IVUS guided ostial LAD PCI

There's more to it than meets the eye

Shiv Bagga, MD,DM, FACC
Associate Professor
Department of Cardiology
Post Graduate Institute of Medical Education & Research
Chandigarh, India

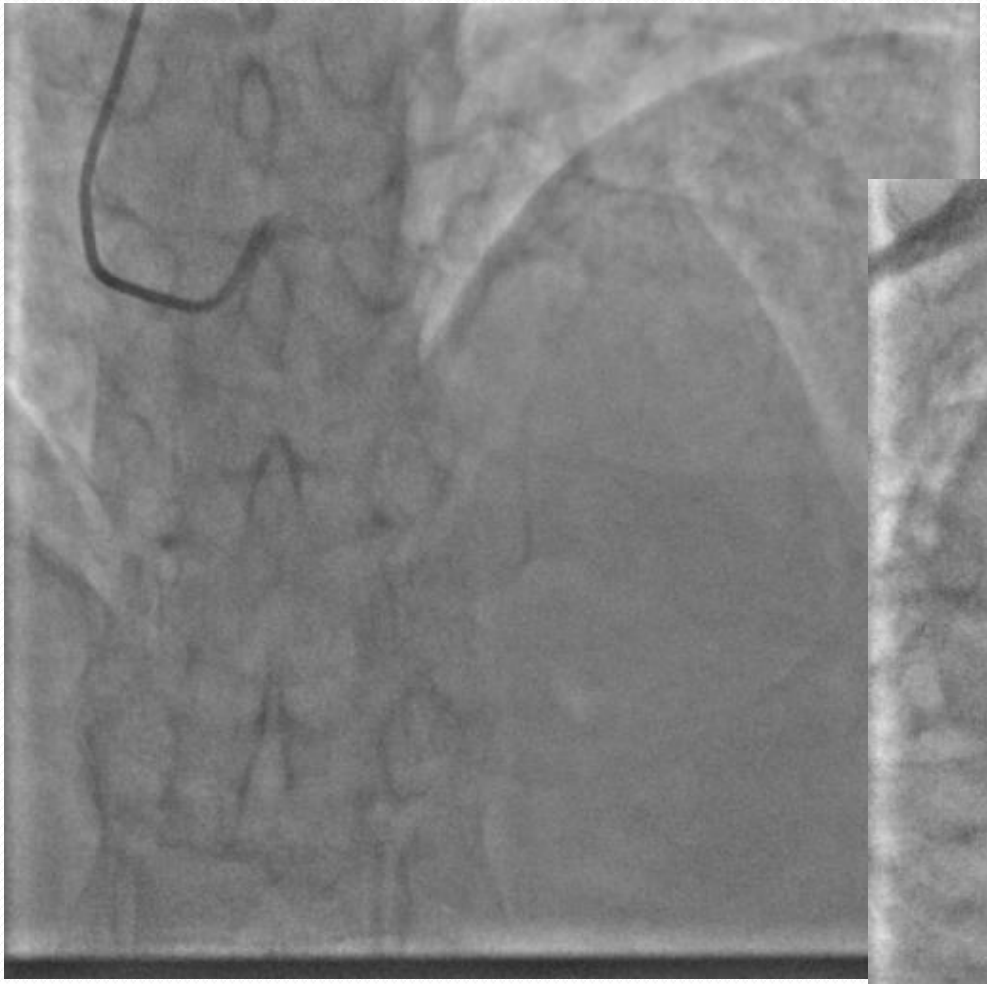
Disclosures

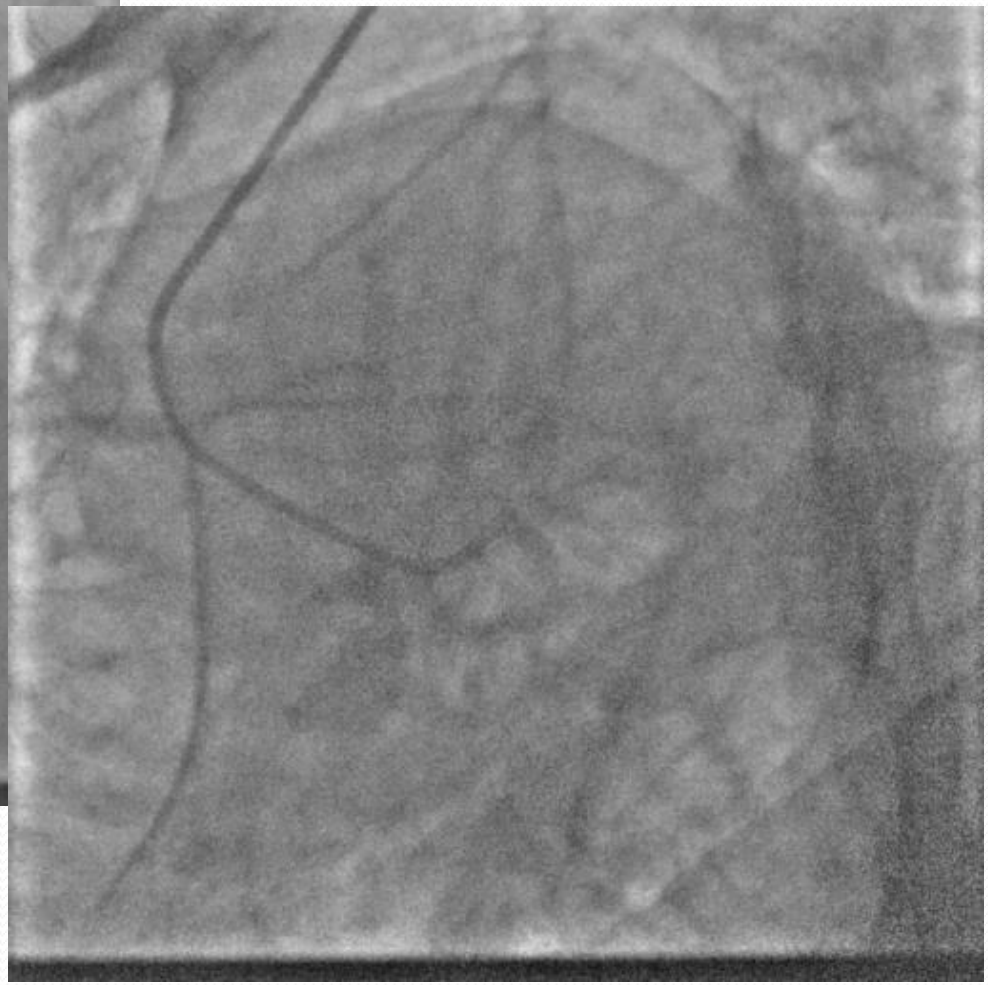
- No relationships to disclose

Clinical profile

- 63/M
- HTN
- CAD, old ALMI (not lysed), CSA CCS 2
- Strong +ve TMT @ 6 METS
- 2D Echo: No RWMA, LVEF 58%,

Cardiac cath

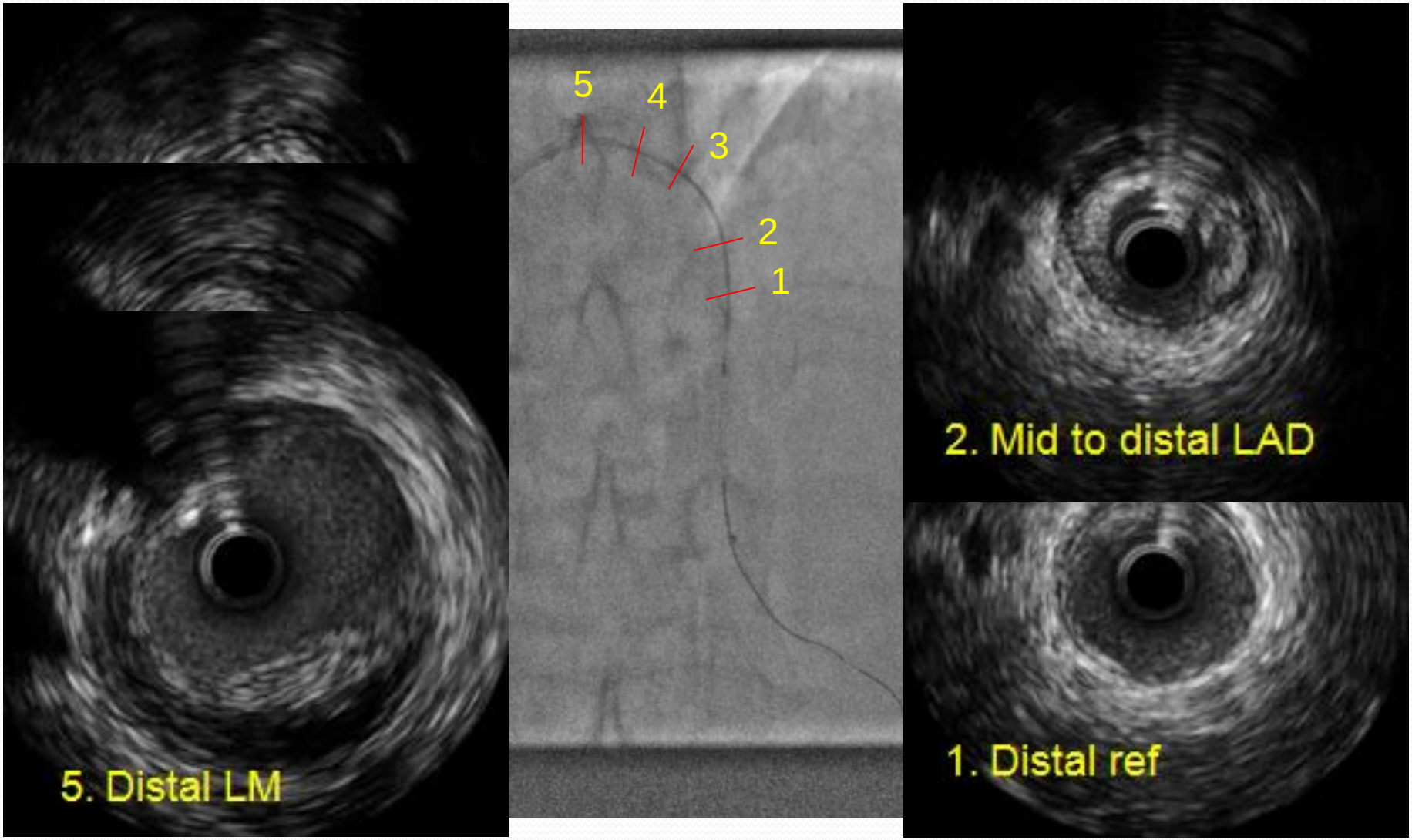




Planning the procedure

- Ostial LAD PCI under IVUS guidance as most of the ostial LAD lesions are a subset of LM disease based on IVUS studies analyzing plaque distribution in the LM territory.

Pre PCI LAD LM IVUS pullback

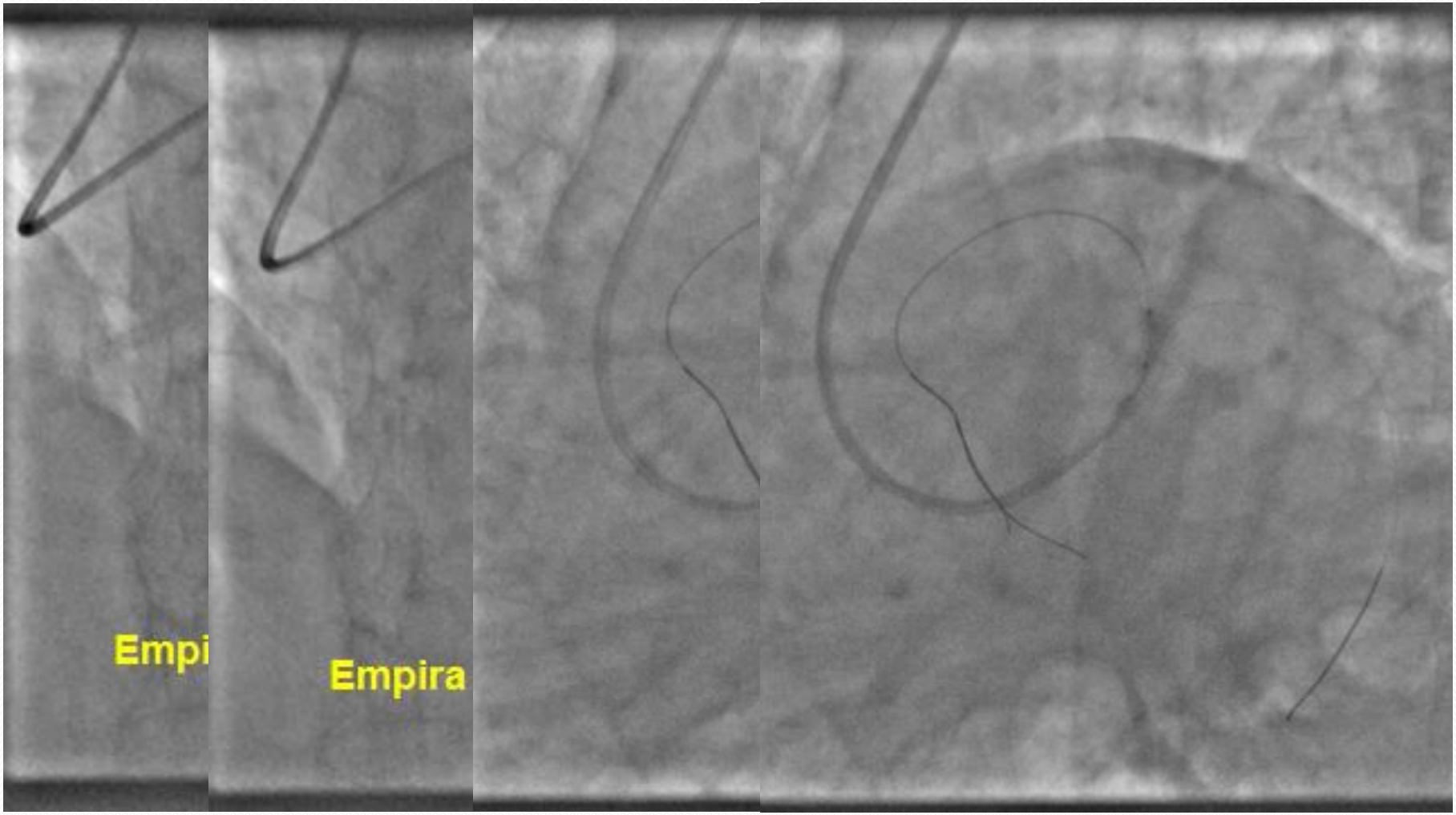


IVUS Guided PCI

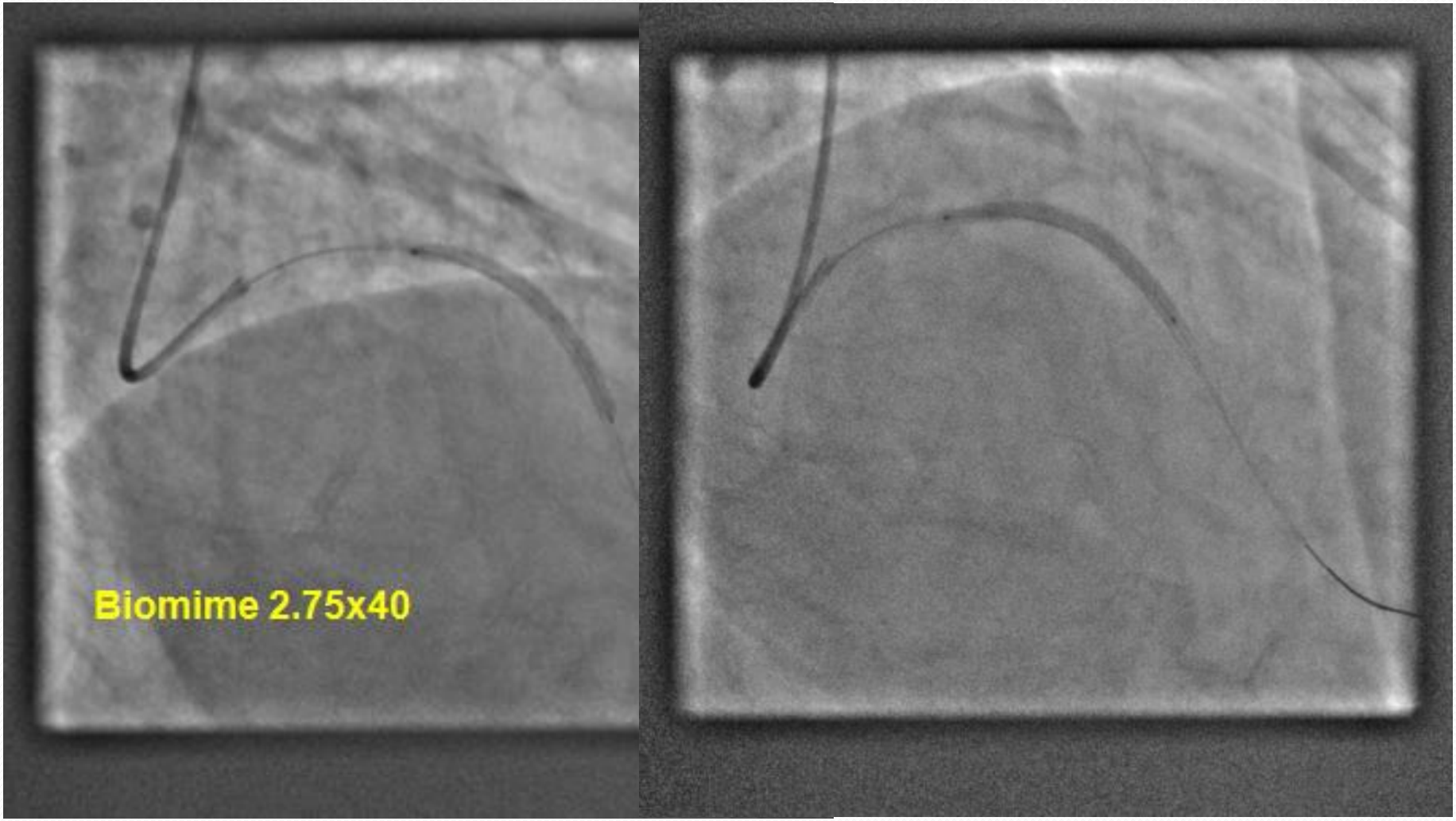
- Single stent crossover strategy for ostial LAD because of distal LM ds on IVUS with provisional approach for LCX ds

- Addressing LM to LAD size discrepancy during LM to LAD crossover stenting

LAD PTCA

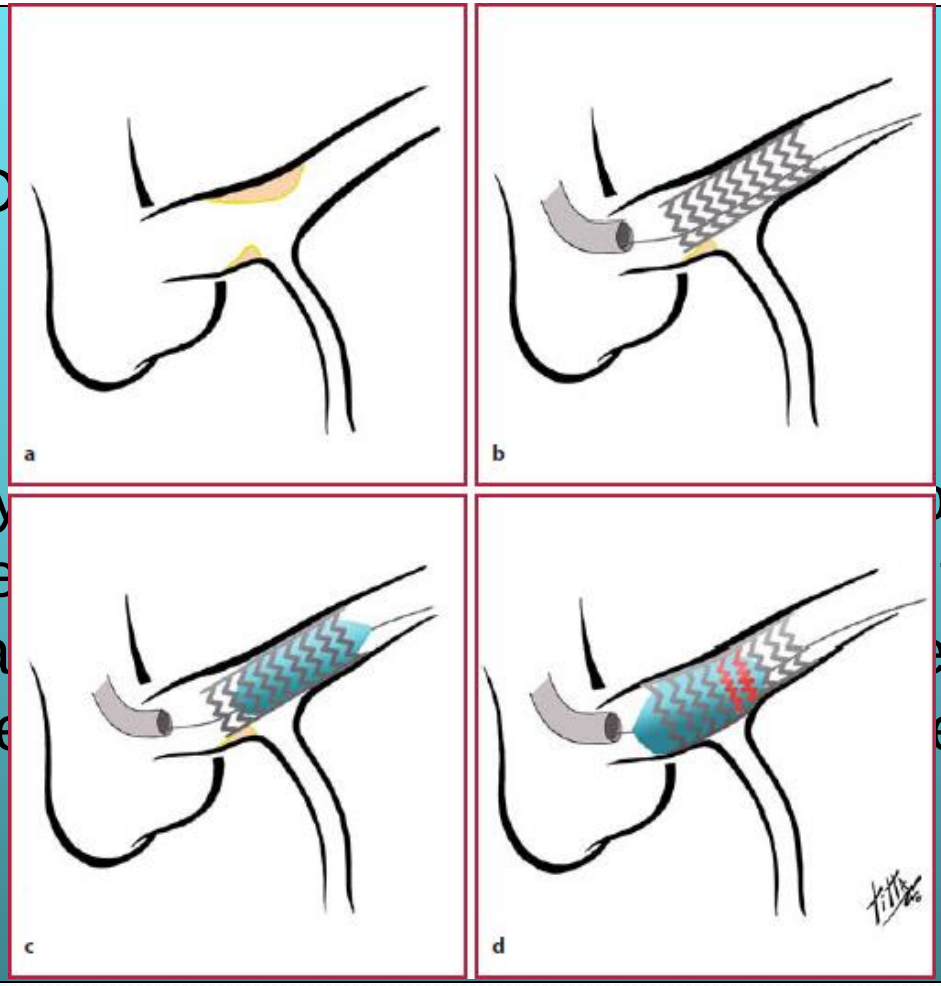


Mid LAD PCI



Tackling LM to LAD size discrepancy

- Stent size … the LMCA and the LAD
- Deploy at …
- Selectively … overing the LAD and the … th short non-complia… …eter duly matching the … essels



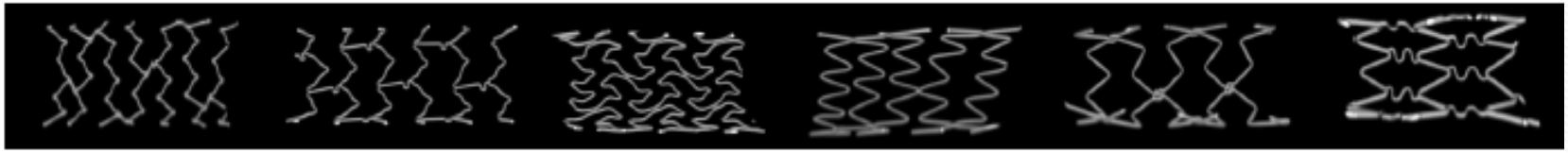
What is so different in Left Main ?

Does Left Main stent design matter ?

From a stent design perspective, this translates into 2 questions:

- What is the largest DES diameter available ?
- How much can one post-dilate the stent up to in the Left Main ?

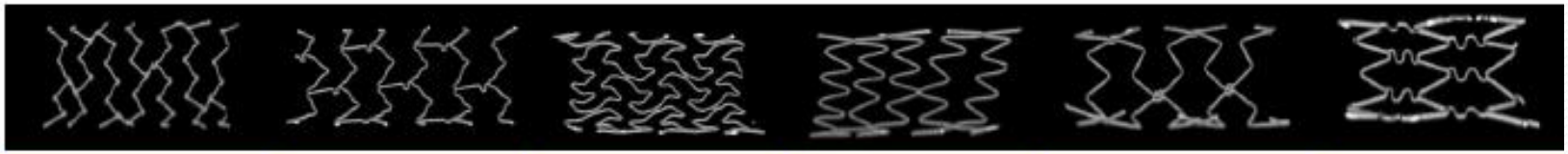
Current DES workhorse designs



	Element	Xience V	Taxus	Integrity	BioMatrix	Cypher
2.25	Very Small WH (2 cells)	Medium Workhorse (6 crowns , 3 cells)	Small workshorse (6 crowns, 2 cells)	Small workhorse (7crowns, 2 cells*) **1.5 cell in Endeavor Resolute*	Medium workhorse (6 crowns, 2 cells)	Medium workhorse (6 crowns, 6 cells)
2.50	Small workshorse (8 crowns, 2 cells)					
2.75			Medium Workhorse (9 crowns, 3 cells)			
3.00	Medium Workhorse (8 crowns, 2 cells)			Medium workhorse (10 crowns, 2 cells)		
3.50		Large workhorse: (9 crowns , 3 cells)			Large workhorse (9 crowns, 3 cells)	Large workhorse (7 crowns, 7 cells)
4.00	Large workhorse (10 crowns, 2 cells)		Large workhorse (9 crowns, 3 cells)			
4.50						
5.00						

Off Label Use

Maximal expansion capacity and workhorse designs



	Element	Xience V	Taxus	Integrity	BioMatrix	Cypher
2.25	Very Small WH (2 cells) *max exp.: 2.8mm*	Medium Workhorse (6 crowns , 3 cells) *max. expansion: 4.4mm*	Small workshorse (6 crowns, 2 cells) *max expansion: 3.3mm*	Small workhorse (7crowns, 2 cells*) *max expansion: 4.0mm* **1.5 cell in Resolute*	Medium workhorse (6 crowns, 2 cells) max expansion: 4.4mm	Medium workhorse (6 crowns, 6 cells) max expansion: 4.75mm
2.50	Small workshorse (8 crowns, 2 cells) *max expansion : 3.5mm*					
2.75			Medium Workhorse (9 crowns, 3 cells) *max expansion: 4.7mm*			
3.00	Medium Workhorse (8 crowns, 2 cells) *max expansion : 4.5mm*			Medium workhorse (10 crowns, 2 cells) *max expansion : 4.8mm*		
3.50		Large workhorse: (9 crowns , 3 cells) *max expansion : 5.7mm*			Large workhorse (9 crowns, 3 cells) max expansion: 5.75mm	Large workhorse (7 crowns, 7 cells) max expansion: 5.7mm
4.00	Large workhorse (10 crowns, 2 cells) *max expansion:*		Large workhorse (9 crowns, 3 cells) *max expansion:*			
4.50	*5.4mm*		*5.75mm*			
5.00						

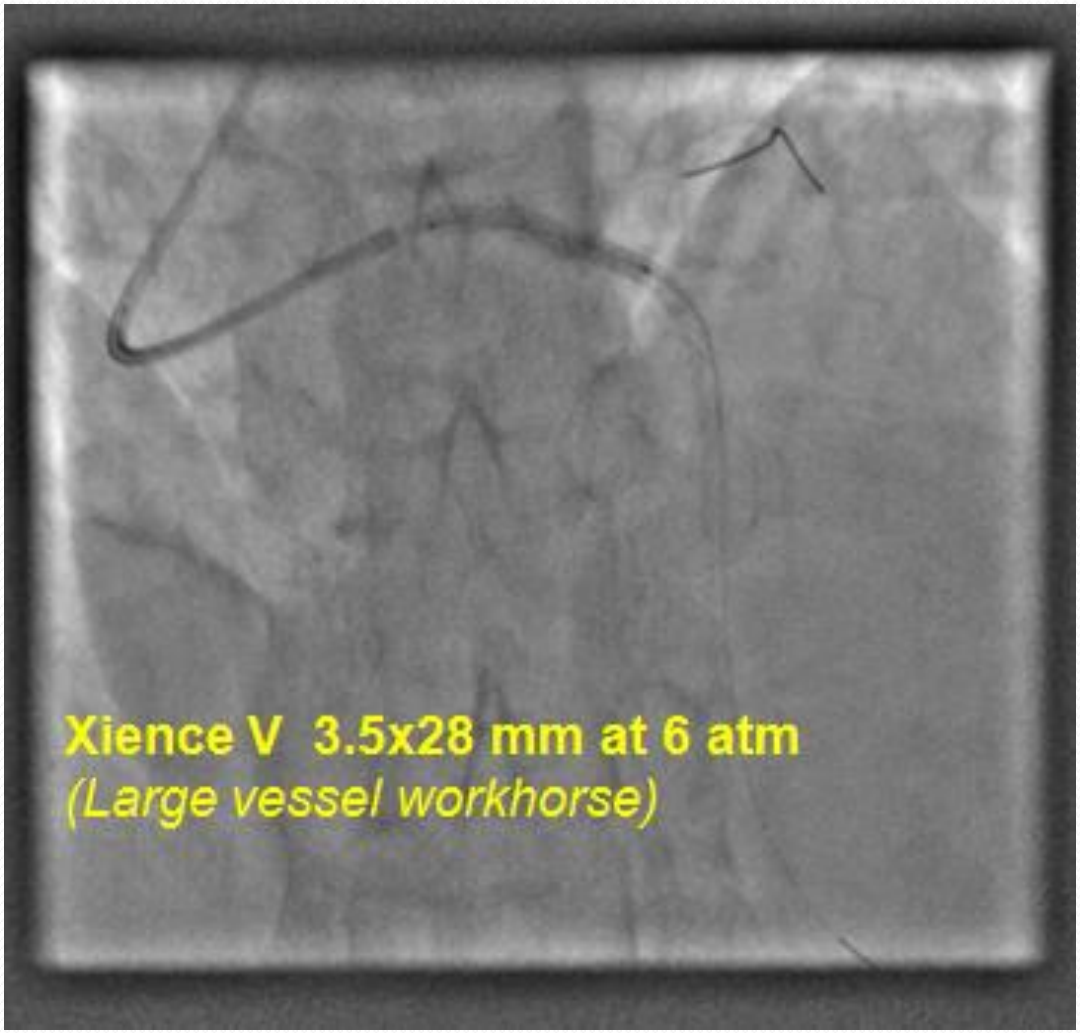
Maximal expansion capacity DES

- Expansion capacity for each stent diameter is limited by its design, knowing the cut-off diameters between the different existing designs is critical for optimising stent selection

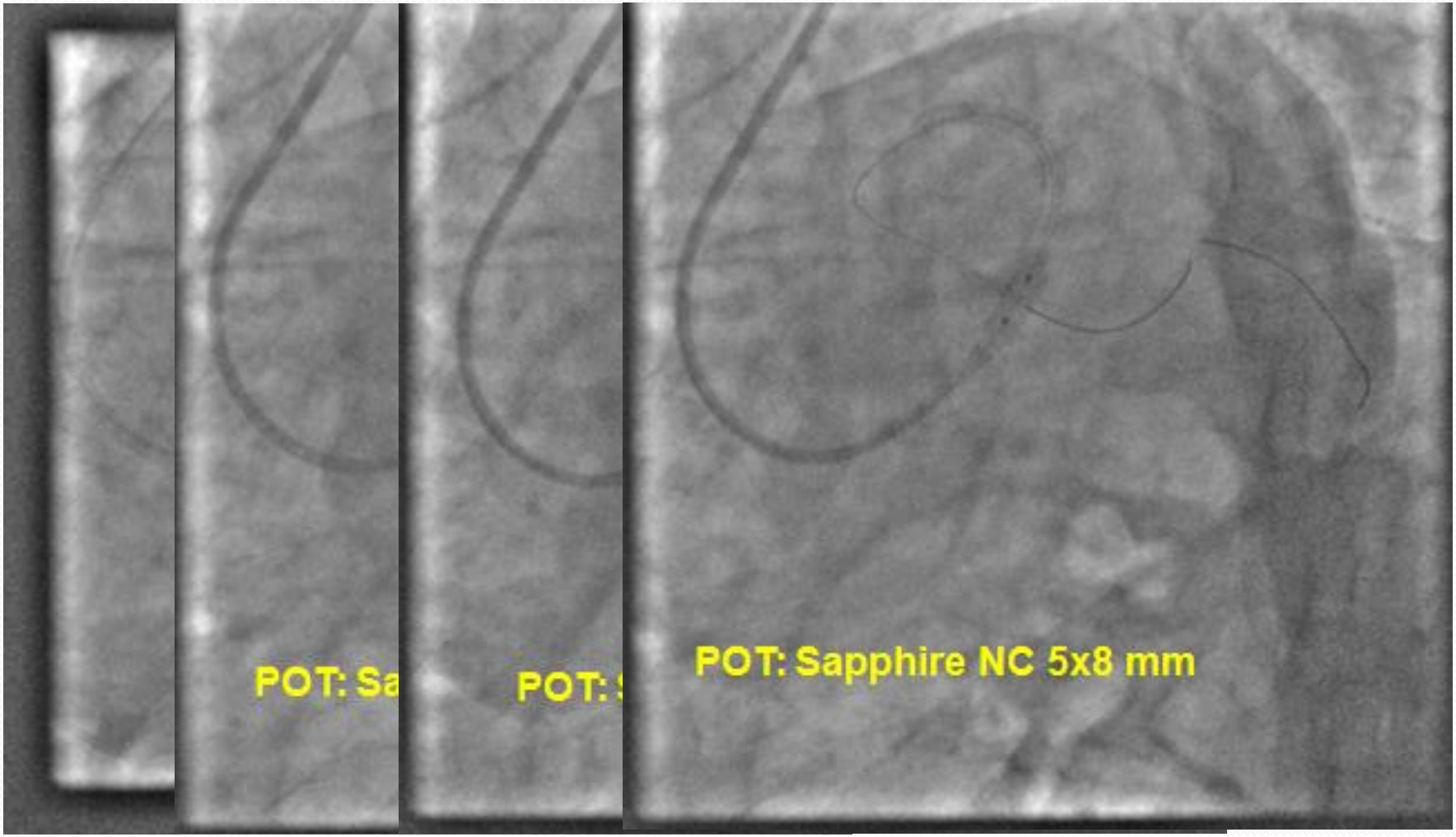
- Stents made with only two designs showed expansion capacity comparable to stent platforms made with three or four different designs

- Despite most stents achieving larger MLD, excessive over-expansion leaves large gaps between rings that may affect the ability of the stent scaffold on atherosclerotic plaque lesion and the effectiveness of the antiproliferative drug coating to prevent restenosis

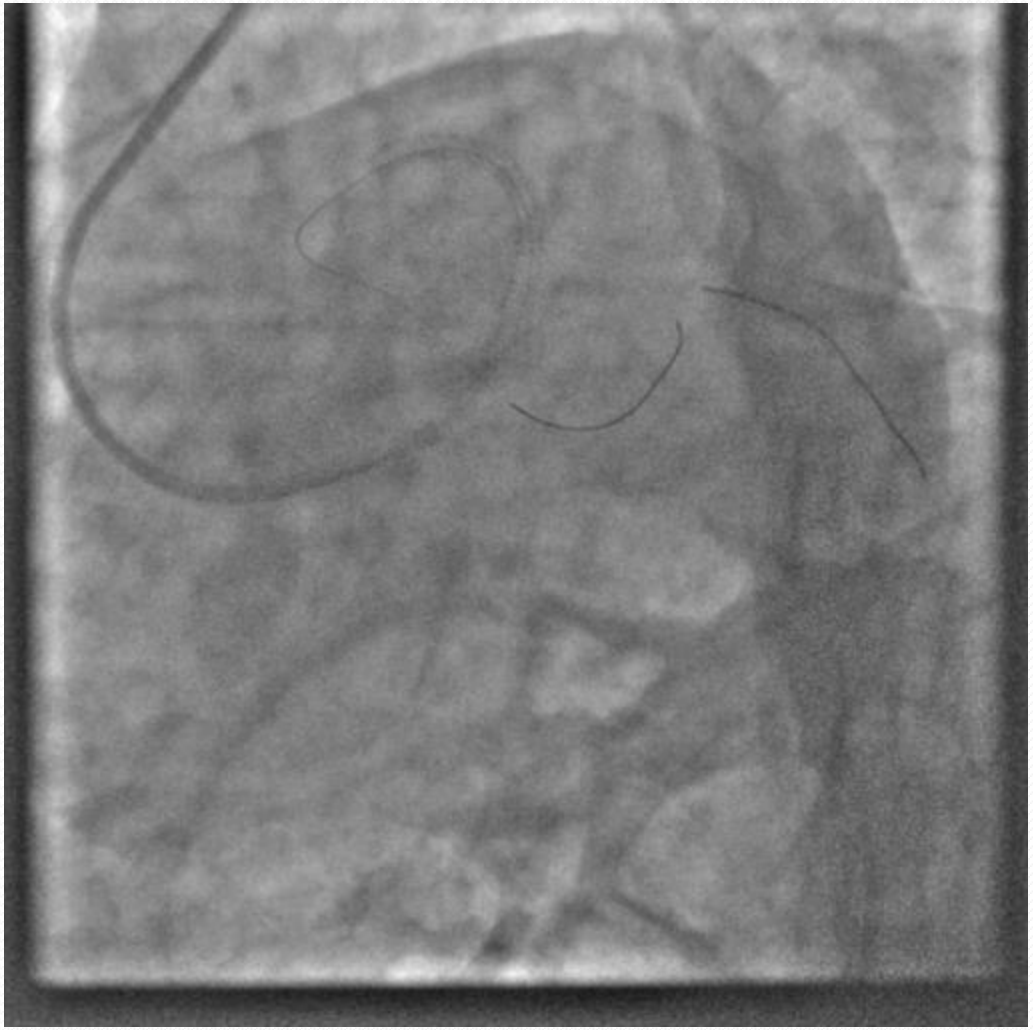
LM to LAD single stent crossover



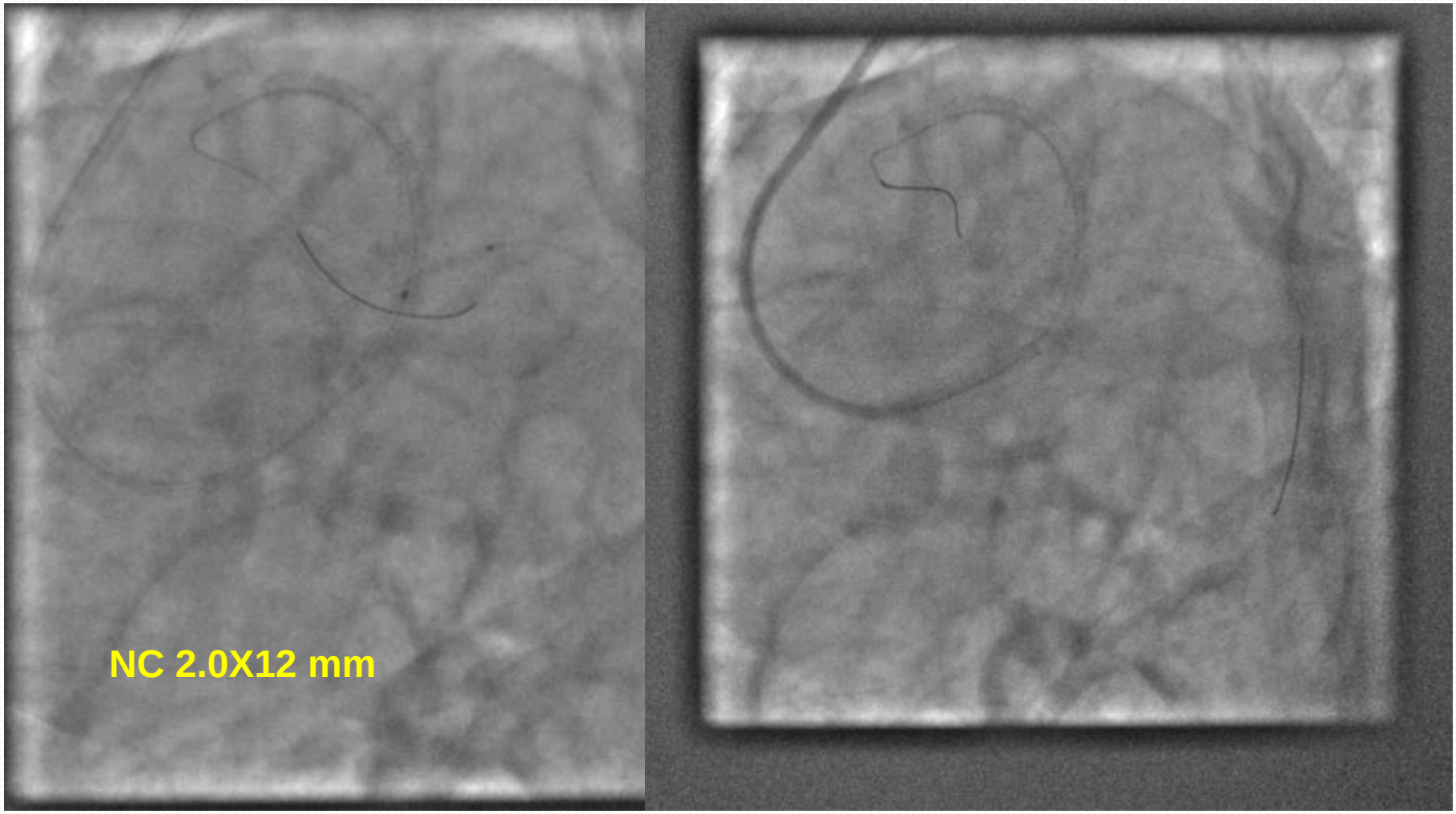
IVUS guided stent optimization



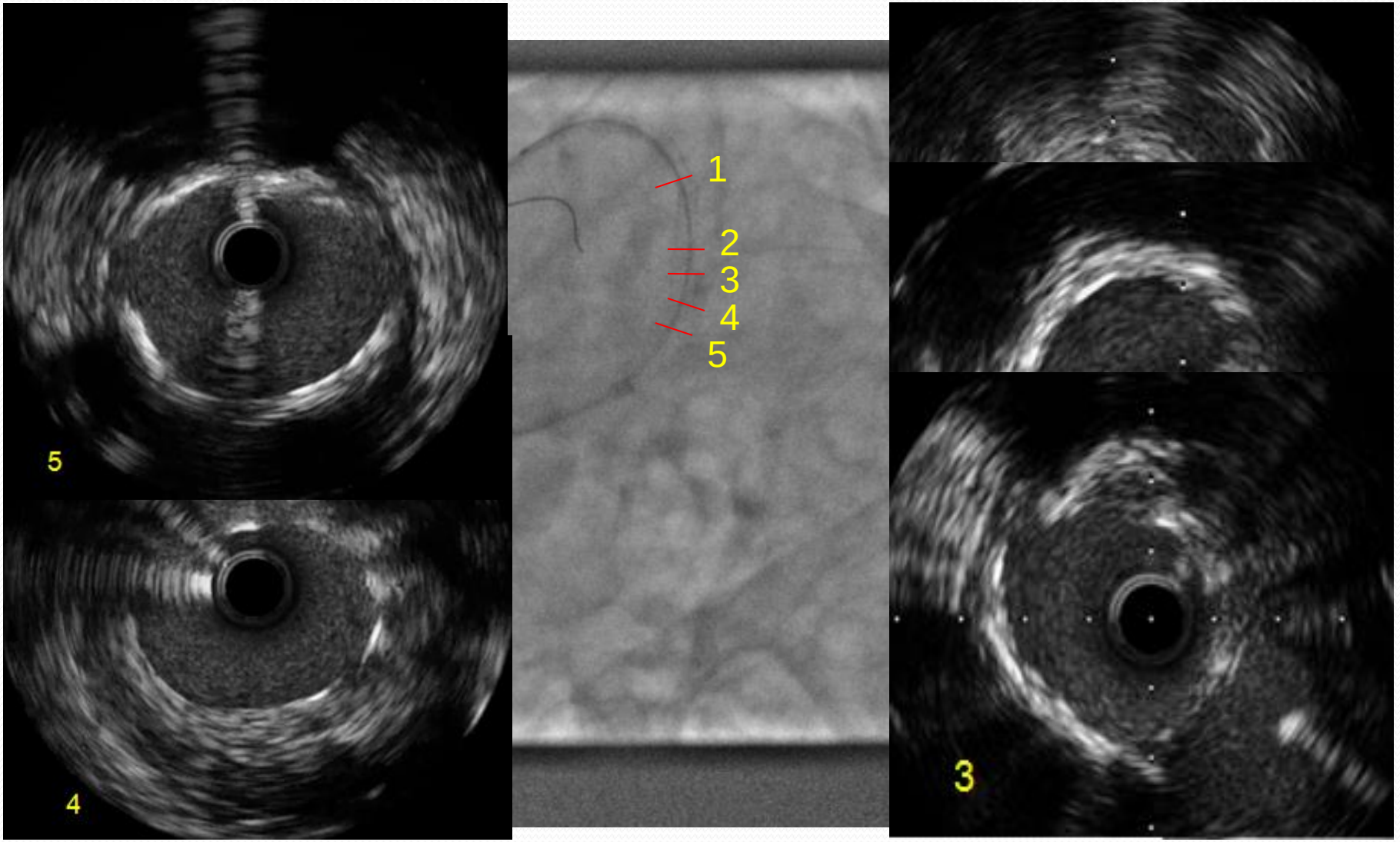
Symptomatic SB compromise



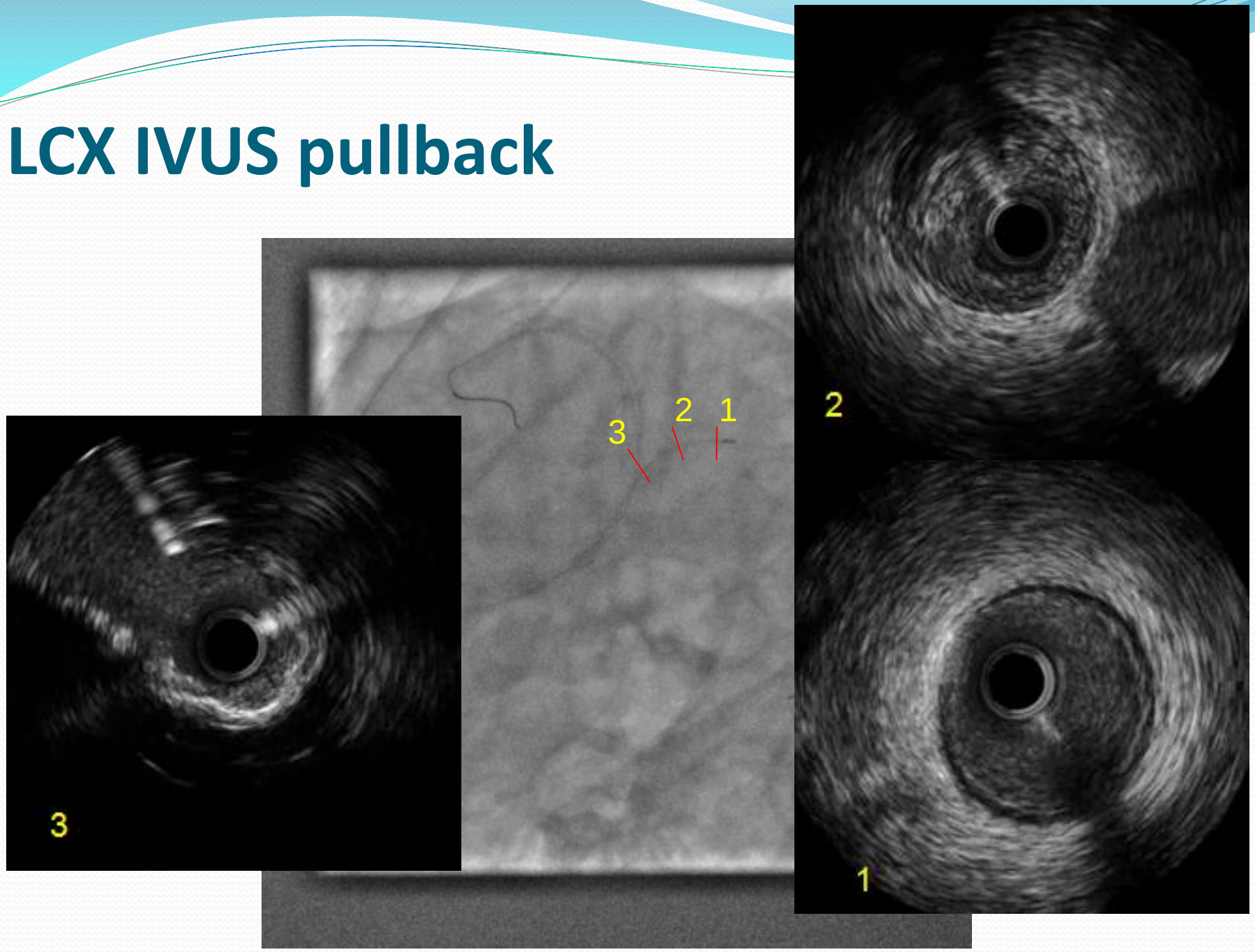
LCX Predilatation



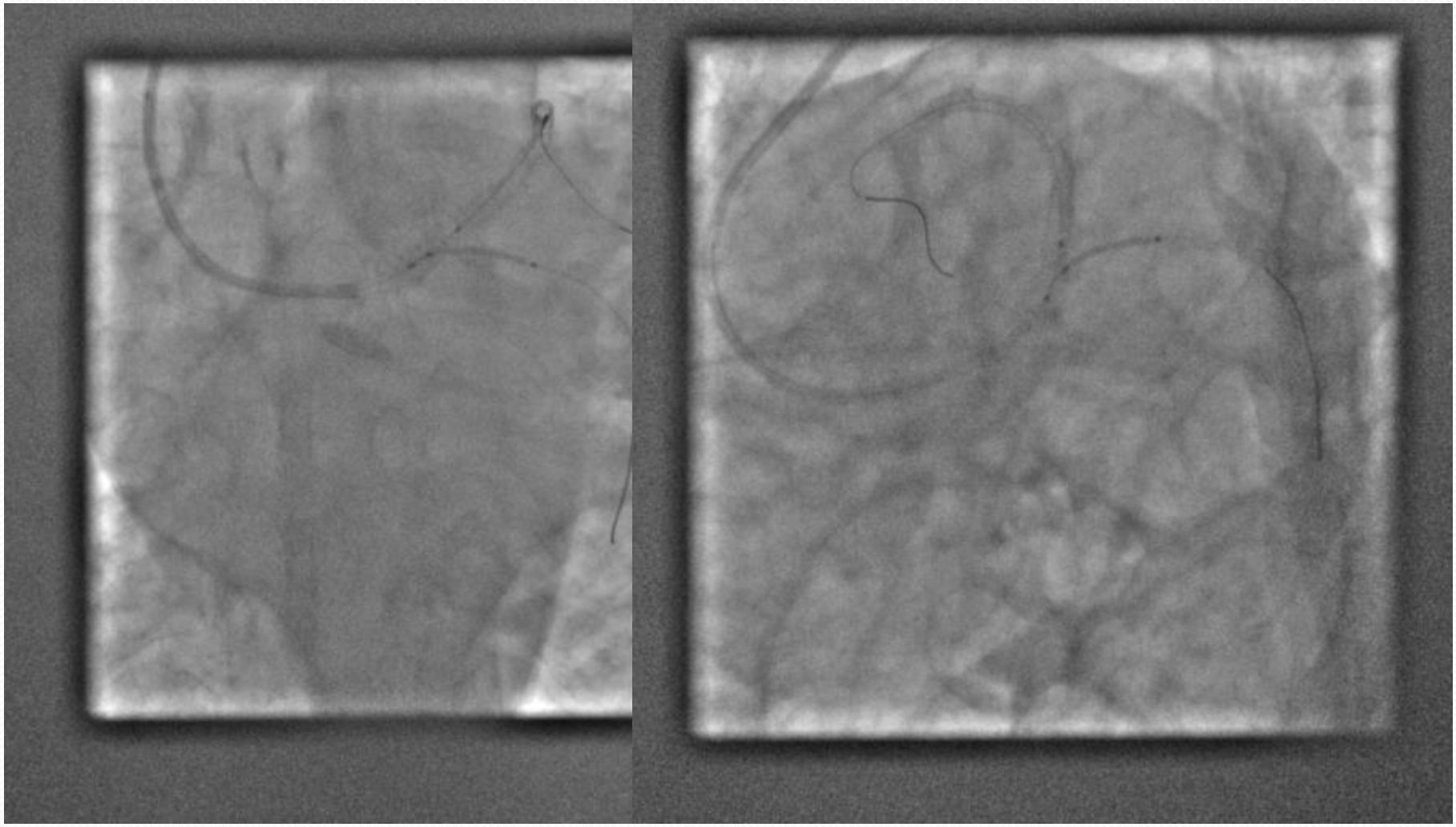
Post PCI LAD IVUS pullback



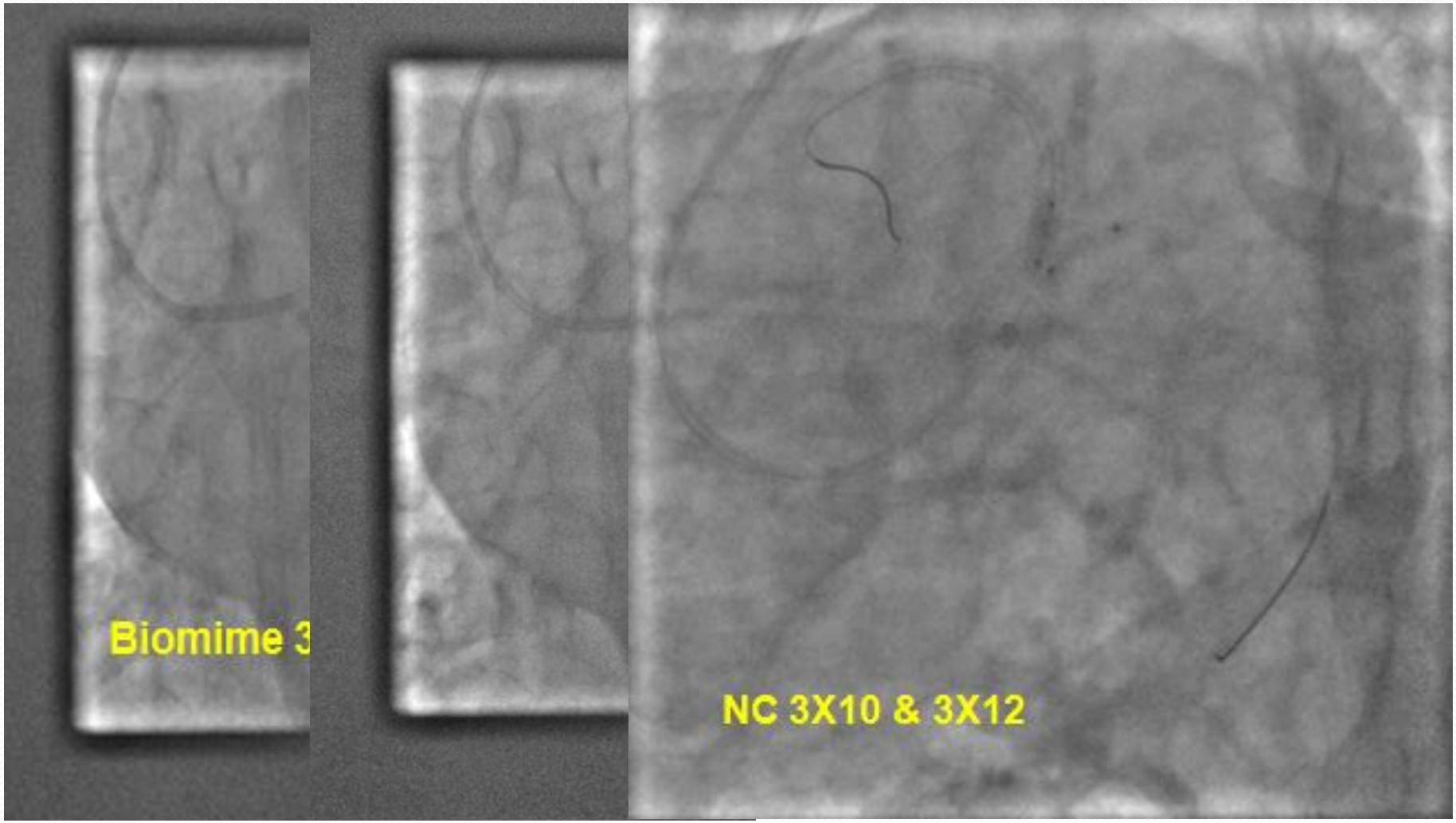
LCX IVUS pullback



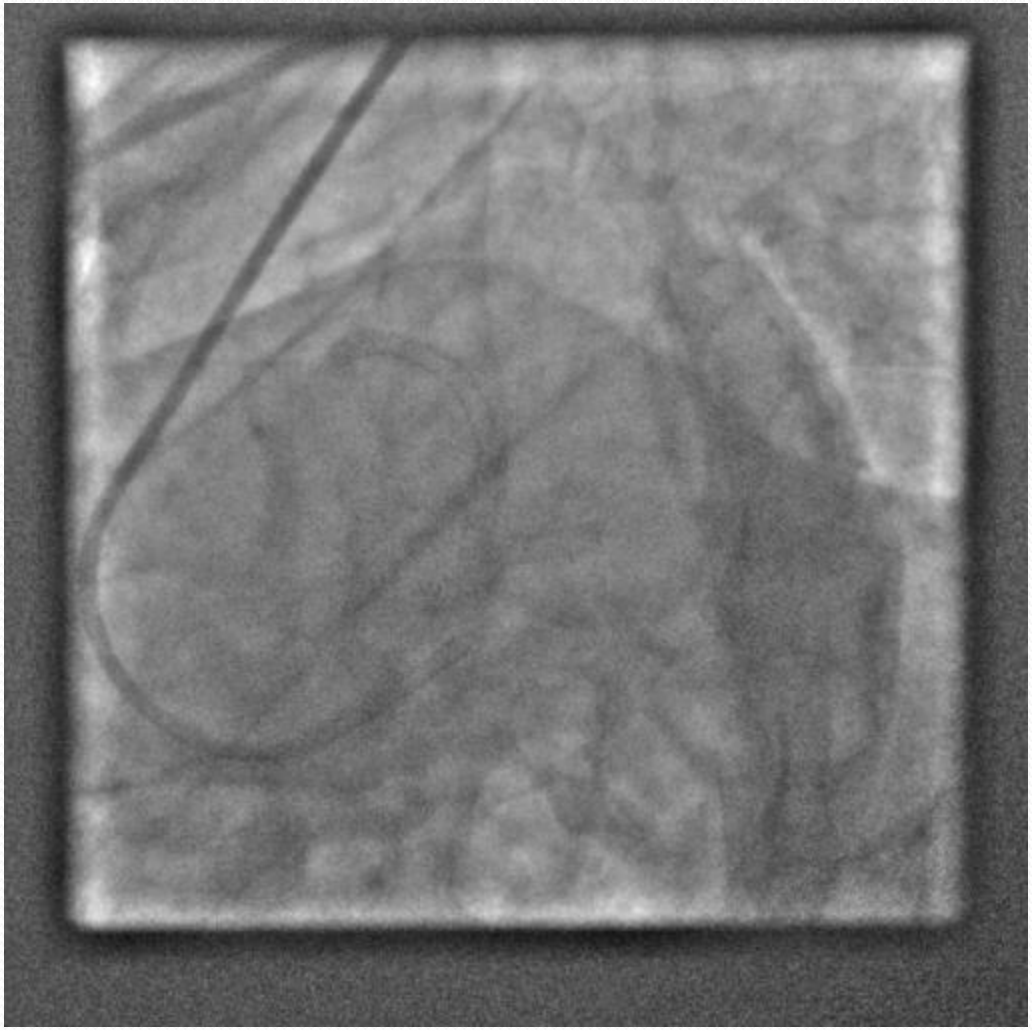
SB treatment: *Provisional stenting TAP*



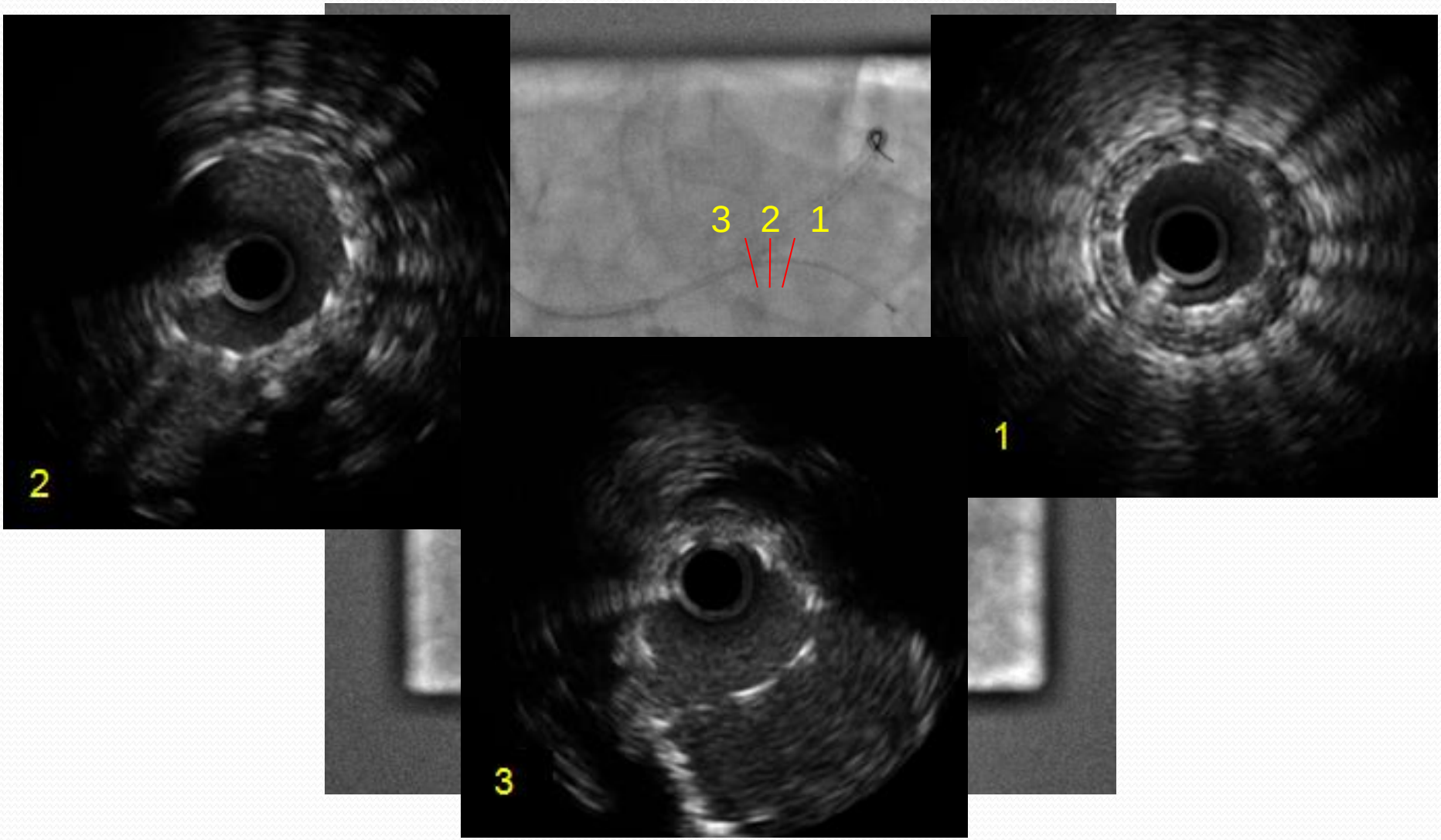
SB treatment: *Provisional stenting TAP*



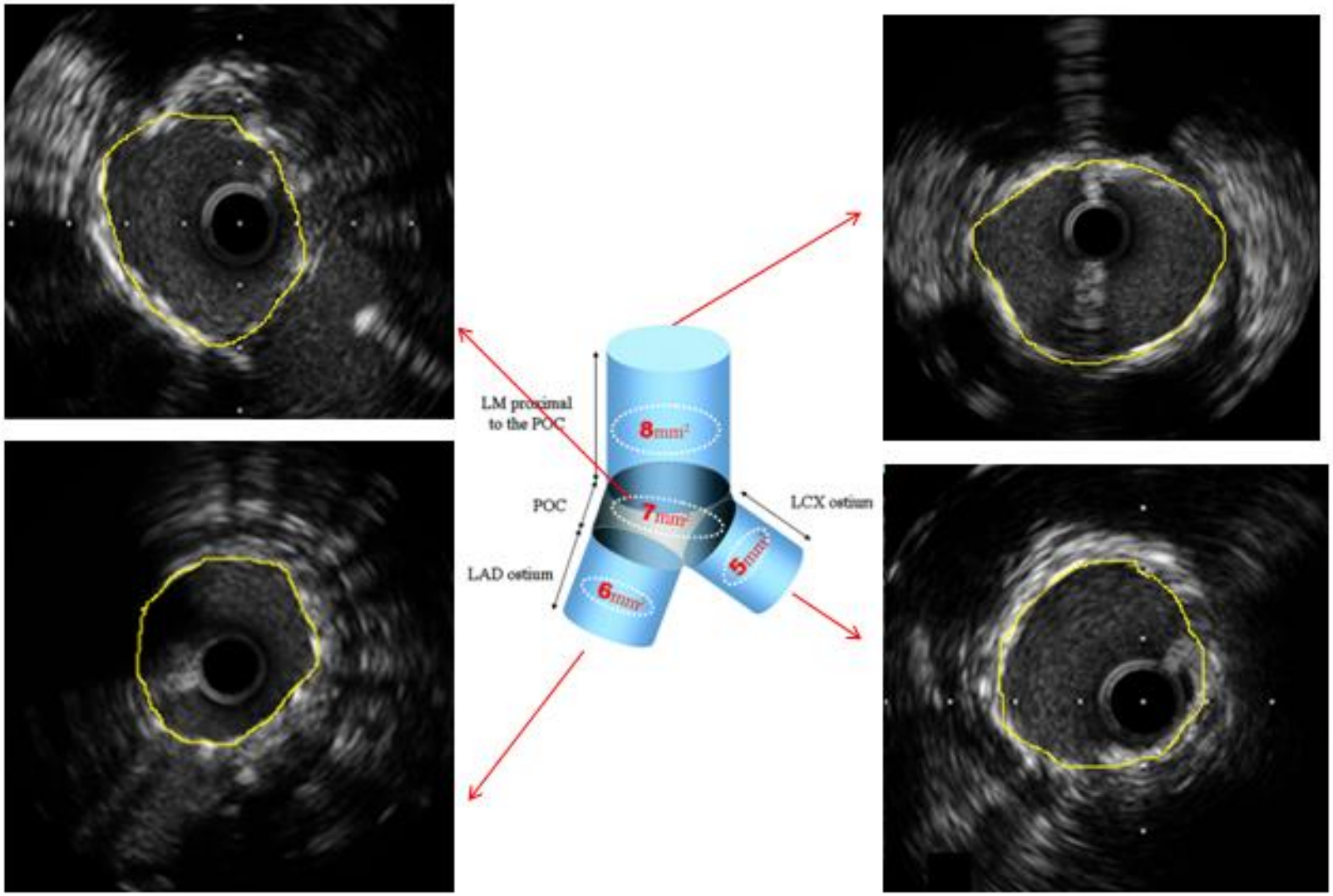
Final Result



Post Bifurcation PCI LCX IVUS pullback



Final IVUS analysis



Conclusion

- Ostial LAD PCI remains challenging because of the frequent involvement of the distal LMCA
- IVUS guidance helps in assessing plaque distribution in this complex lesion subset which can impact treatment strategy
- During initial IVUS evaluation, direct imaging of side branch is necessary for accurate assessment
- Careful stent selection based on stent model design cut-off may limit the risk of incomplete stent expansion and the stent approaching its physical maximal expansion limit