Learning Case: Management of LM disease. Step by Step

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Clinical History

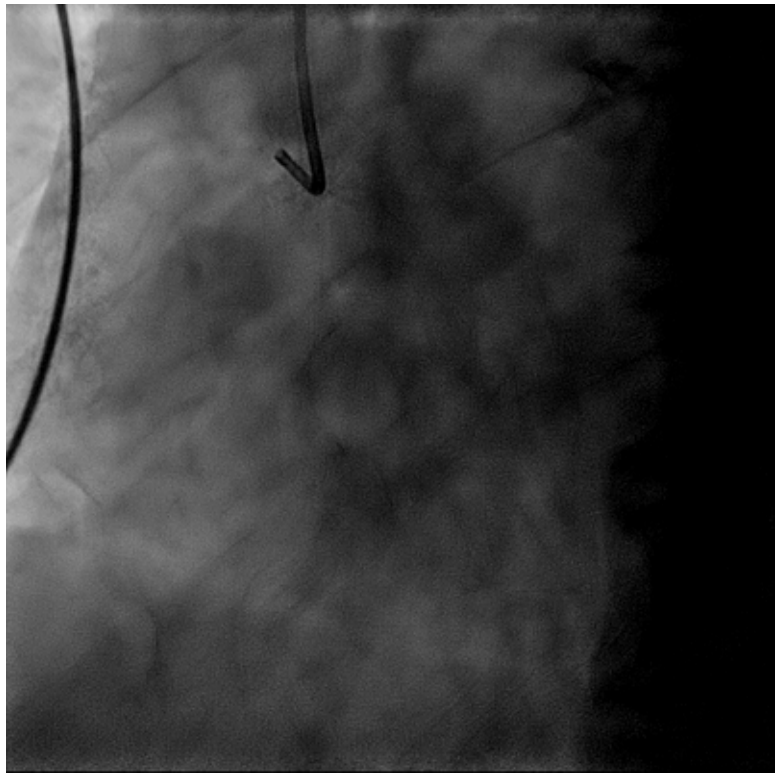
- 69 y.o. man.
- Previous smoker; nondiabetic.
- Comorbidities: COPD, schizophrenia.
- Home therapy: poor compliance to psychiatric therapy.

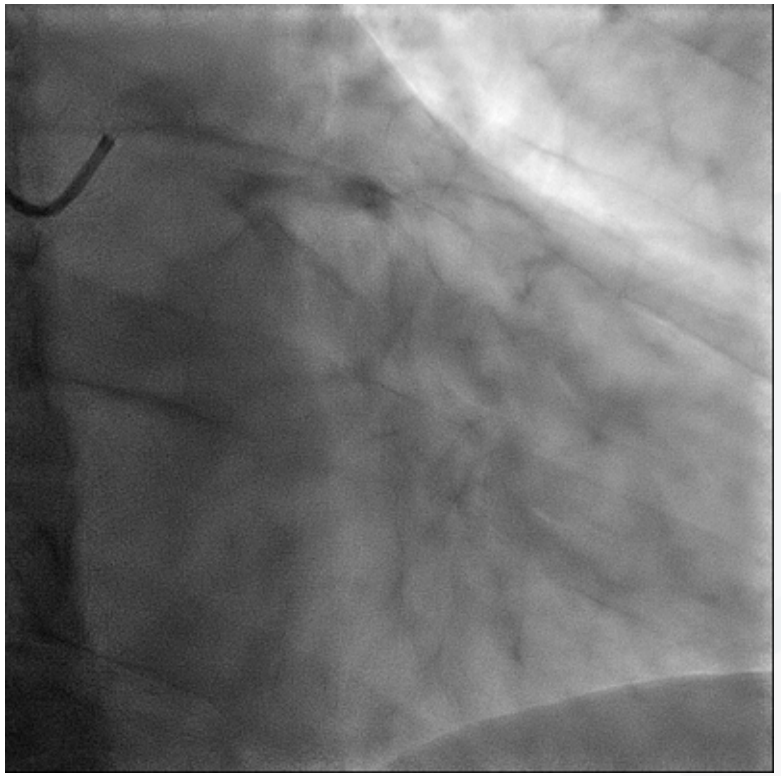
- No previous cardiovascular history.

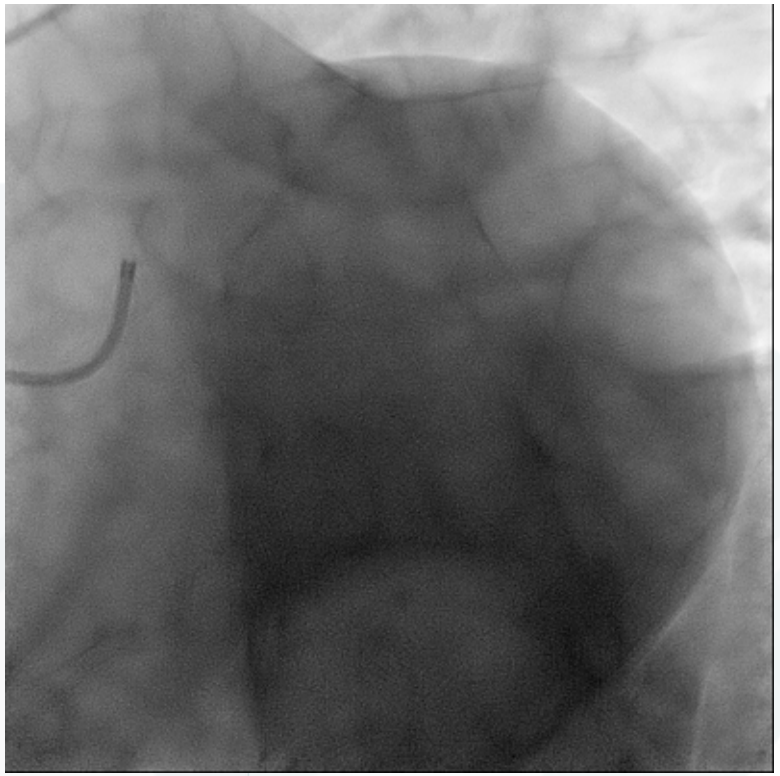
Emergency Department (ED) Access

- Patient accessed ED complaining typical chest pain, which was worsening over the last few days.
- ECG showed sinus rhythm and non-specific ST-segment abnormalities.
- TTE documented severe left ventricular dysfunction (EF 35%) with wall motion abnormalities involving anterior, septal and lateral segments.
- Hs-TnT resulted negative.

Baseline Coronary Angiography







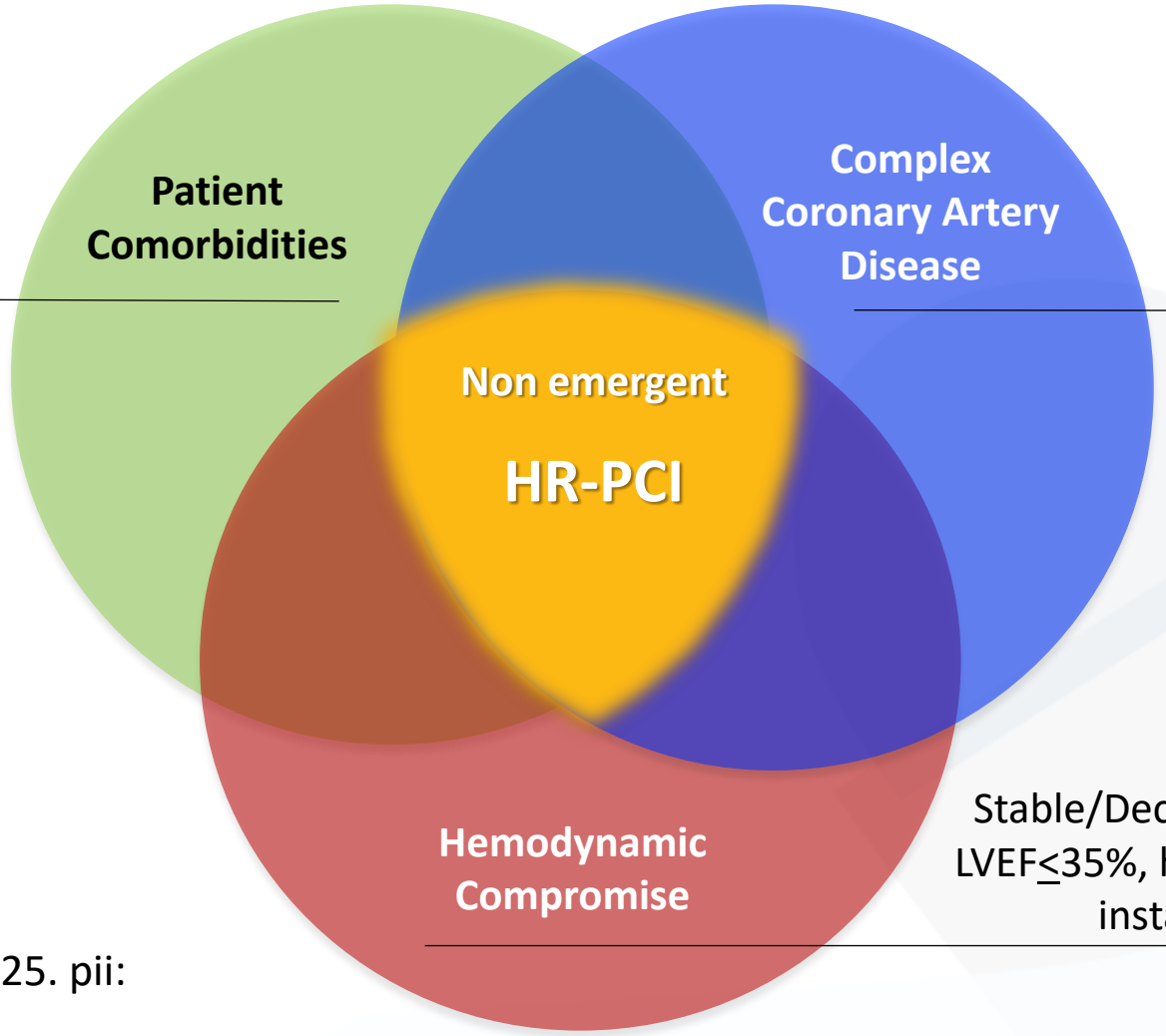
Heart Team Discussion

- Heart Team discussion ► CABG (Syntax score: 36; EuroScore 2%)
- Patient categorically refused CABG > PCI.
- PLAN THE PROCEDURE… What would you do?

Plan the procedure

- Evaluate Need of MCS
- Evaluate Bifurcation PCI Complexity
- Decide your LM Stenting Strategy
- Imaging Guidance

Non Emergent High Risk PCI



HF, DM, age, PVD, prior surgery

MVD, UPLM Disease, CTO, calcified lesions

Stable/Decompensated LVEF≤35%, hemodynamic instability

Chieffo et al Int J Cardiol. 2019 May 25. pii: S0167-5273(19)30642-4.

Joint EAPCI/ACVC expert consensus document on pVAD

Table 2 Indication for pVAD-support in HR-PCI[a]

Device	Indication	Evidence
IABP	Should not be used	BCIS-1[10]
AFP	May be considered in highly selected patients undergoing HR-PCI in case of acceptable femoral access (>6 mm diameter common femoral artery, no severe tortuosity)	PROTECT II[11] and cohort studies[12–15]
VA-ECMO	Should not be used	No data available

Clinical Characteristics:

- LVEF <35%
- Haemodynamic instability
- Diabetes mellitus
- Acute coronary syndromes
- Previous cardiac surgery
- Chronic kidney disease

Angiographic Characteristics

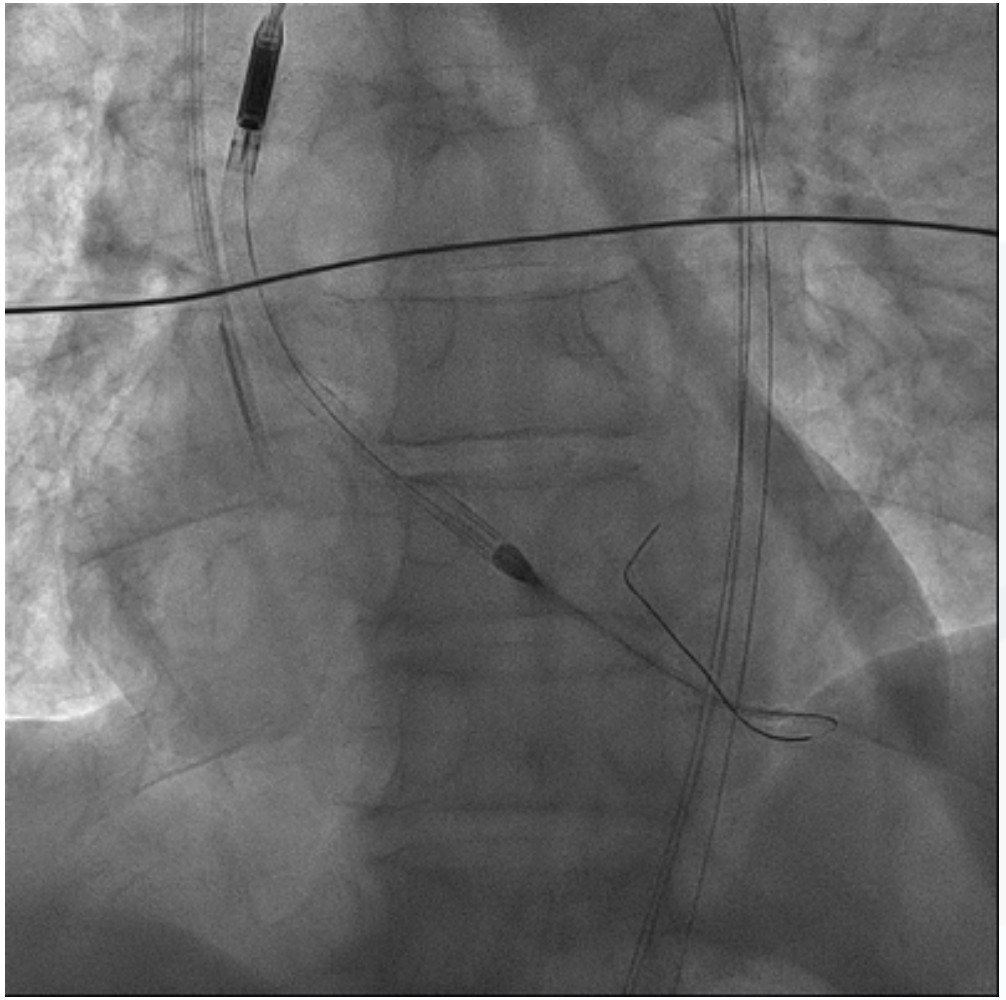
- Diffuse CAD
- Multivessel disease
- Unprotected LM involving bifurcation
- Severe coronary total occlusion
- Rotational atherectomy
- Last patent conduit

Chieffo et al Eurointervention-EHJACC 2021

Step 1. Evaluate Need of MCS

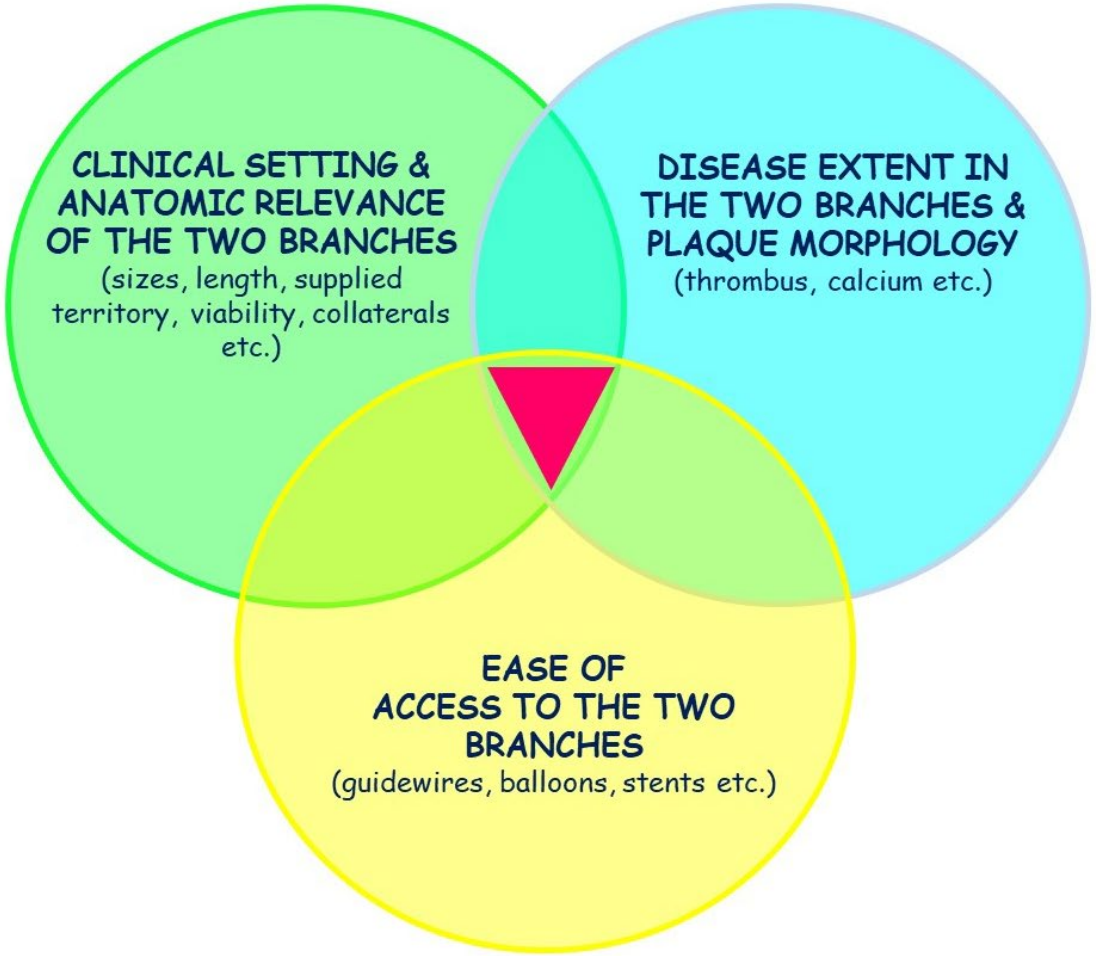
- Given the high-risk scenario, it was then decided to proceed to **pre-PCI mechanical circulatory support (MCS)** with a transfemoral Impella CP (Abiomed, Massachusetts, US).

Impella CP positioning... in the apex



Check always the position of Impella with TEE/TTE

Step 2 .Evaluate Bifurcation PCI Complexity



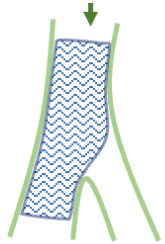
EuroIntervention 2021;16:1307-1317

Decide your LM Stenting Strategy

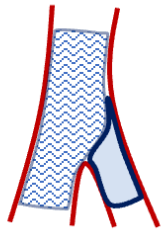
Bifurcated lesion with extensive atherosclerotic involvement of both MB and (an important) SB

Low risk of loosing the SB after MB stenting

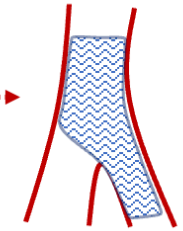
Major concerns regarding the SB after MB stenting



MB stenting across SB/Provisional strategy

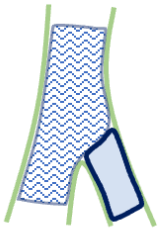


DK Crush

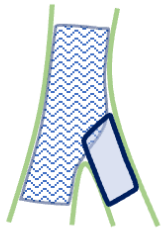


Inv. MB stenting across SB

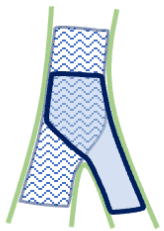
POT, distal MB rewiring, MB dilation



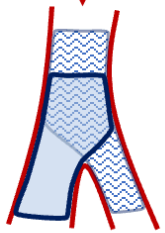
T stent



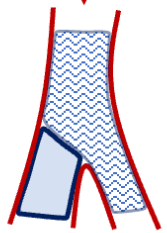
TAP



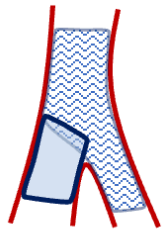
Culotte



Inv. Culotte



Inv. Elective T



Inv. TAP

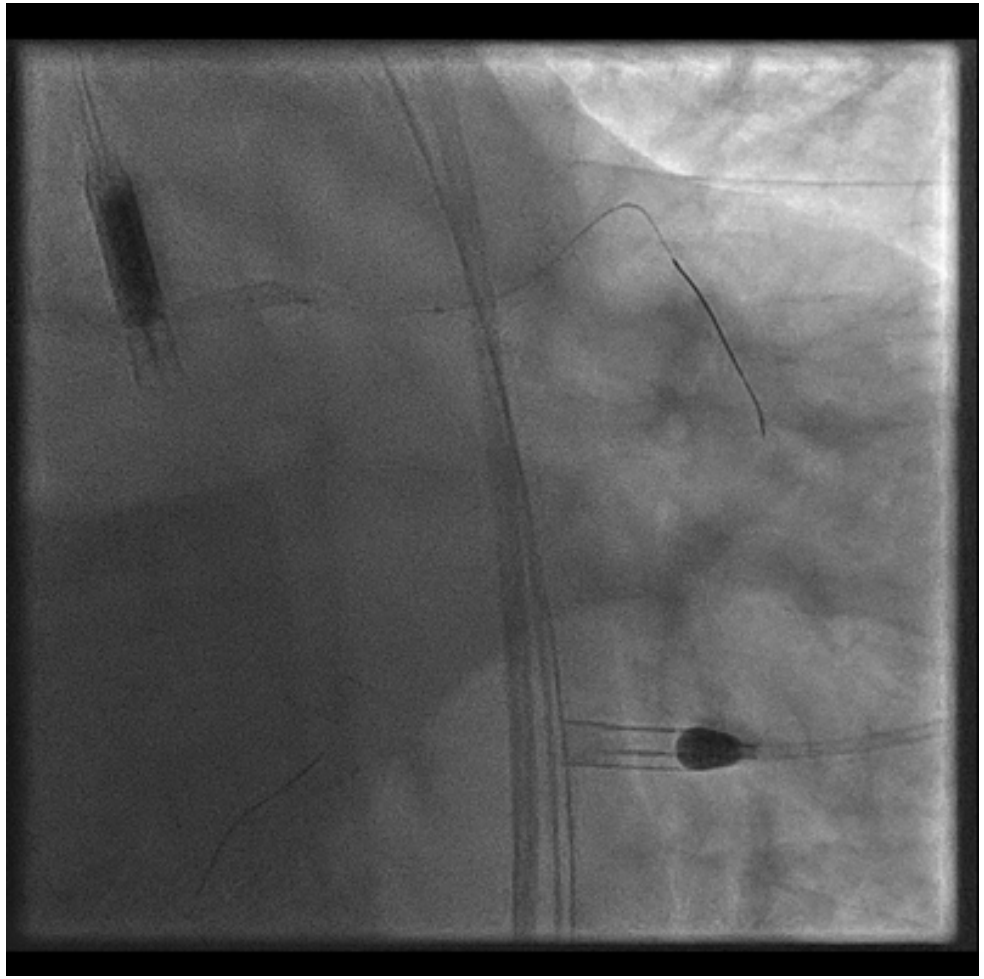
Provisional stenting is *a treatment philosophy* rather than *a technique*

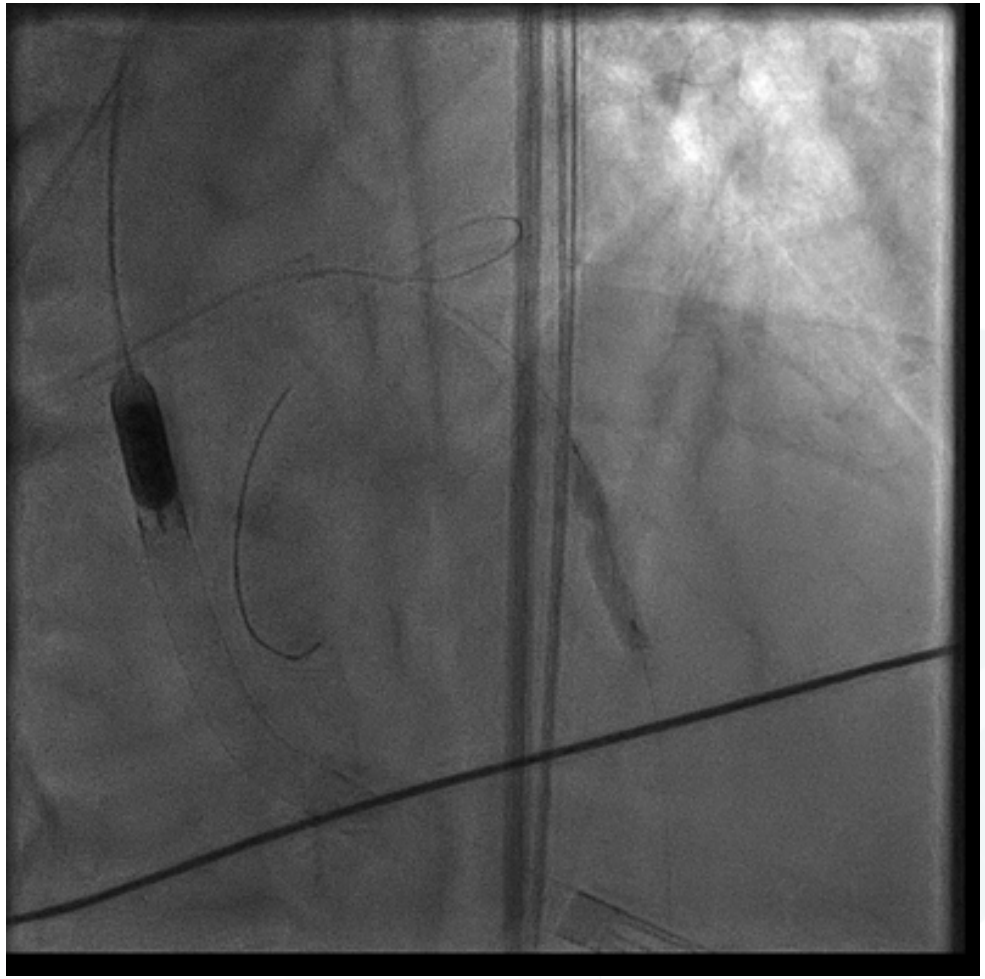
EuroIntervention. 2018 Jan 20;13(13):1540-1553

Step 2. LM Stenting Strategy

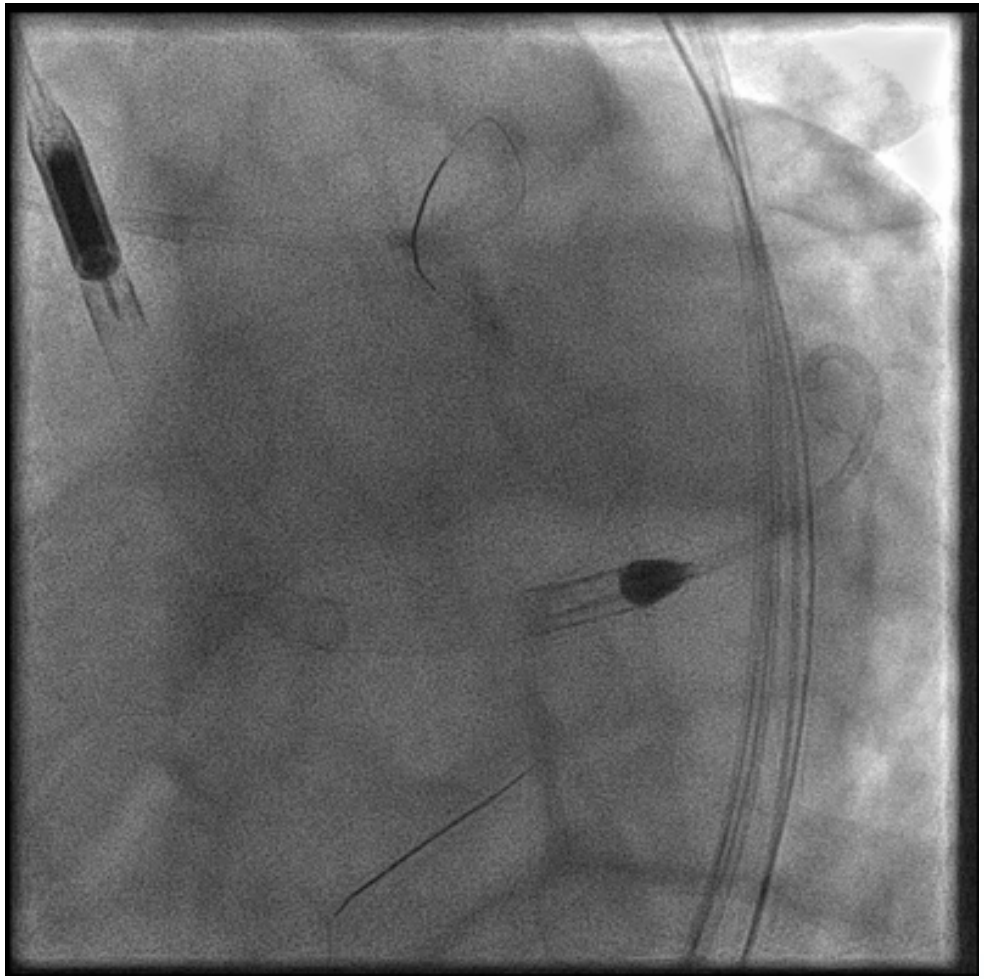
- Given the complex-true bifurcation lesion (Medina 1:1:1 with SB lesion length > 10 mm), it was then decided to proceed with 2-stent strategy.
- Given the angle of the SB and the ostial LAD disease, we preferred to use DK crush.

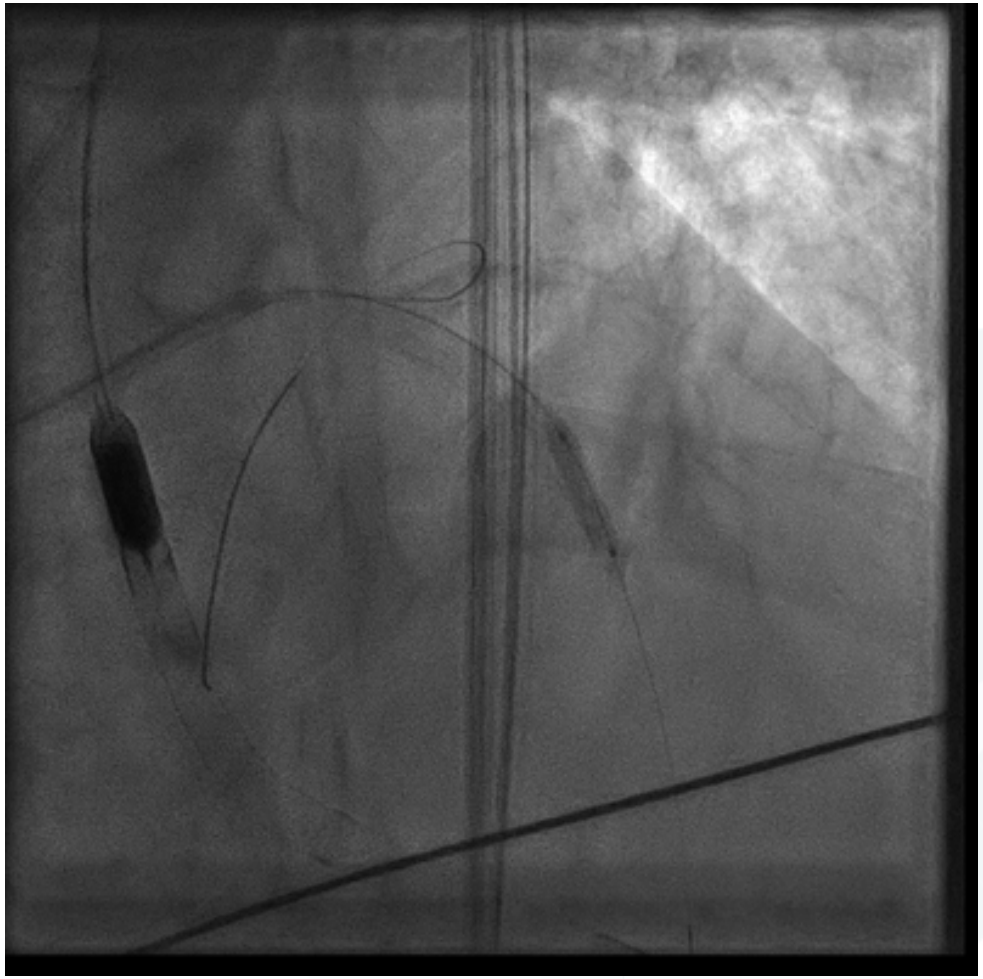
Preparation of the lesions… the most important aspect to optain a correct stent expansion



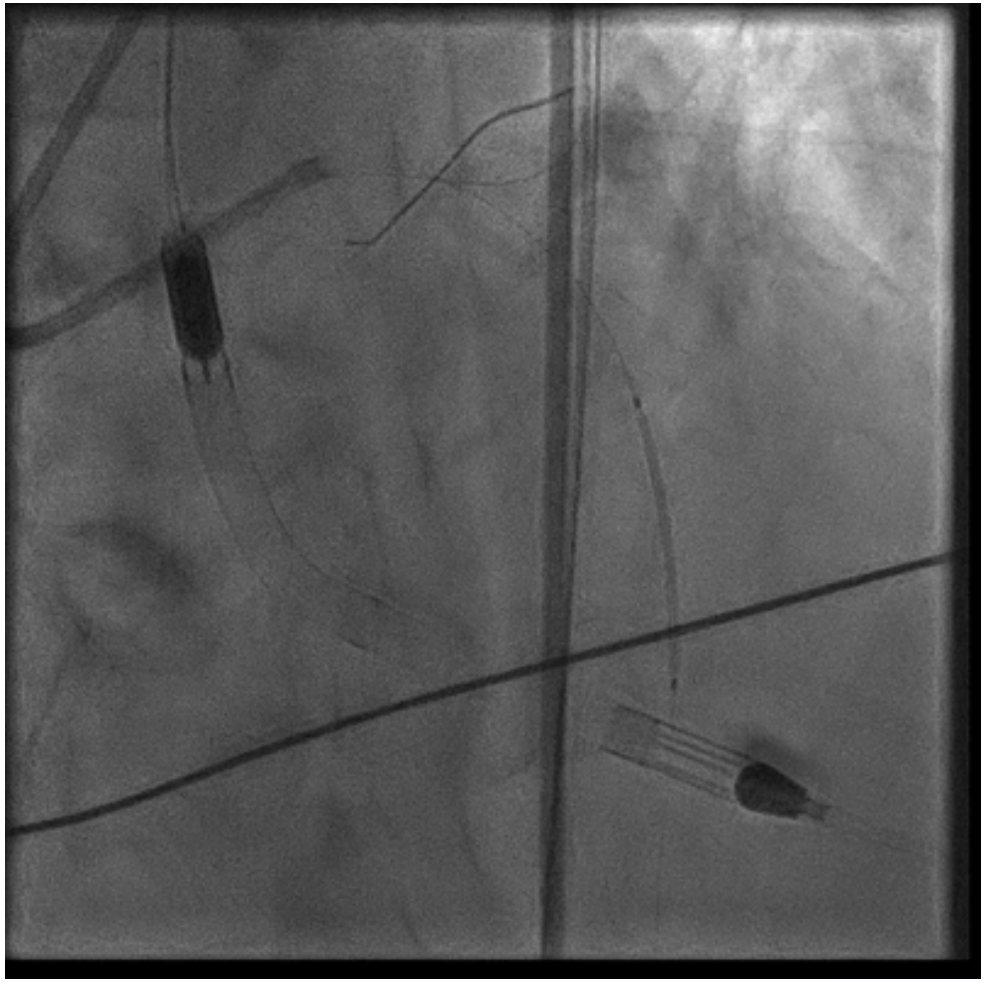


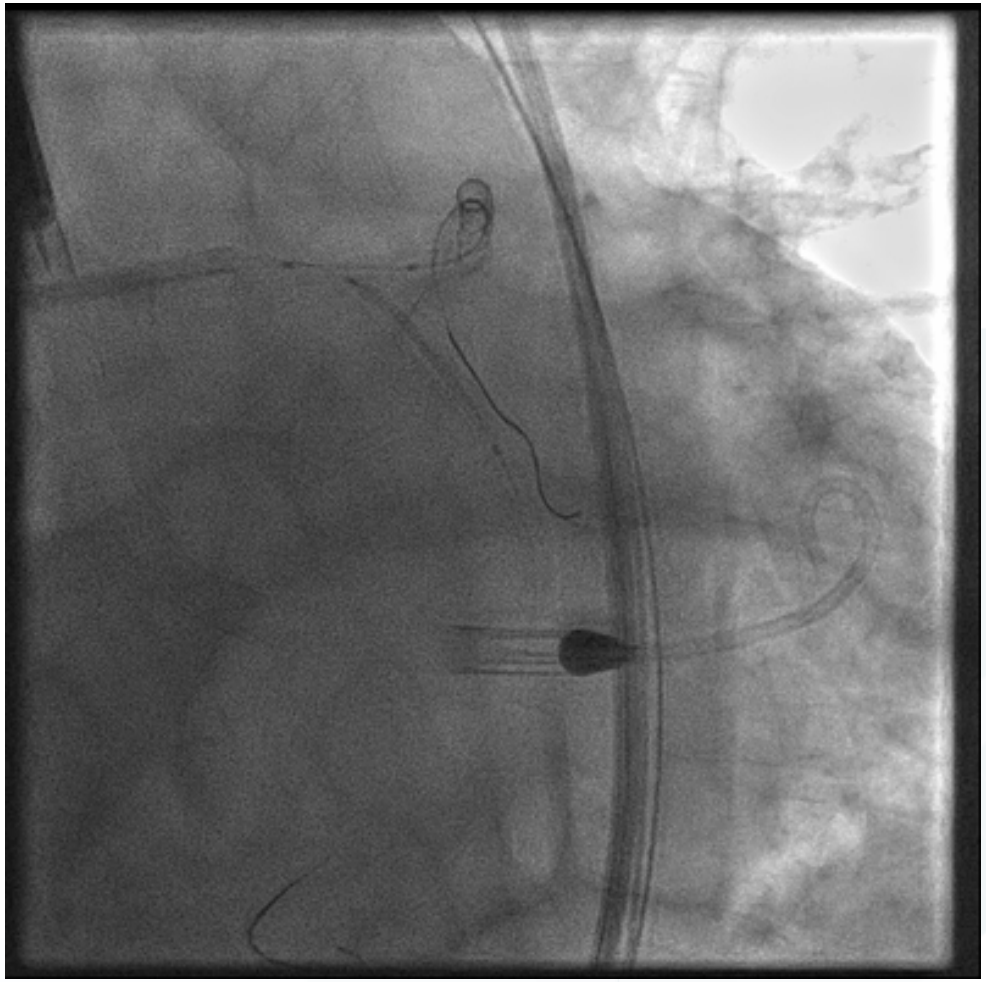
As expected… we need lithotripsy



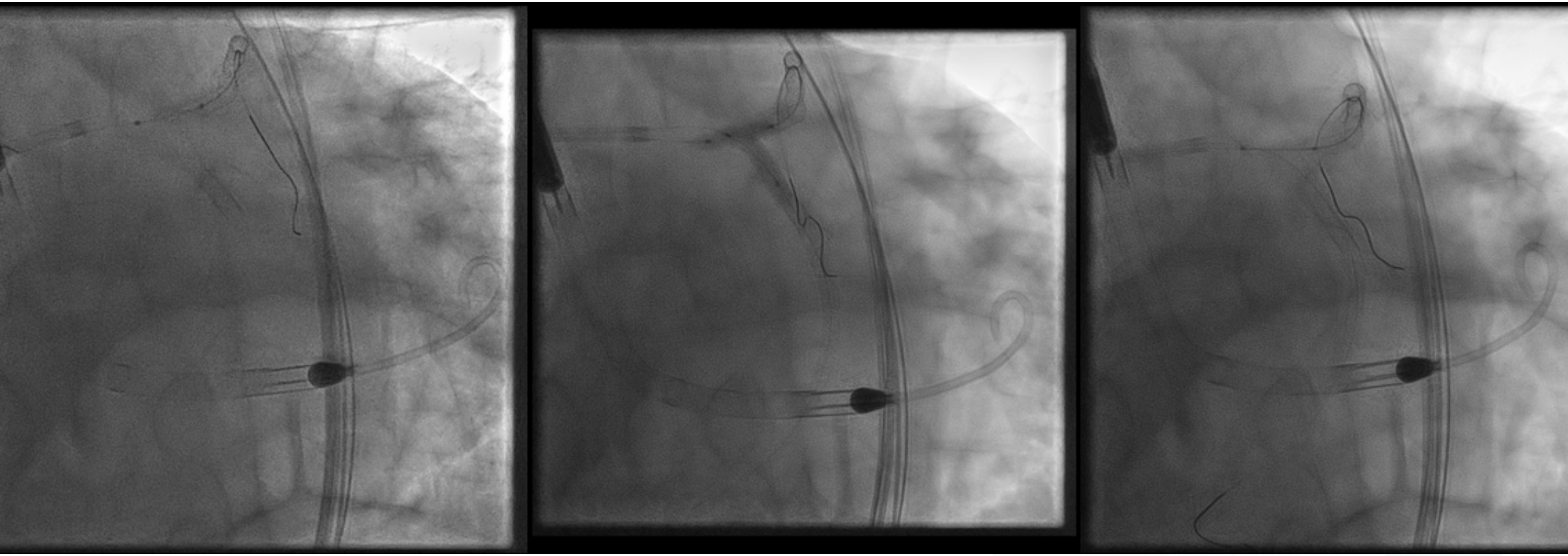


Stenting of «distal» LAD and SB

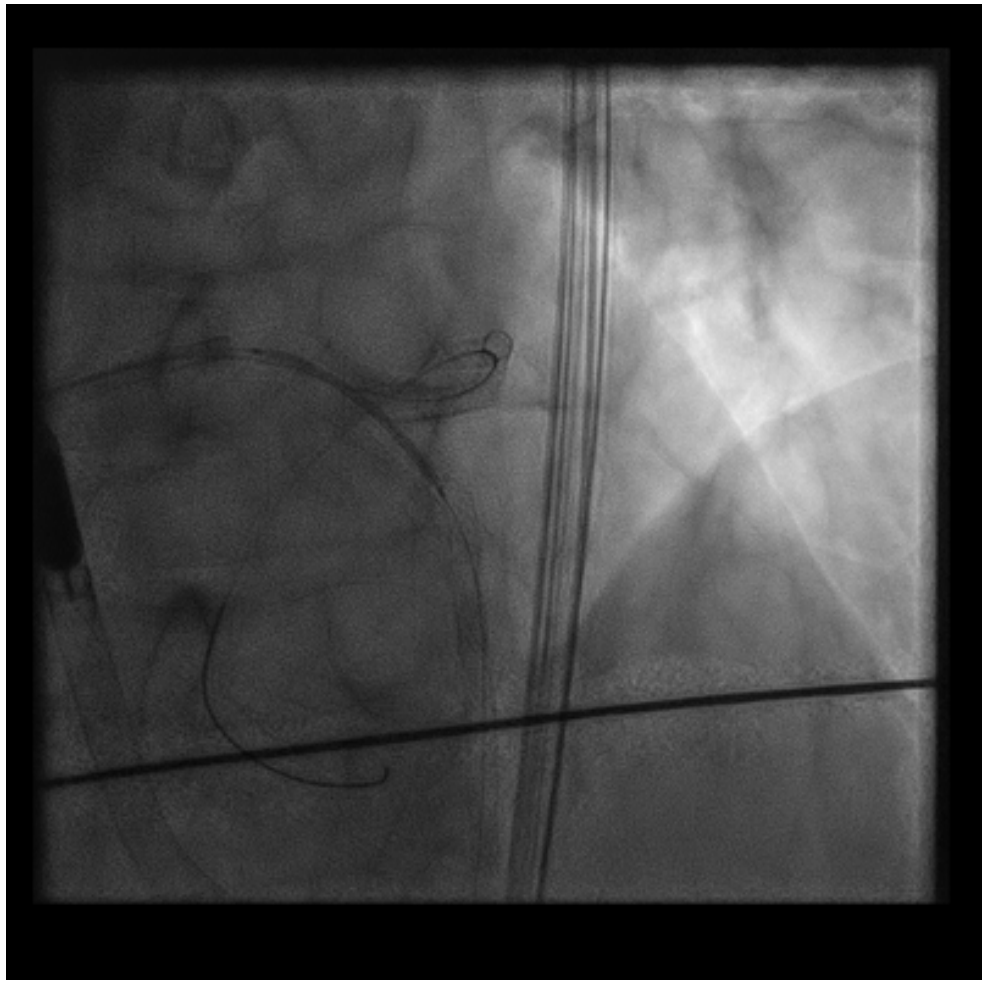


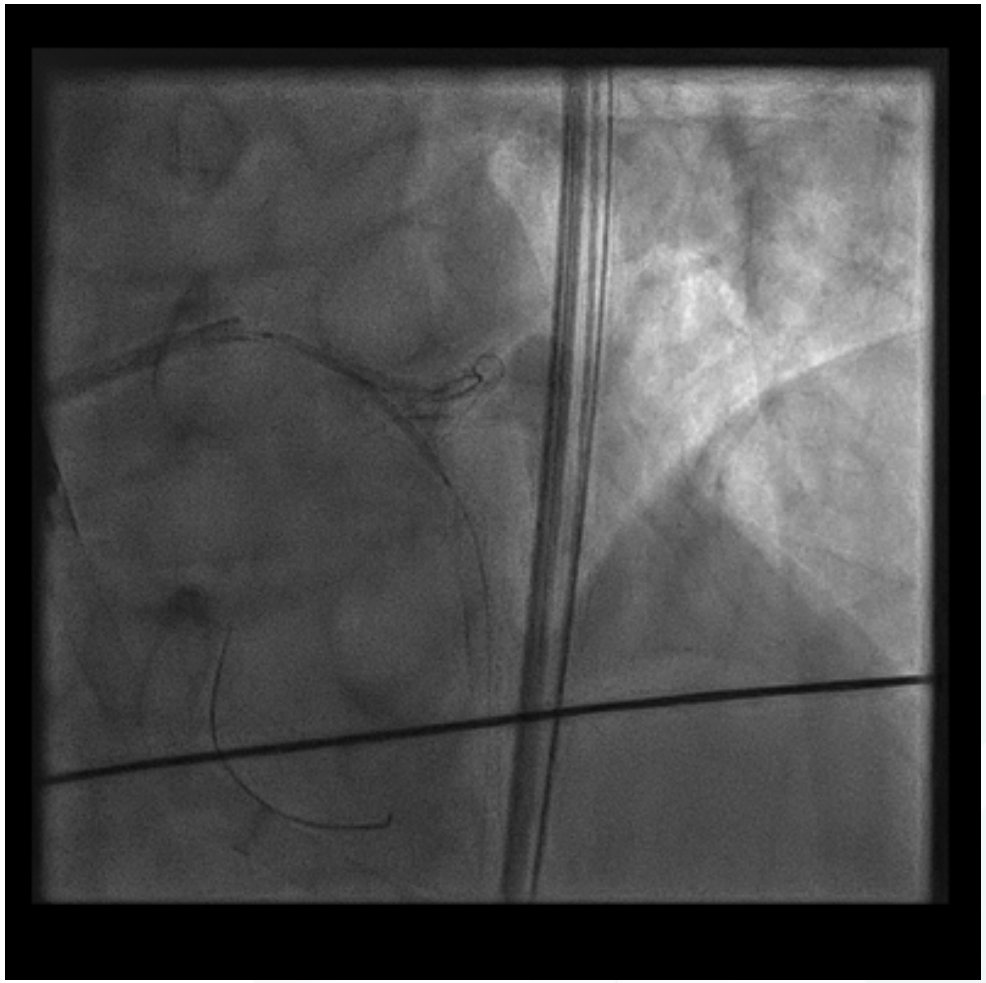


Crush the struts

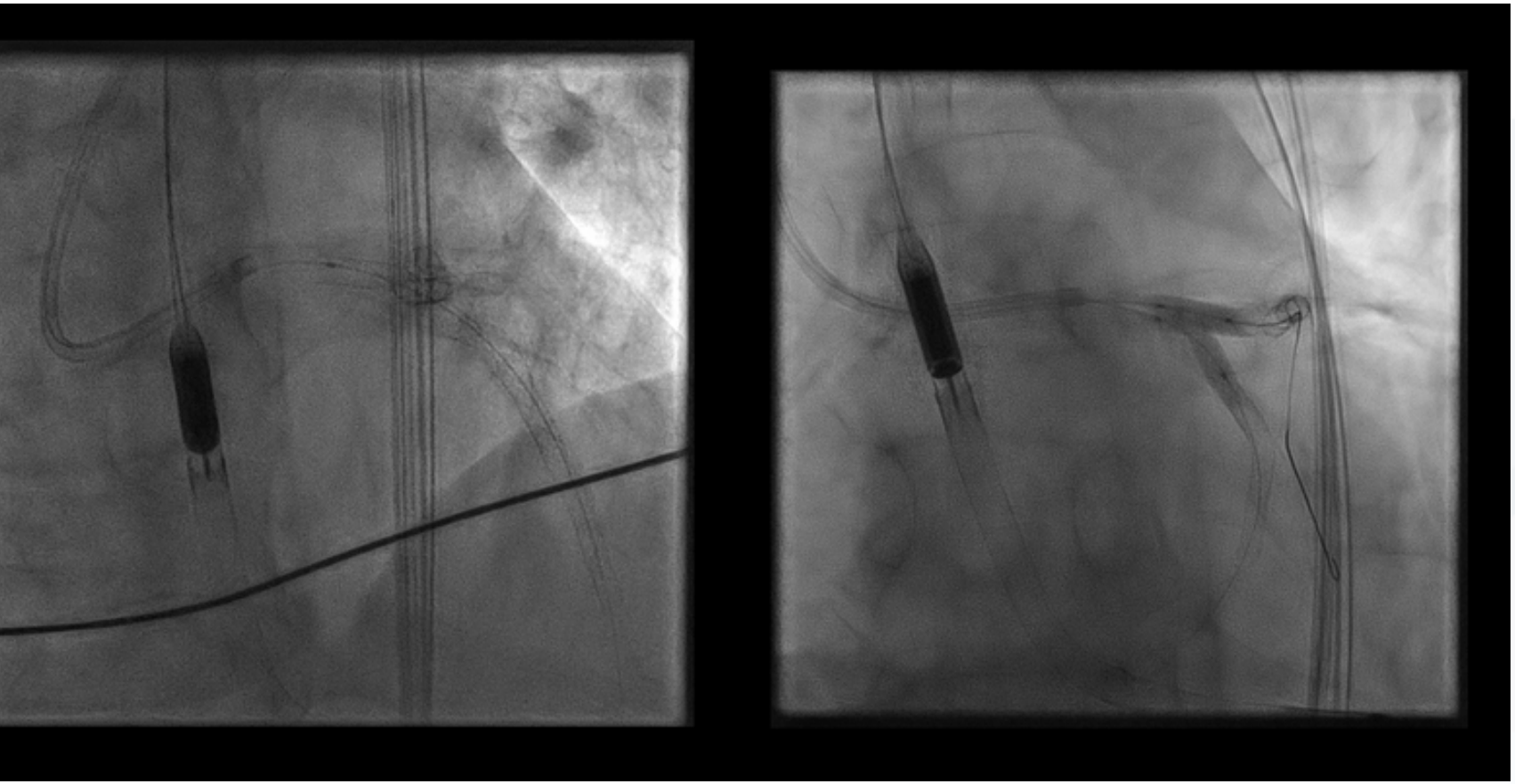


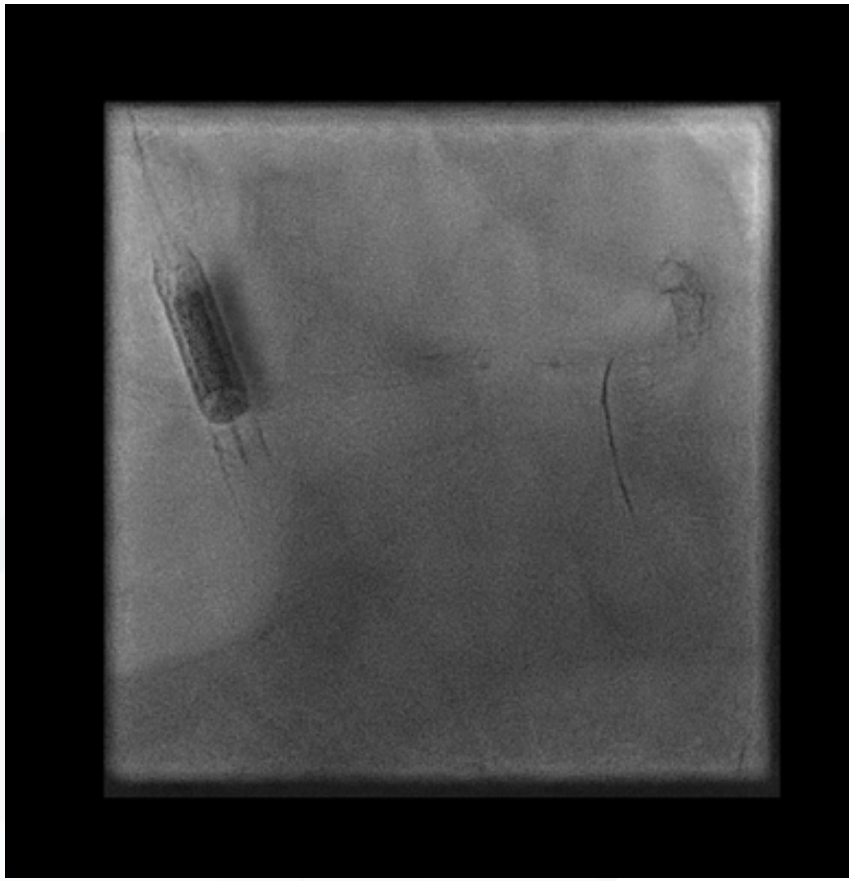
Stenting LM-LAD



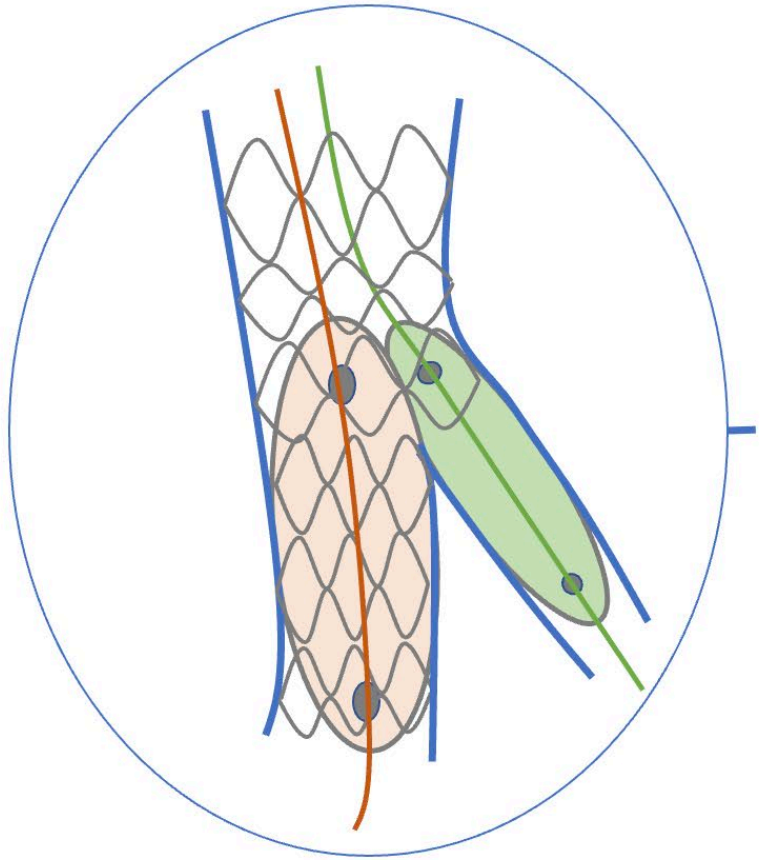


Optimize stent apposition: POT, KB and final rePOT





How to perform optimal Final Kissing?

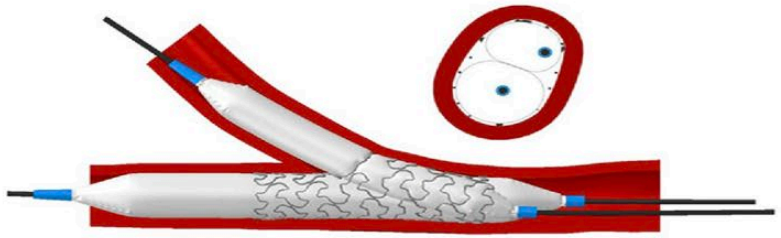


- 2 NC balloons;
- Both sized according to the distal reference of the MB and the SB;
- Short proximal overlap (if longer proximal overlap, consider re-POT);
- Sequential balloon inflation (SB first) and simultaneous deflation;
- Keep balloons inflated 30 sec.

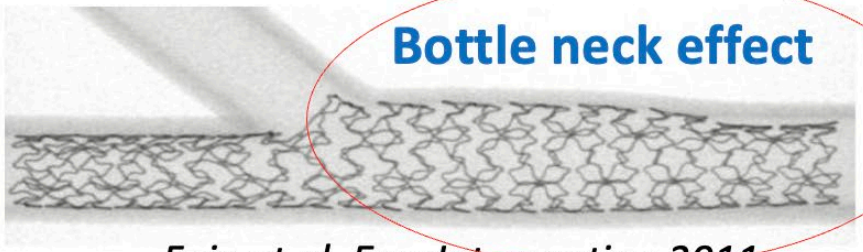
Courtesy of Prof G Stankovic

EuroIntervention. 2019 May 20;15(1):90-98.

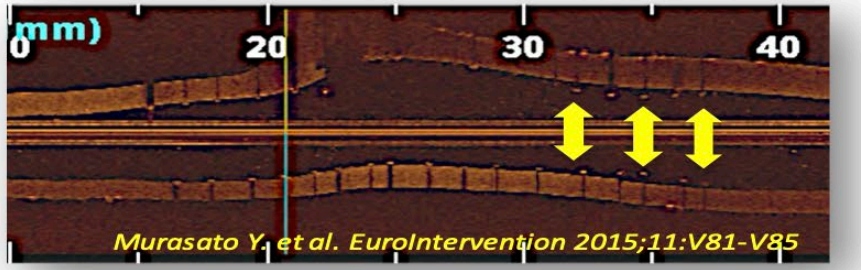
Final POT to correct deformation after KBI in vitro!



Bottle neck effect

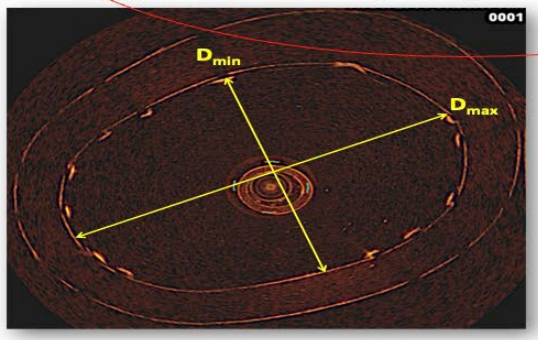


Foin et al. EuroIntervention 2011.

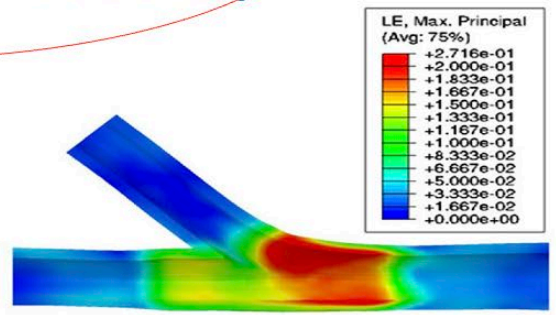


MV Proximal edge malapposition

Proximal elliptic deformation with kissing balloon inflation (arterial + plaque overstretch)

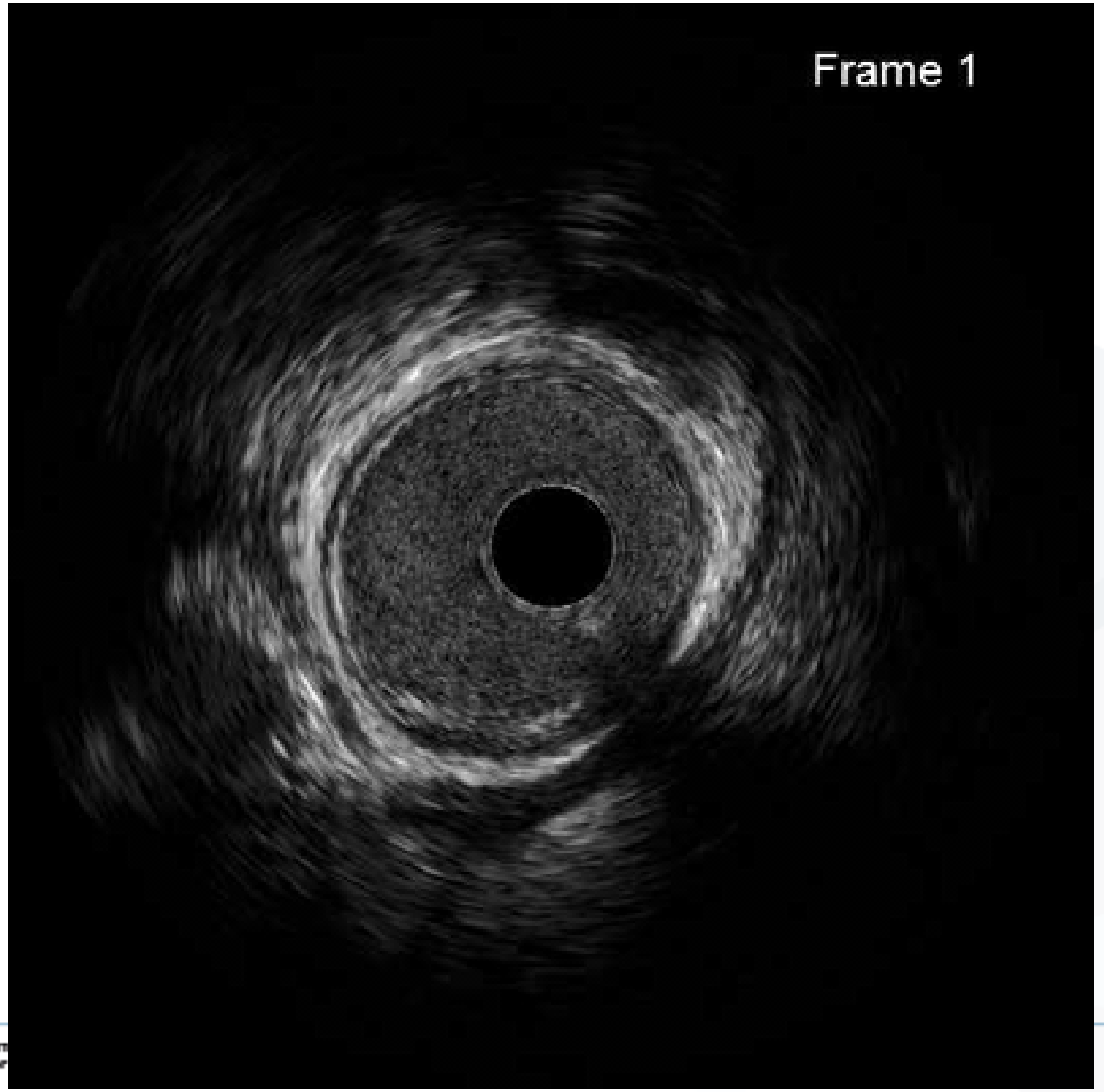


Mortier P et al. JACC CI 2014

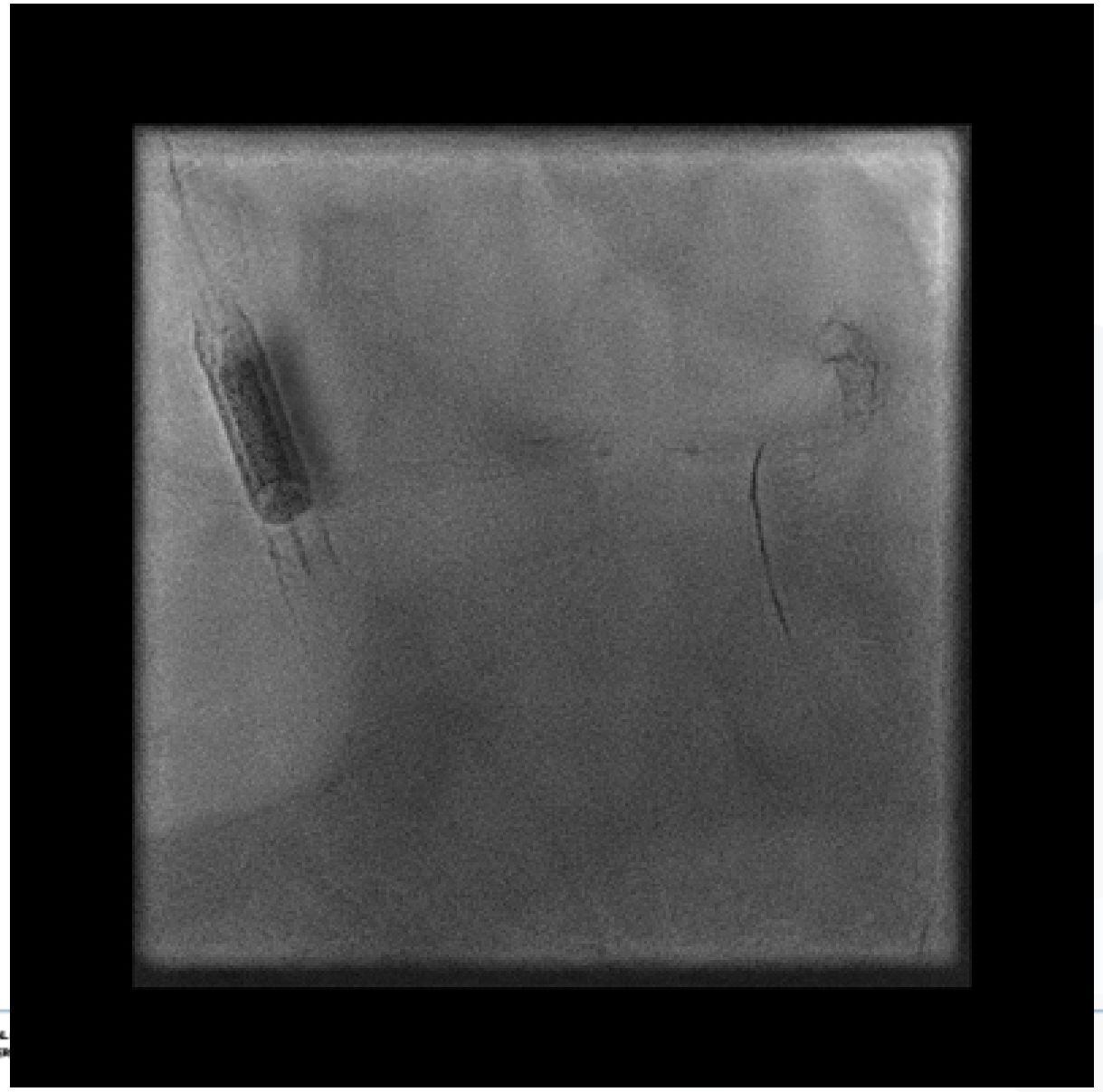


Foin et al. JACC CI 2012

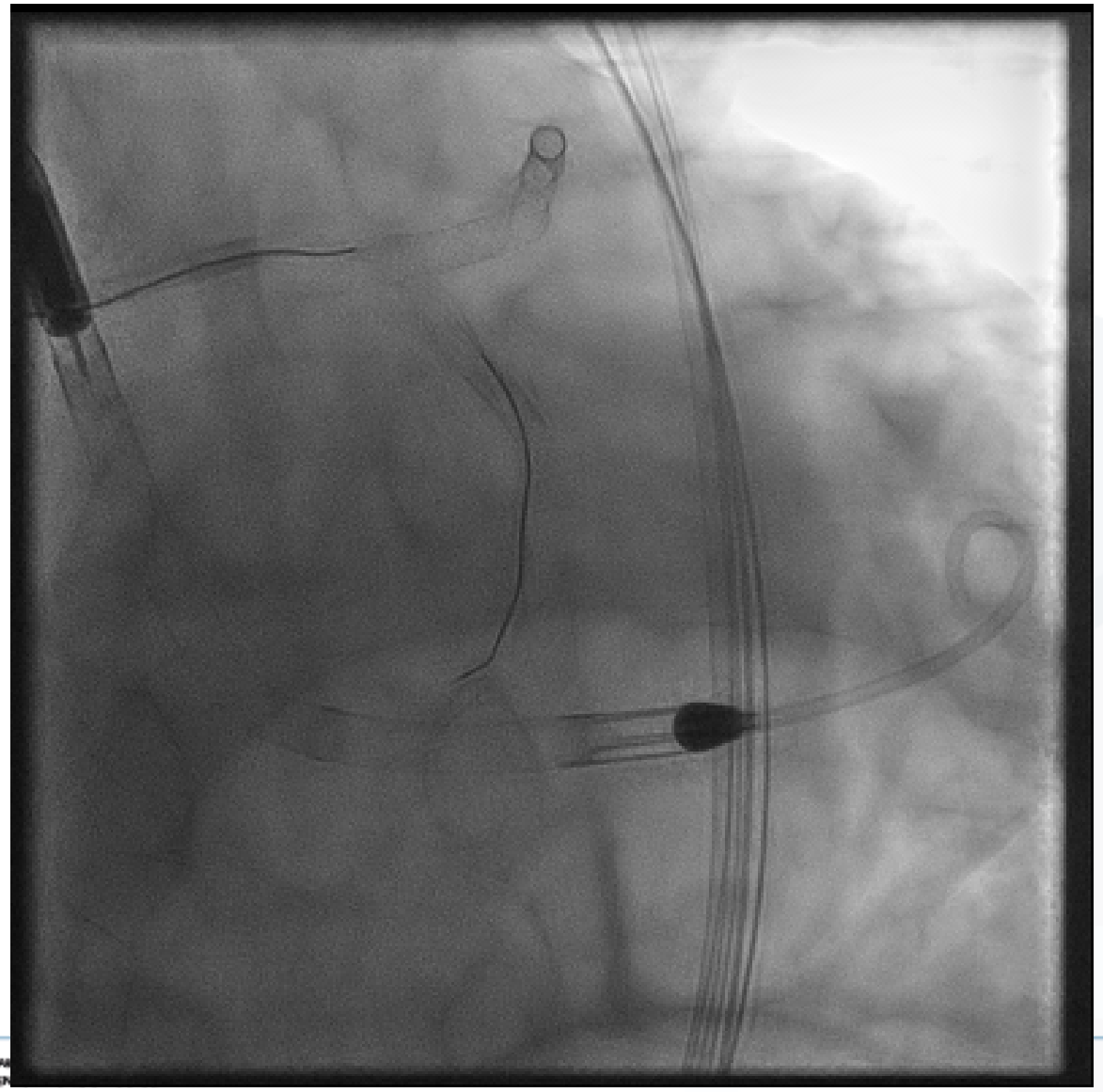
4. Imaging Guidance



RePOT post IVUS with NC 5.0 mm



FINAL RESULT



Conclusions

In LM bifurcation lesions

- Evaluate MCS for HR-PCI
- Evaluate bifurcation complexity
- Plan ahead which stenting strategy
- Imaging guidance to assess lesion and confirm optimal stenting implantation

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Thanks for your attention