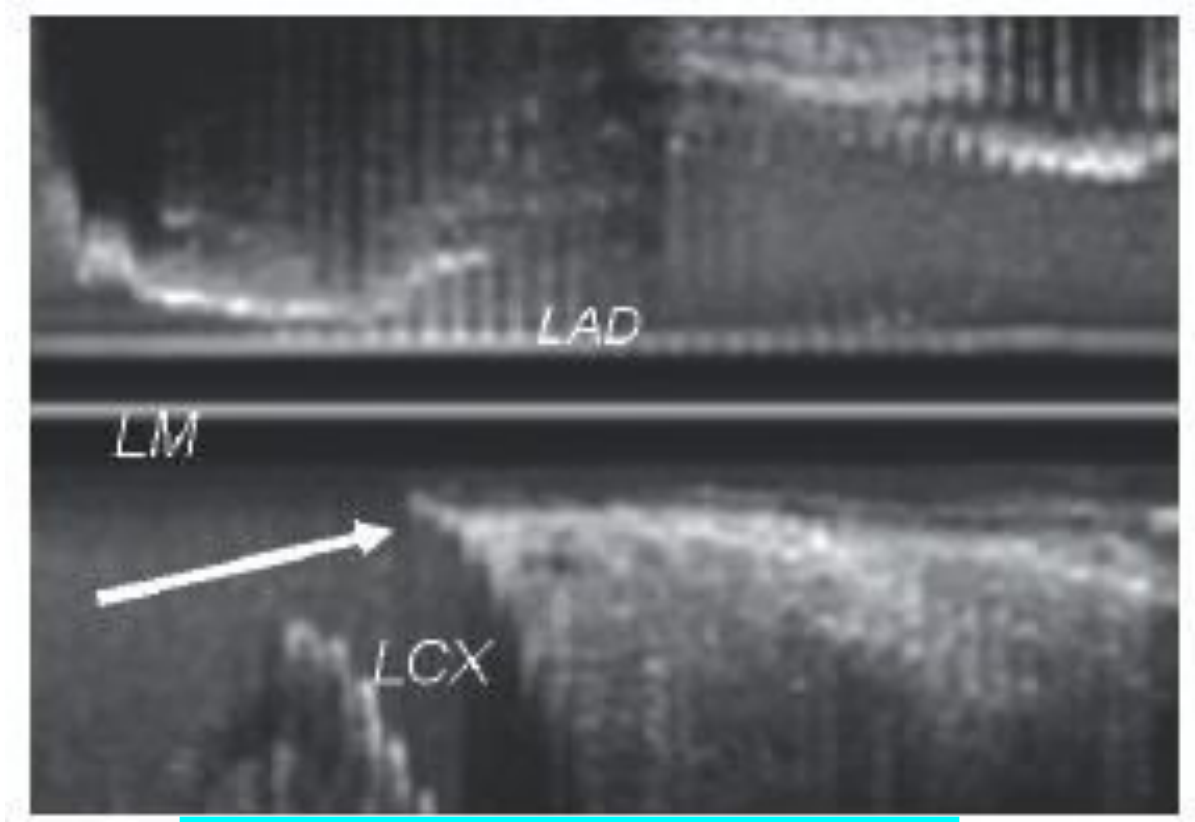
# SIDE-BRANCH COMPROMISE PREDICTION



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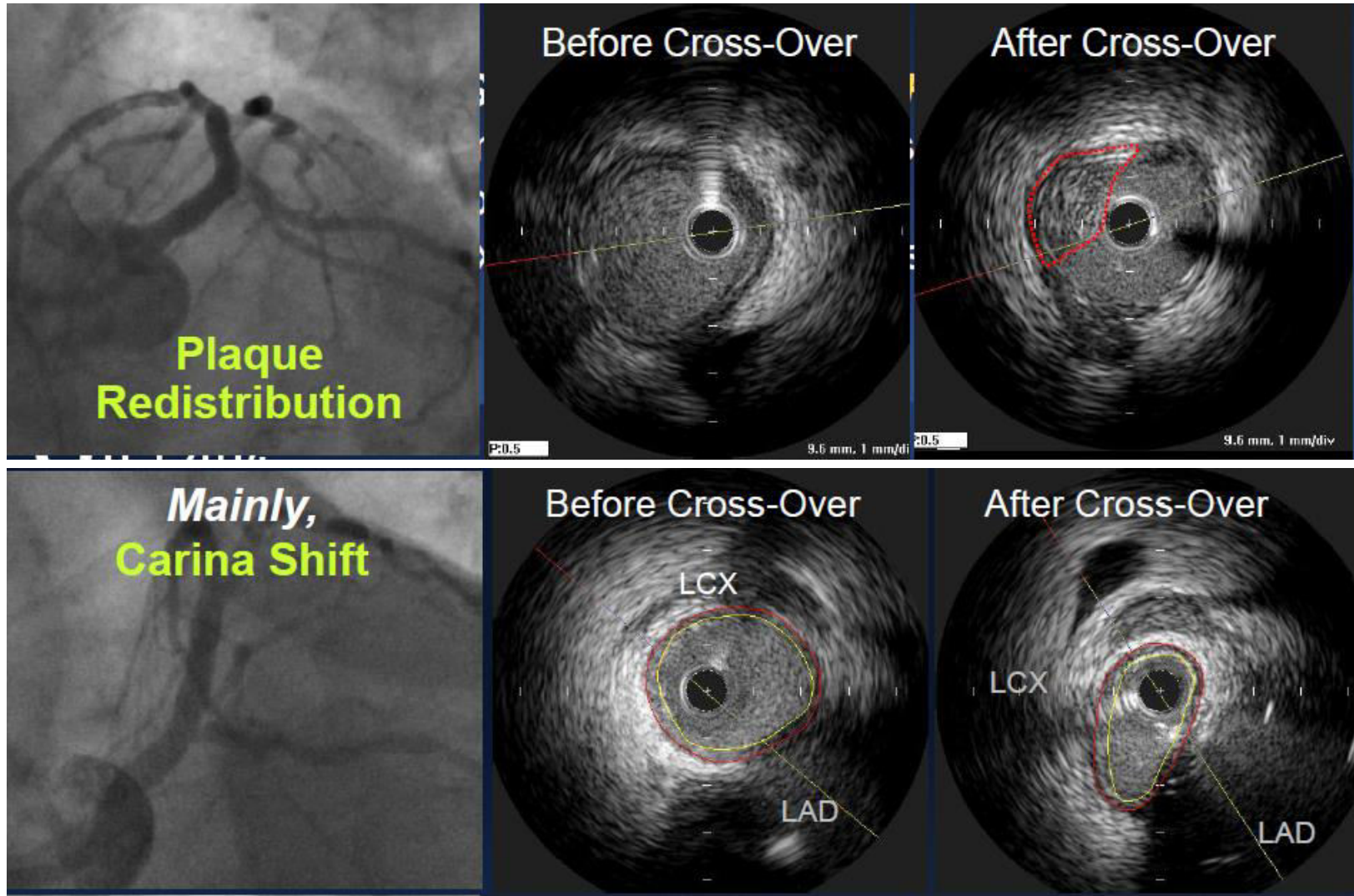


## Vulnerable carina



## "EYEBROW SIGN"

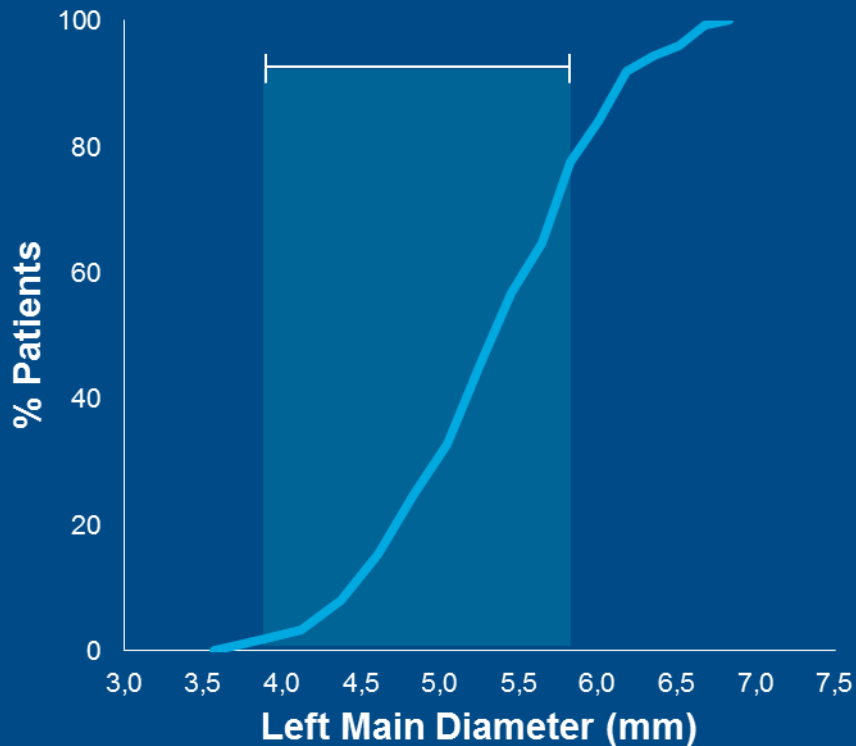
# SIDE-BRANCH COMPROMISE PREDICTION



# HOW BIG IS MY LEFT MAIN ?



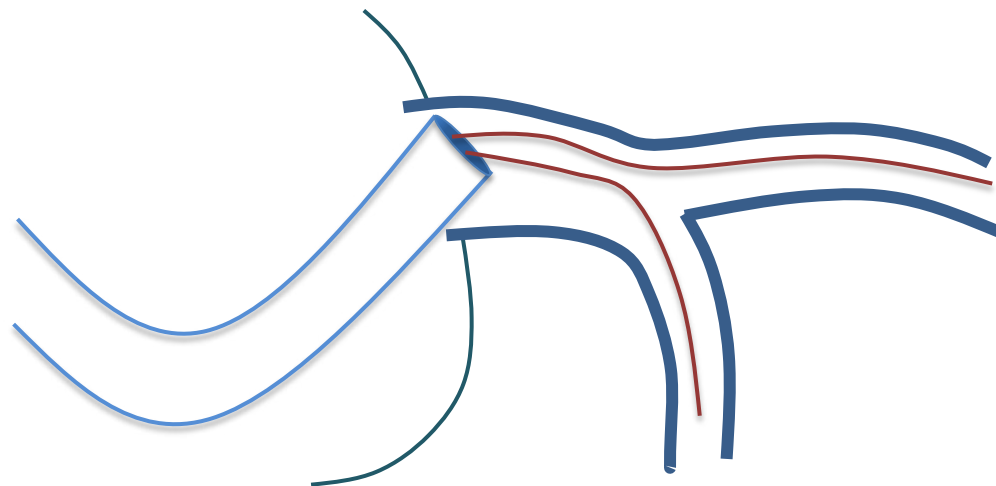
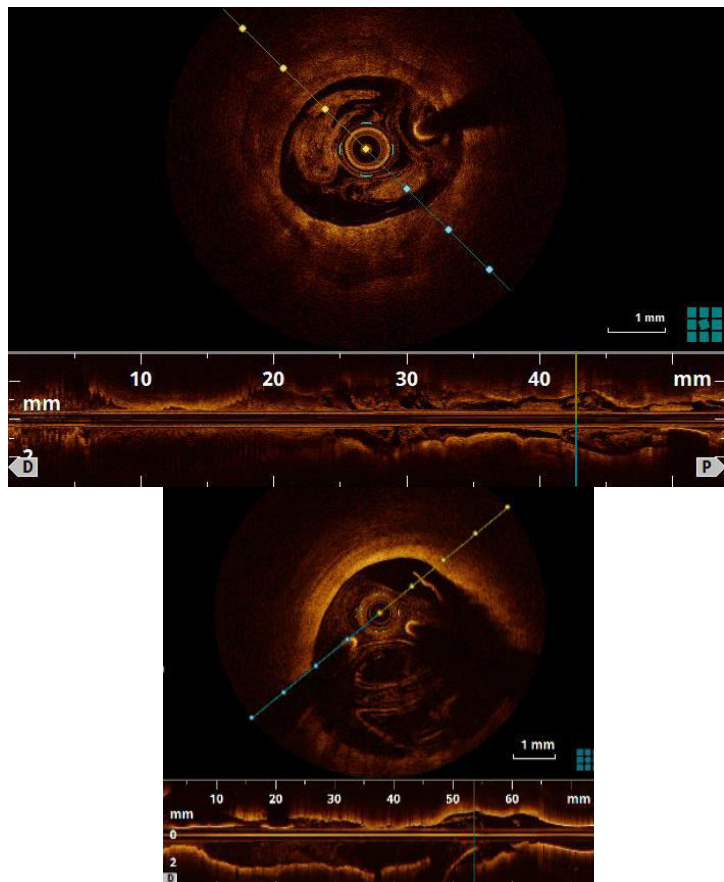
# HOW BIG IS MY LEFT MAIN ?



The vast majority (75%) of LM are in the diameter range between 3.9 and 5.75 mm

...close to, or above, the dilatation limit of most currently available coronary stents

# CAN WE USE OCT INSTEAD OF IVUS FOR LM?

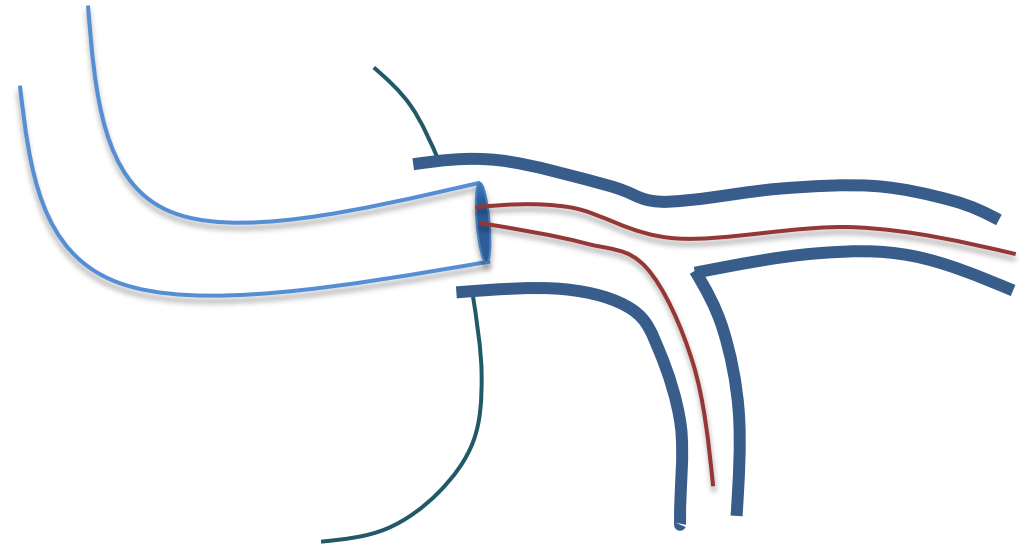
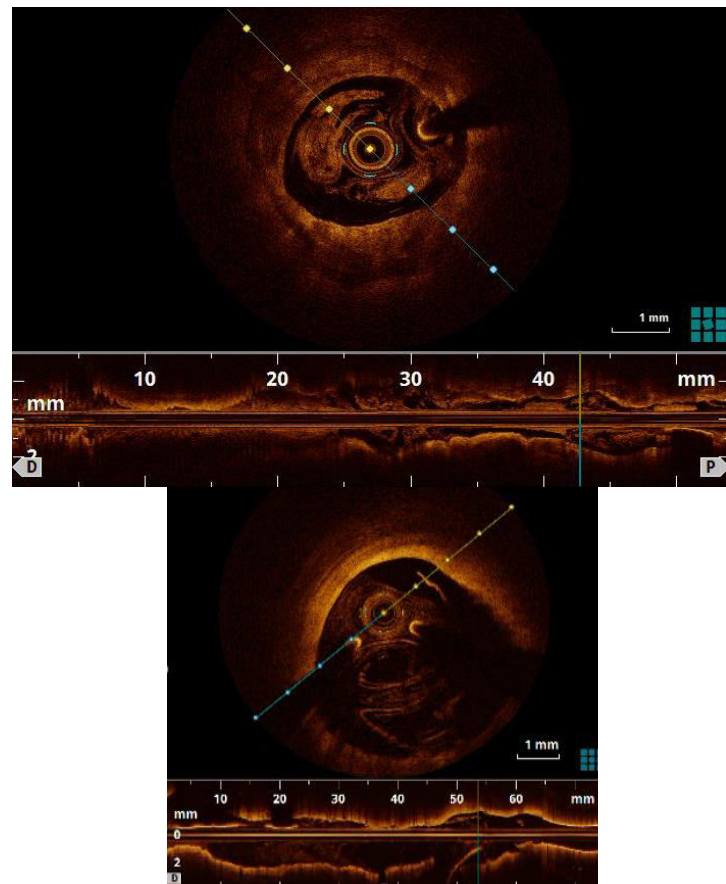


Acquisition technique may be pivotal

# CAN WE USE OCT INSTEAD OF IVUS FOR LM?



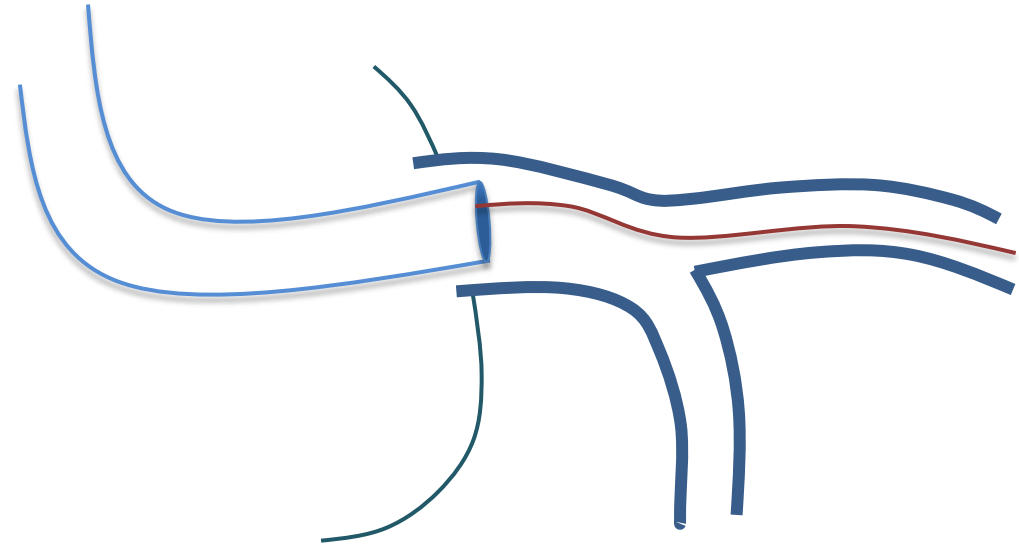
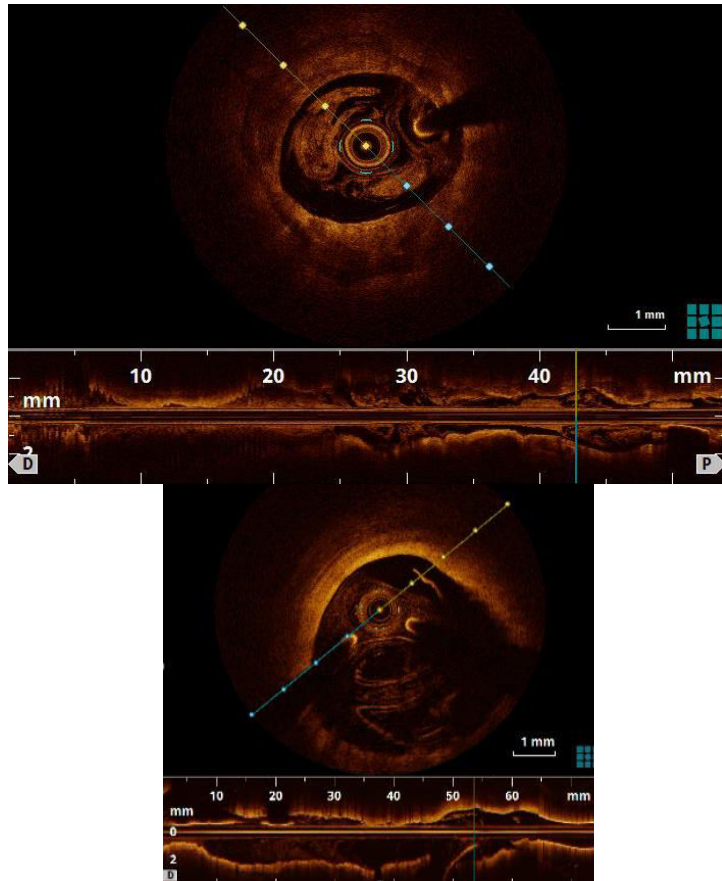
# CAN WE USE OCT INSTEAD OF IVUS FOR LM?



Look for a better guiding catheter alignment (and check with a test injection before acquisition)

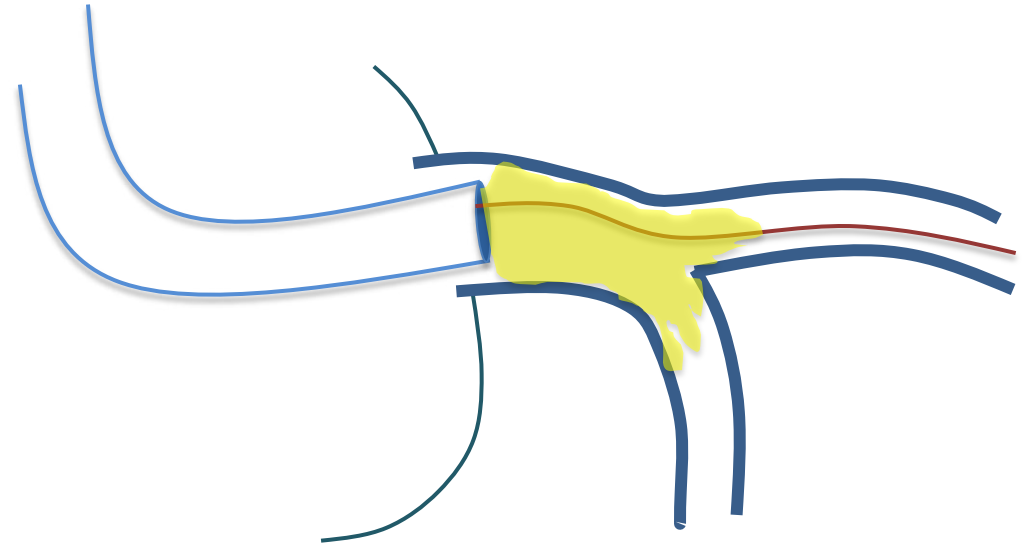
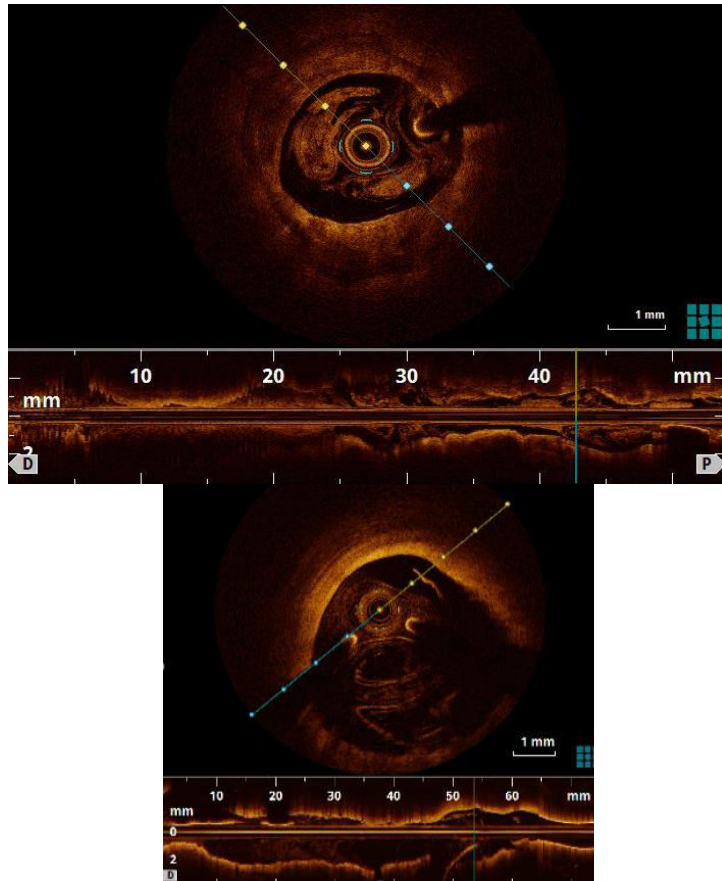


# CAN WE USE OCT INSTEAD OF IVUS FOR LM?



Consider using one wire only  
(systematically feasible for baseline LM scanning  
and often feasible for post-PCI check)

# CAN WE USE OCT INSTEAD OF IVUS FOR LM?



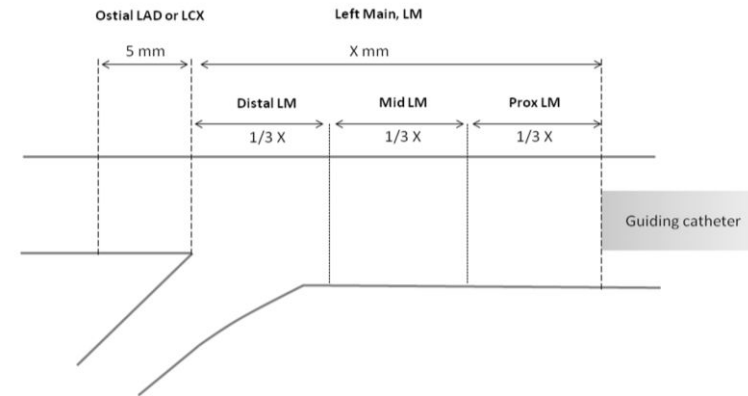
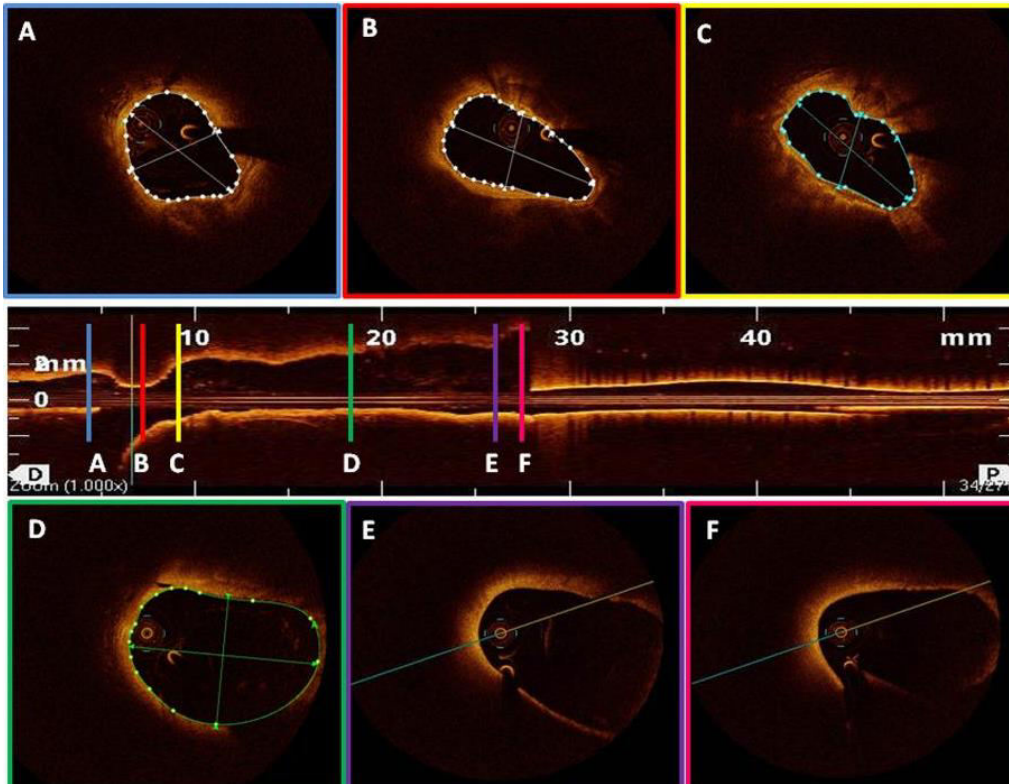
Use enhanced contrast injection protocol (6 ml/s\*) in the case of large LM

# CAN WE USE OCT INSTEAD OF IVUS FOR LM?



## STUDY END-POINT:

Nr of artifacted frames (failure of MLA automatic calculation)

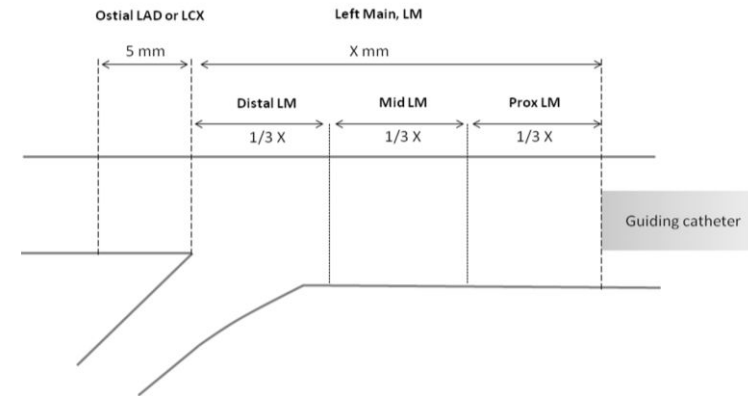
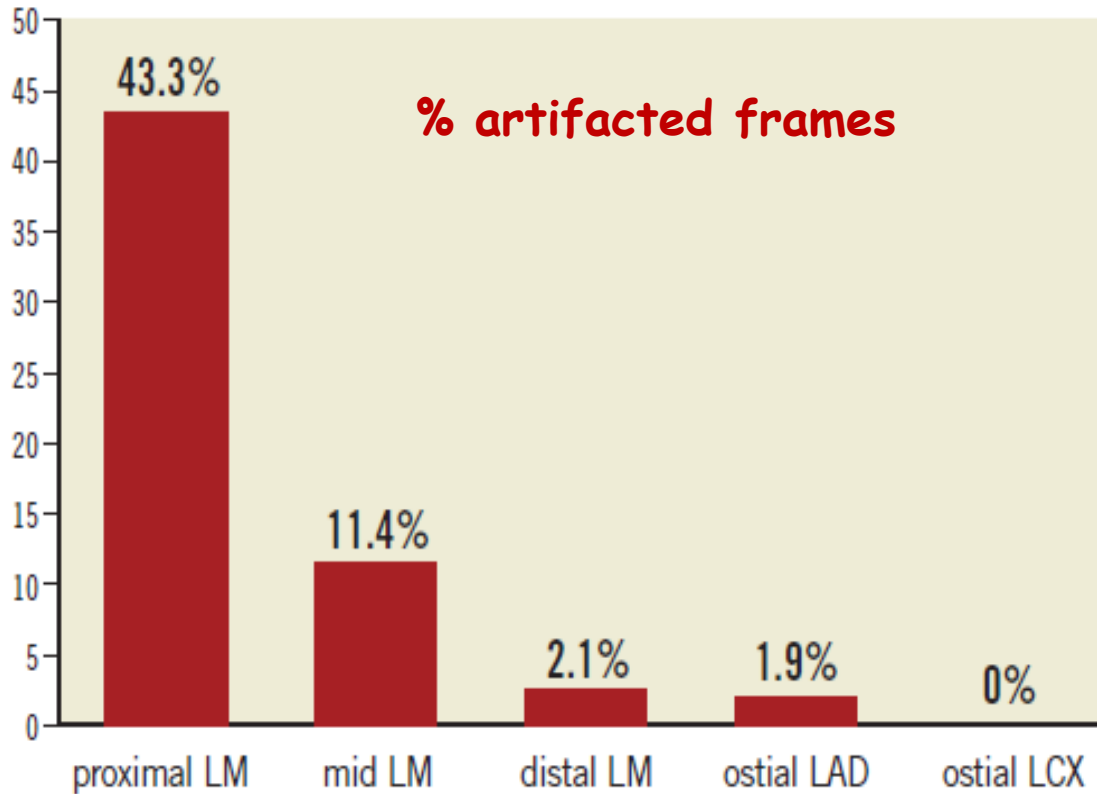


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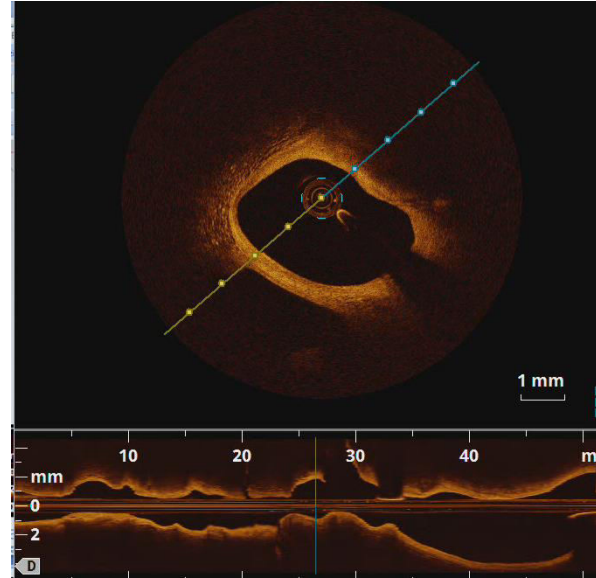
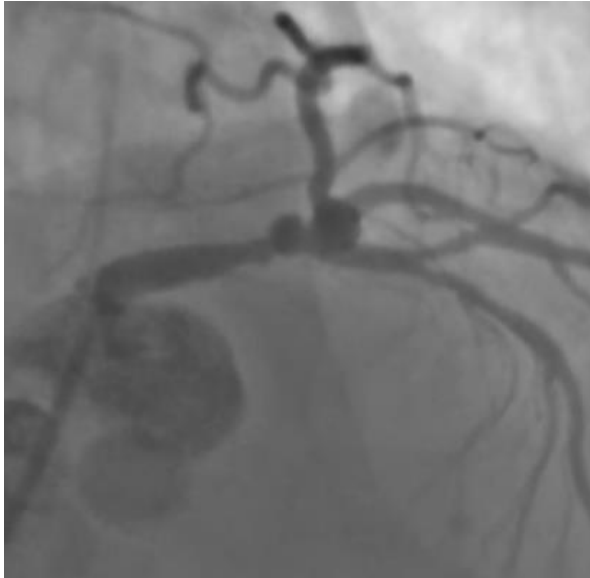









## STUDY END-POINT:

Nr of artifacted frames (failure of MLA automatic calculation)



# CAN WE USE OCT INSTEAD OF IVUS FOR LM?



	 1,1,1	 1,1,0	 1,0,1	 0,1,1	 1,0,0	 0,1,0	 0,0,1	<b>P</b>
<b>Angiographic Medina classification</b>	8 (11%)	8 (11%)	5 (7%)	7 (9%)	6 (8%)	31 (42%)	9 (12%)	<0.001
<b>OCT plaque distribution</b>	29 (39%)	27 (36%)	2 (3%)	0	1 (1)	11 (15%)	14(6%)	

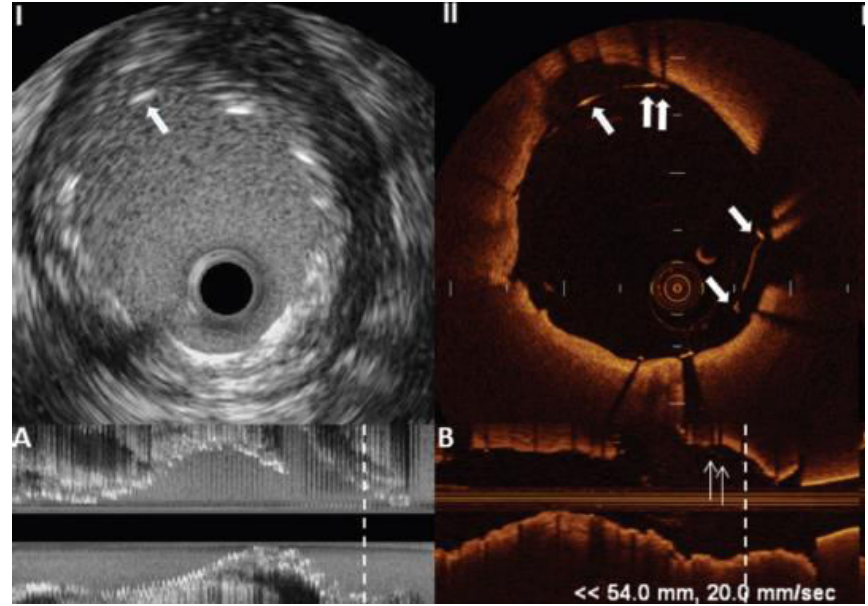
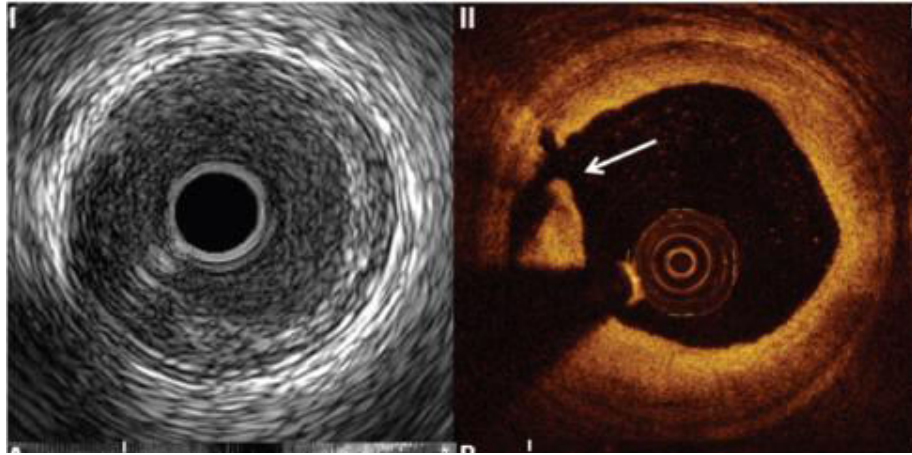
# WHY TO USE OCT INSTEAD OF IVUS FOR LM?



# WHY TO USE OCT INSTEAD OF IVUS FOR LM?



Frequency-Domain Optical Coherence Tomography  
Assessment of Unprotected Left Main Coronary Artery  
Disease—A Comparison With Intravascular Ultrasound



WE SEE MUCH BETTER WITH OCT !!!

# WHAT HAPPENS IF WE MOVE TO OCT ?

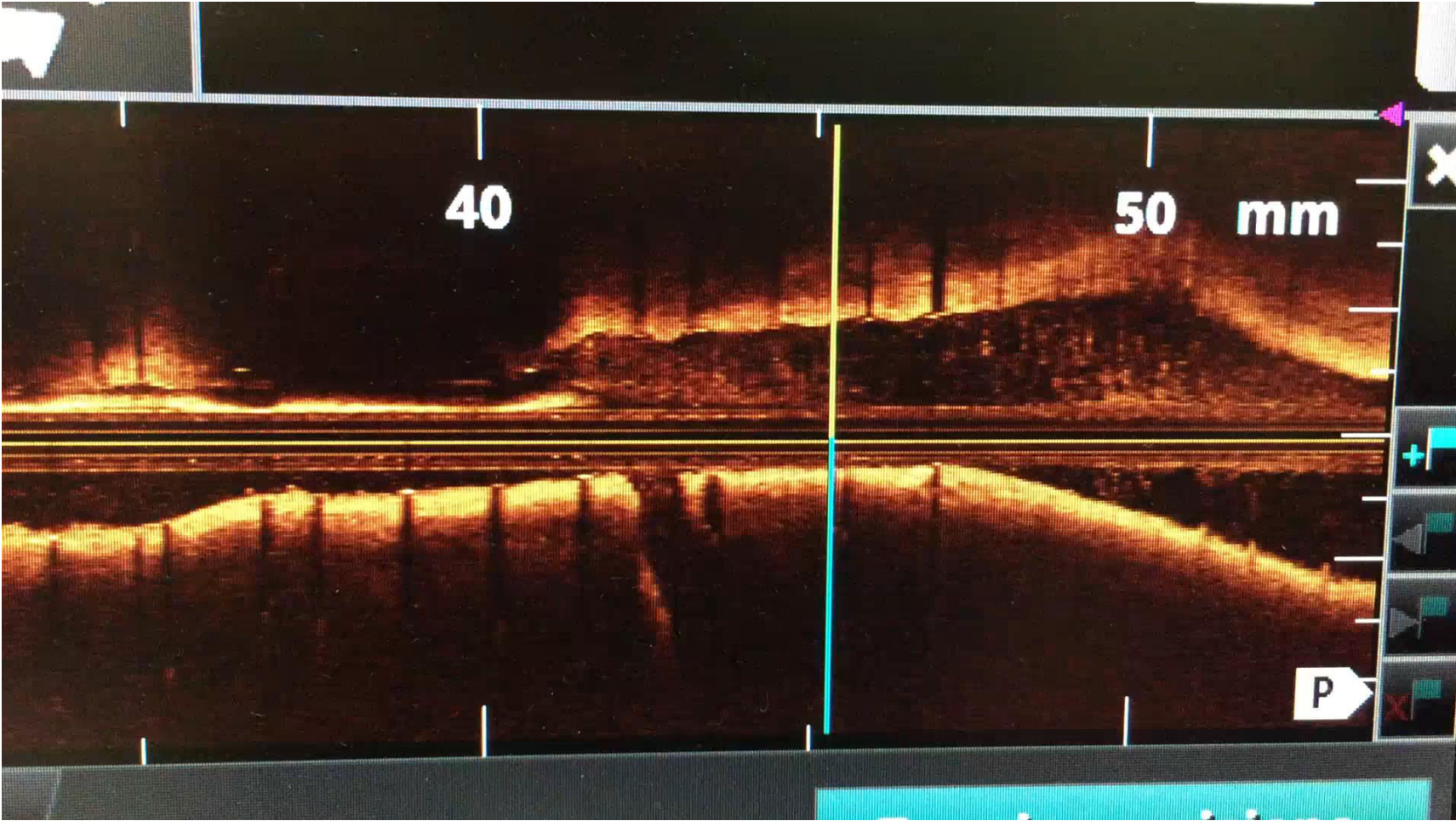




# WAS OSTIAL STENTING PRECISE ?



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# DID I CROSS THE DISTAL CELL ?



# DID I CROSS THE DISTAL CELL ?

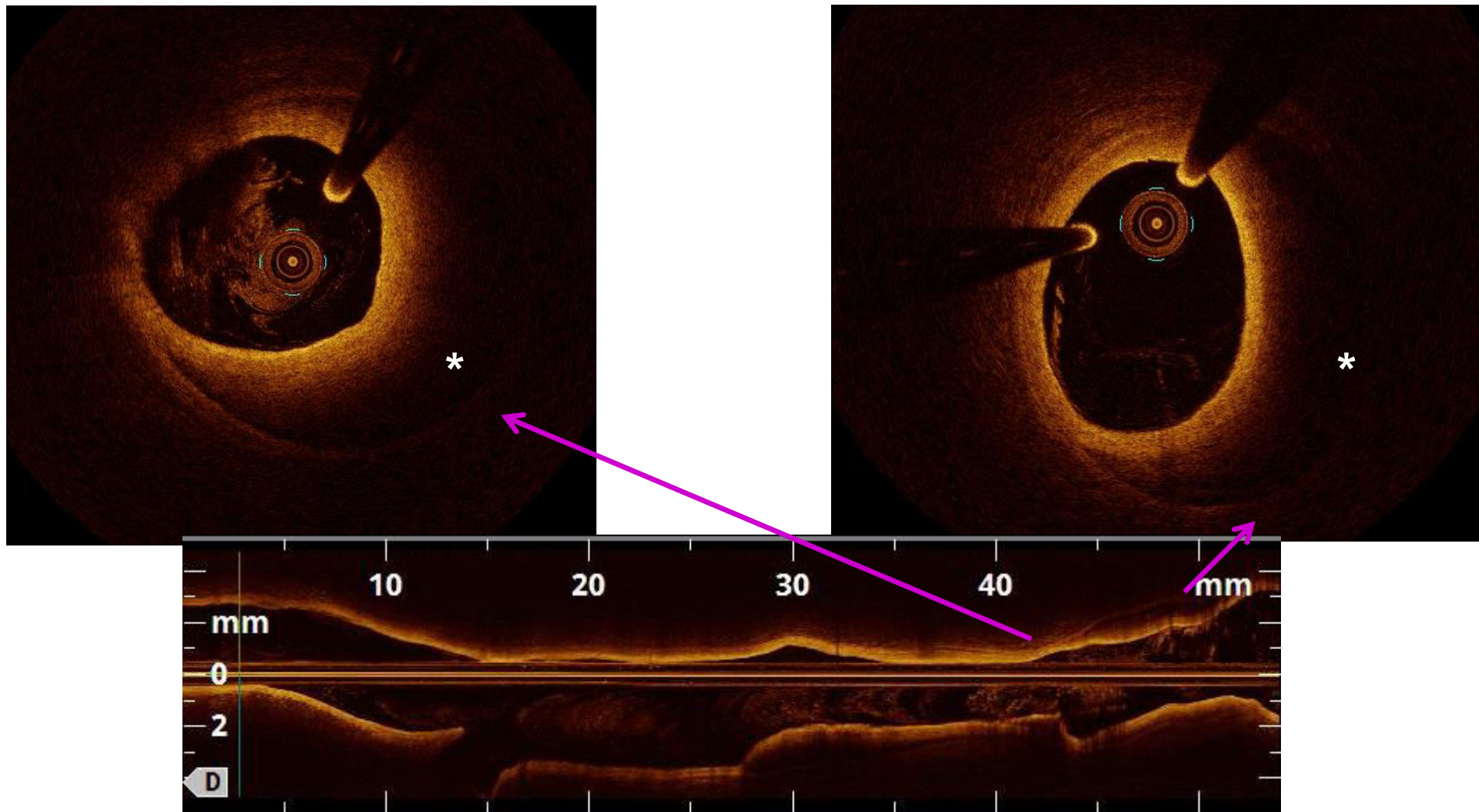


# WHICH MECHANISM FOR NSTEMI ?

Female 62 years old  
No risk factors  
NSTEMI



# WHICH MECHANISM FOR NSTEMI ?



# WHICH MECHANISM FOR NSTEMI ?

Coronary angiography after 7-day  
Conservative therapy



# WHICH MECHANISM FOR NSTEMI ?

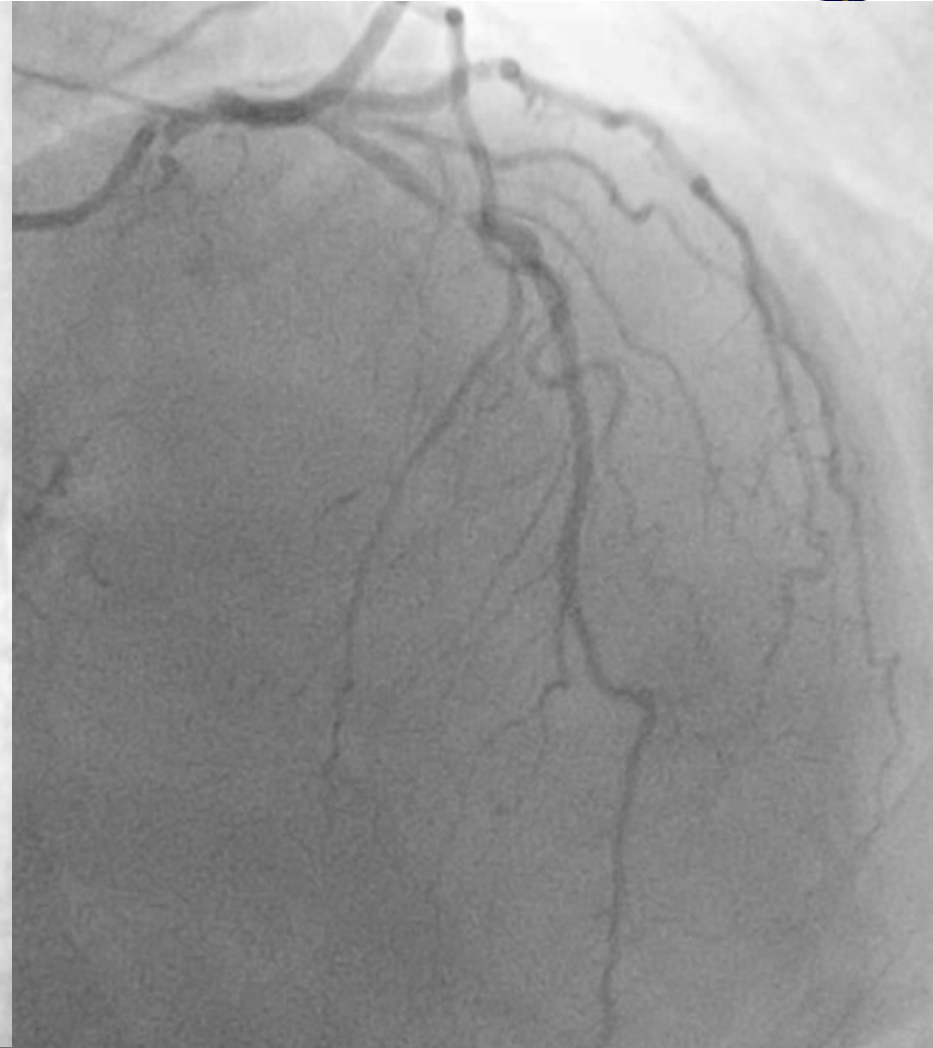


6-month follow-up (asymptomatic)

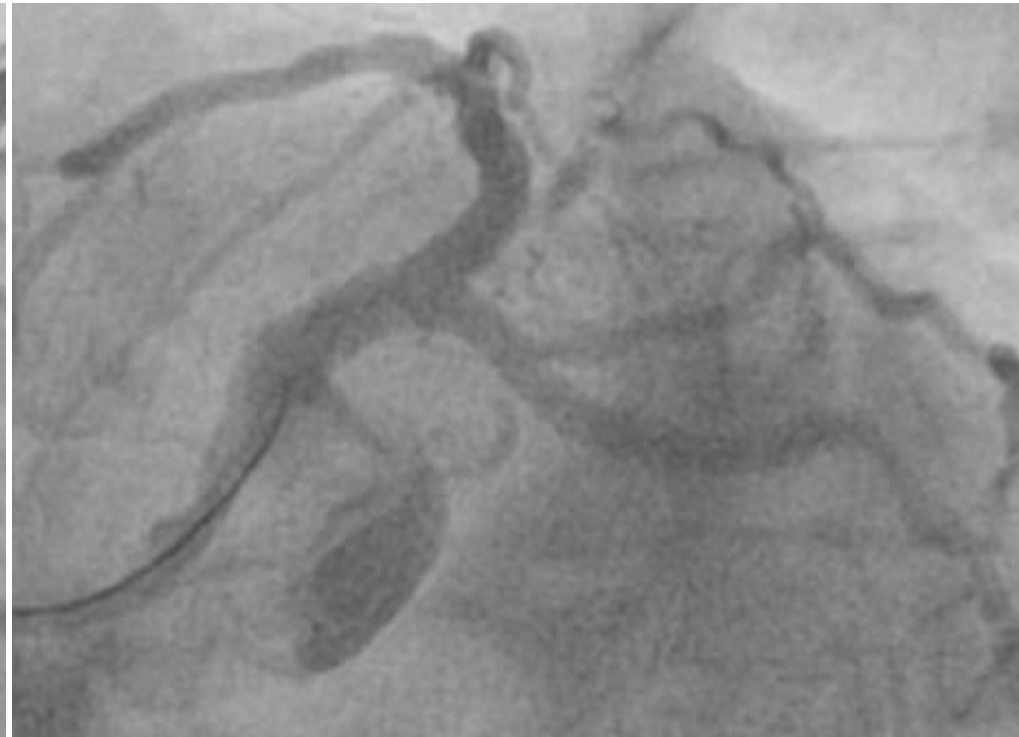
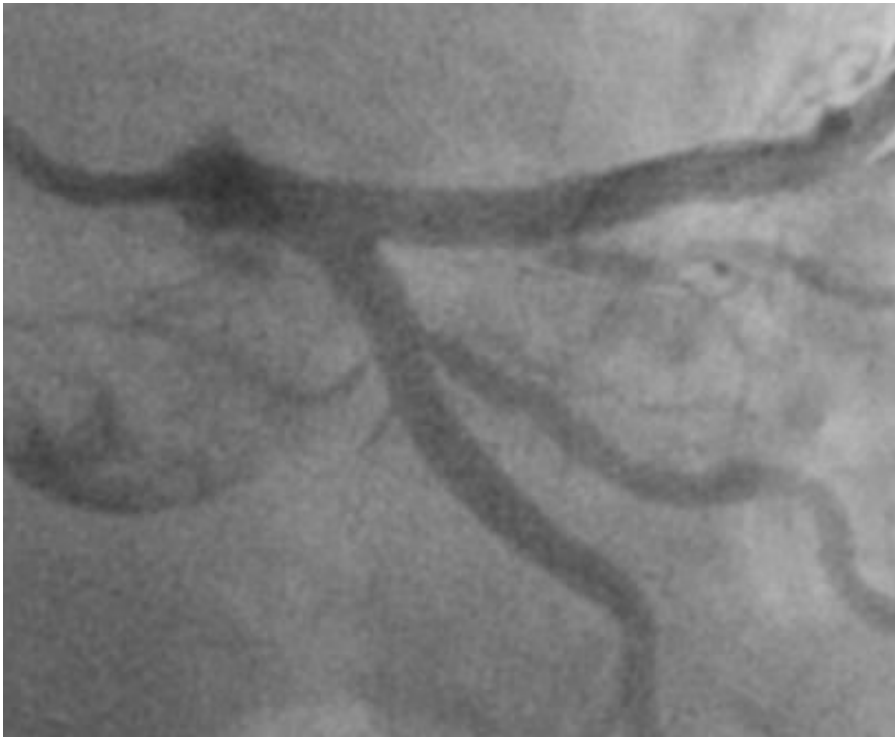




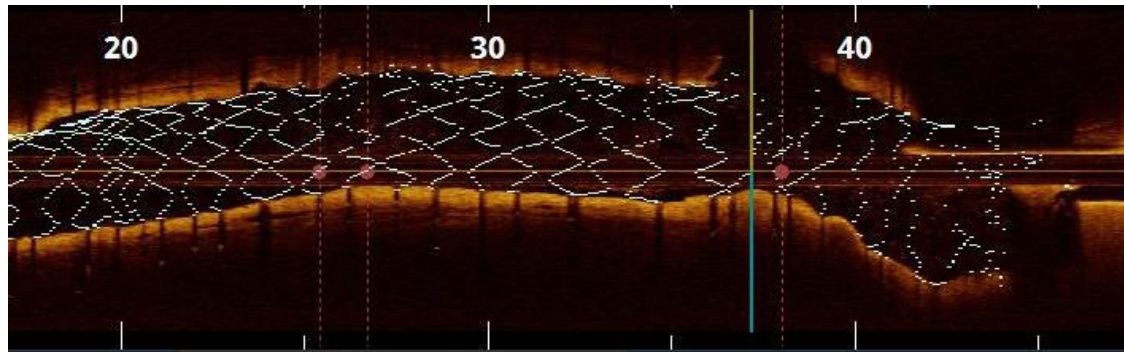
# WAS MY LM TAP RESULT REALLY NICE?



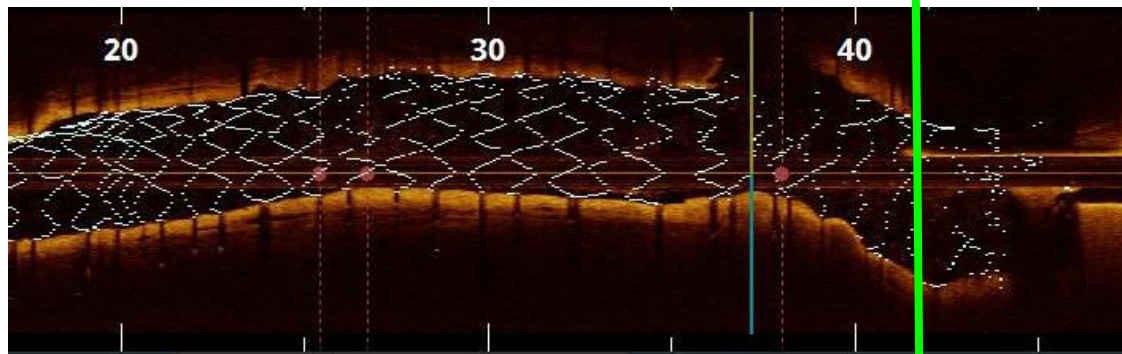
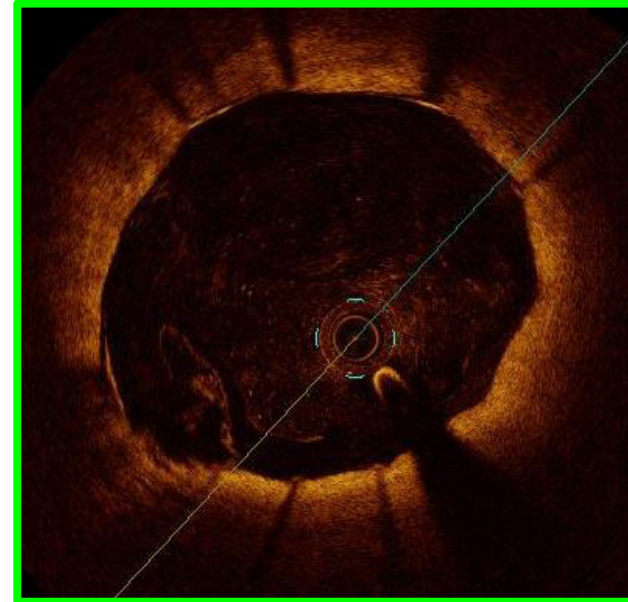
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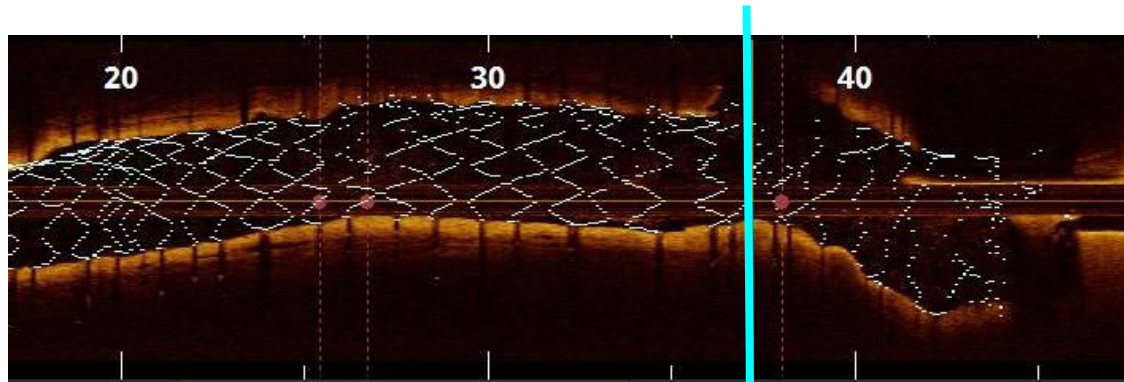
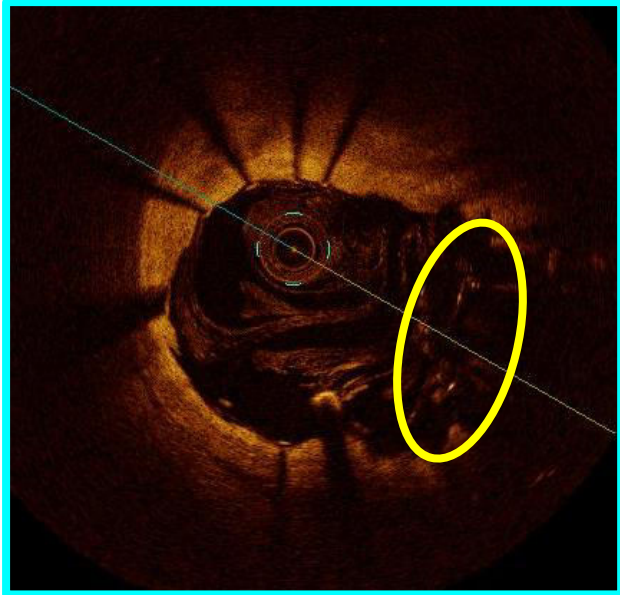
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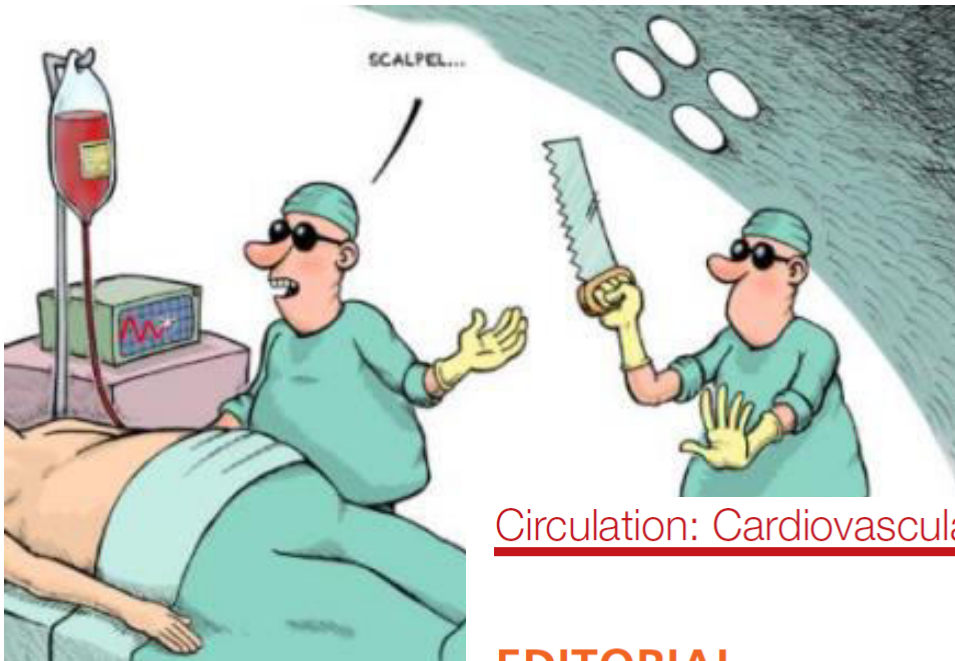
# WAS MY LM TAP RESULT REALLY NICE?



# WAS MY LM TAP RESULT REALLY NICE?



# MY (MAYBE TOO SIMPLE ?) CONCLUSION...



Circulation: Cardiovascular Interventions

## EDITORIAL

### Intracoronary Imaging

The Glasses for Modern Interventional Cardiologists Who Do Not Like Blind Decisions

[See Article by Maehara et al](#)

Francesco Burzotta, MD,  
PhD  
Carlo Trani, MD

Coronary angiography represents both the gold standard for diagnosis of coronary artery disease and the main guidance for percutaneous coronary