When catastrophe awaits few mm away

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Clinical data and presentation

Female, 58 yo

Smoker, Hypertension, Fam. history CAD and PAD.

Moderate COPD

Alcohol abuse

2004 Preeclampsia

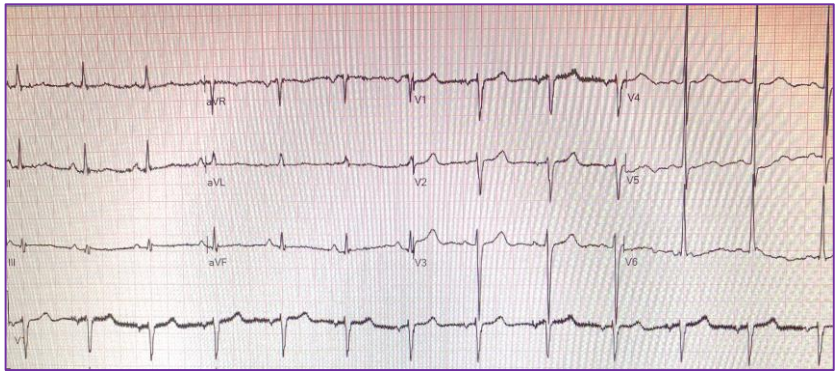
2013 PAD with left femoro-popliteal bypass

30/09/2019: Effort dispnoea worsening.
ECG: Sinus rhythm. LVH.
Echo: LV mild dilation, infero-posterior wall akinesia. EF 40%.

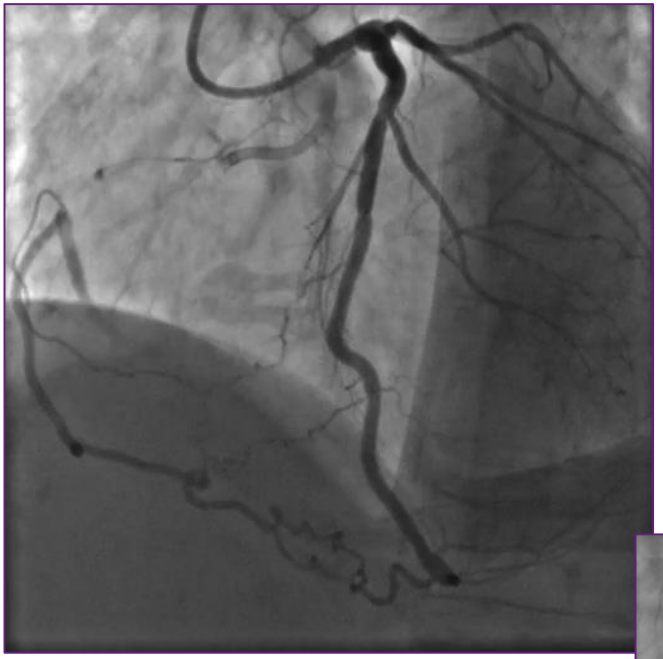
18/10/2019 Angio: 1VD. Ostial RCA CTO with epicardial collaterals.

04/11/2019: Dobutamine stress-echo: viable and ischemic infero-posterior wall. EF rise to 50%.

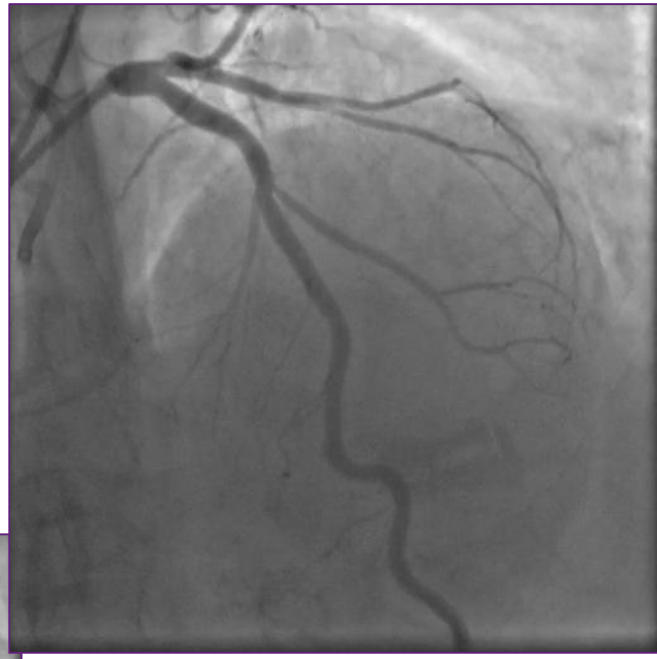
Revascularization planned in dedicated CTO session, delayed by COVID outbreak till august 2020.

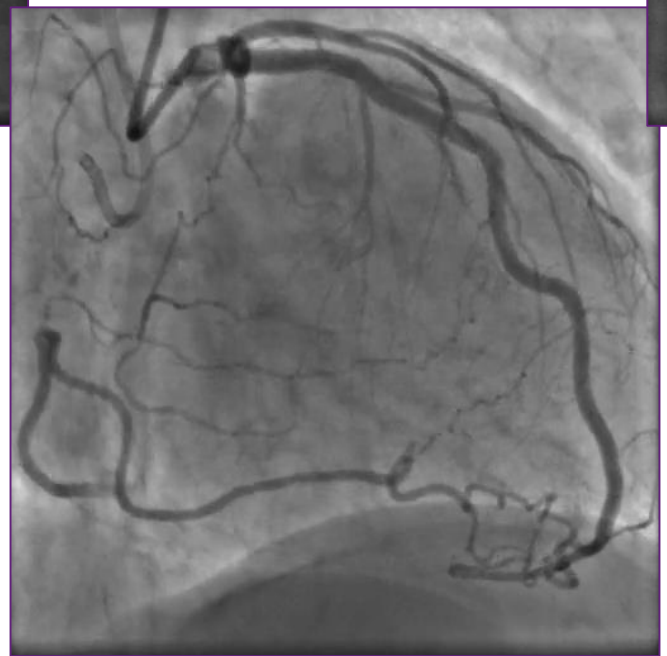


Double injection angio 25/08/2020



1VD: Ostial RCA CTO
Calcium on prox cap
Long microchannel
No septal collaterals
Good LCX epicardial collateral
Distal landing zone on a bifurcation
Distal bed without disease

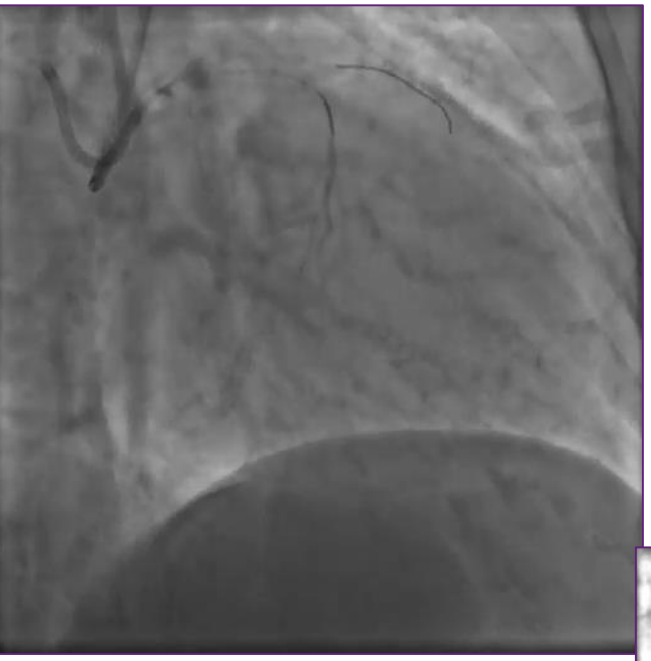




Bi-radial access 7 Fr slender sheat
EBU 3.5 90 cm 7 Fr retrograde
AL 0.75 100 cm 7 Fr antegrade

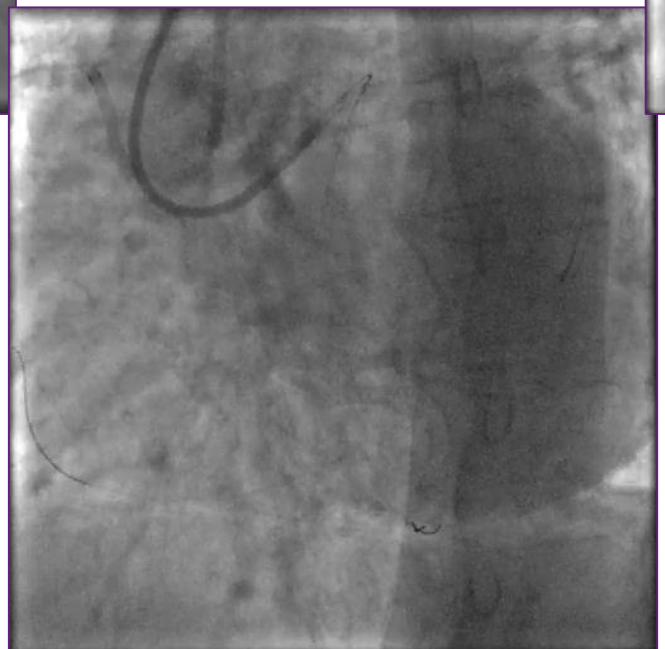
Blunt prox cap
Occlusion > 20 mm
Calcium on prox cap
No bend > 45°
No previous failure
J-CTO Score 3

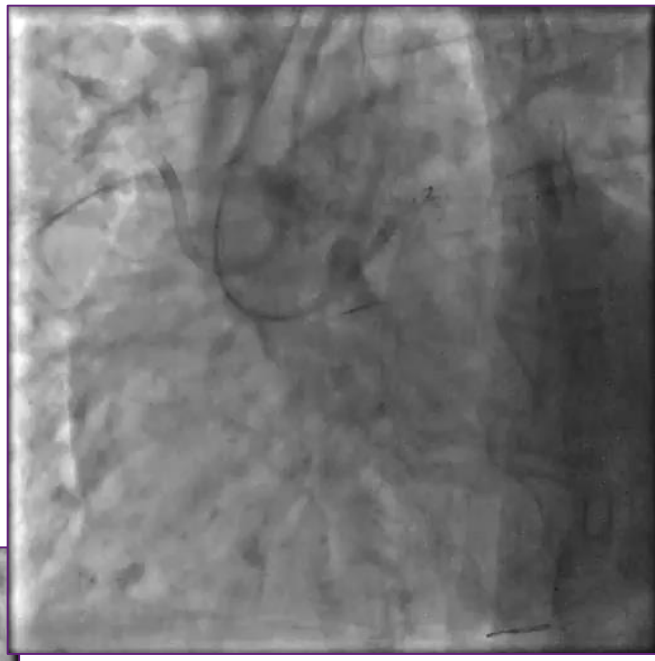
CTO PCI 25/08/2020



MC Turnpike LP 150 cm on S1
Tip injection: no septal connection
BMW left as LAD protection
MC moved to LCX
SUOH 03 epi collateral crossing

Turnpike Lp advanced to distal cap
Change for Gaia Third
Gaia Third - MC crossing prox cap
Change for RG3





RG3 snared in aorta (snare 35 mm)
Snare lost grip inside antegrade GC
RG3 trapping
MC advanced into antegrade GC
Exchange with new RG3

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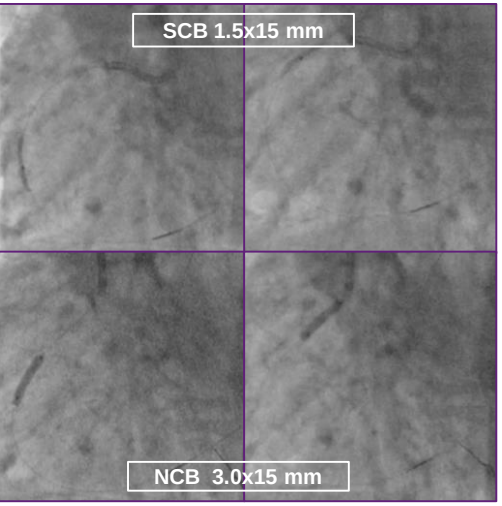
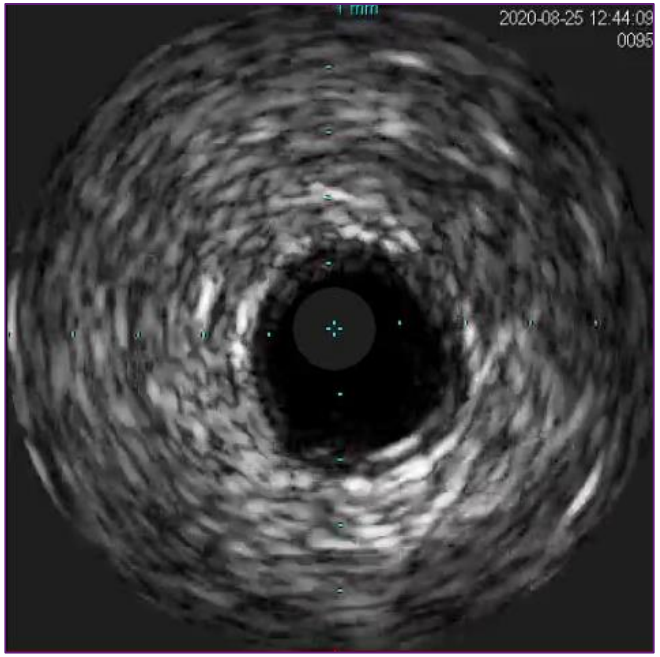
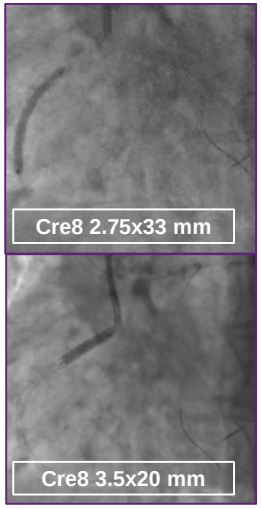
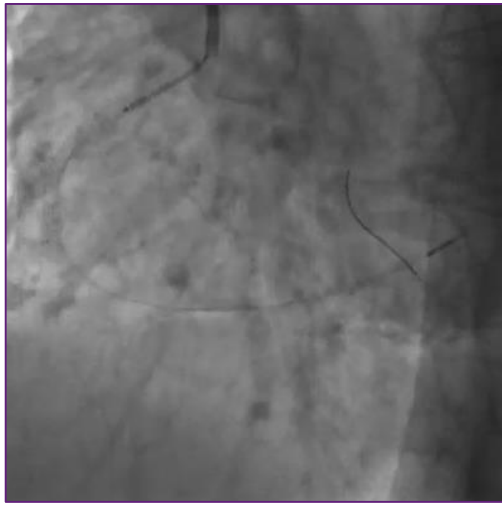






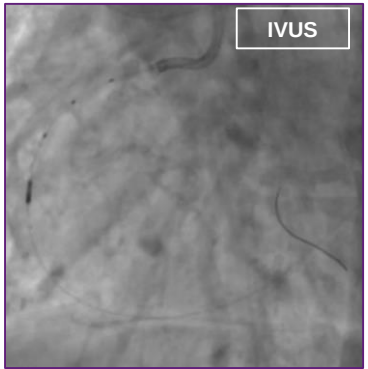


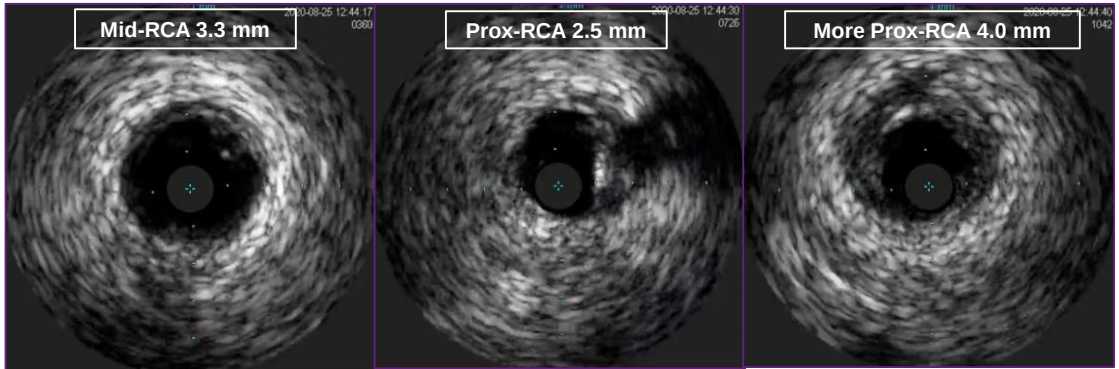
Predilation
SCB 1.5x15 mm @ 18 atm
NCB 3.0x15 mm @ 20 atm

Stenting
Cre8EVO 2.75x33 mm @20 atm
Cre8EVO 3.5x20mm @18 atm

IVUS run: wire track true-to-true

Proximal zone of negative remodelling with calcium spot





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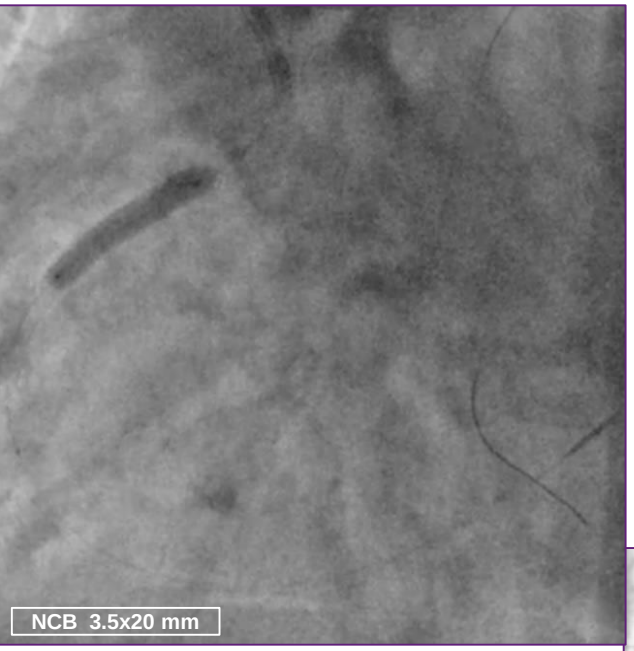
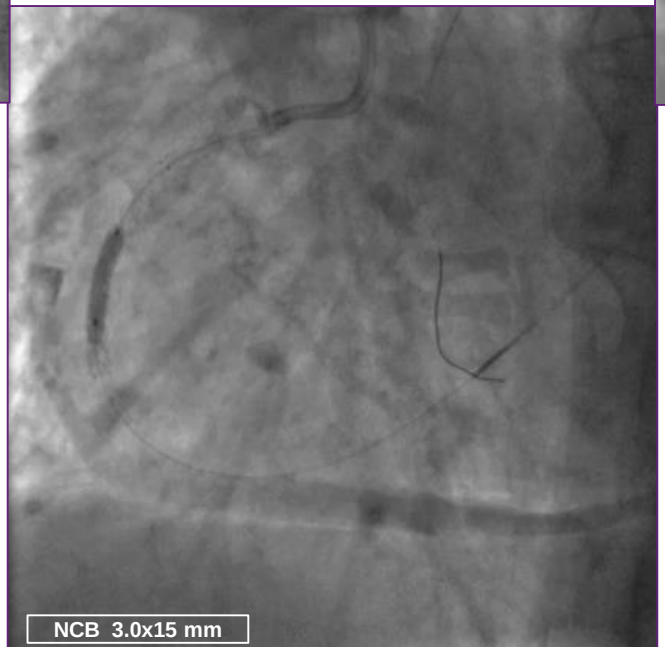
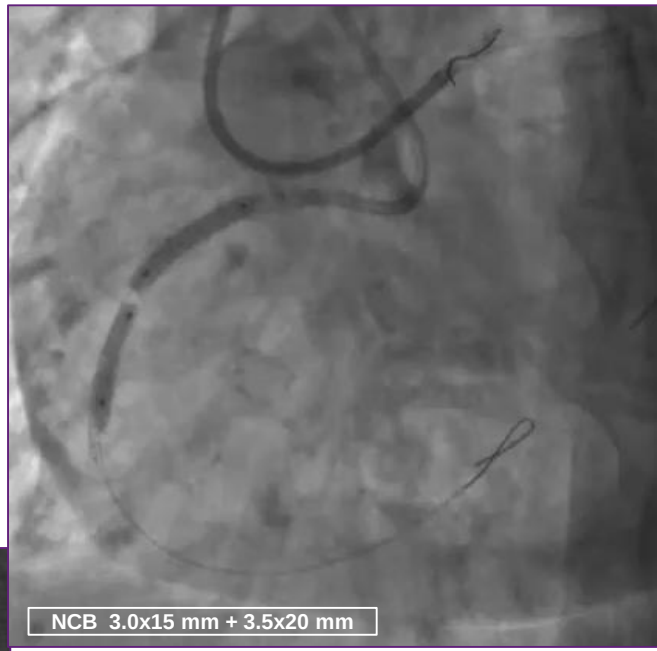


Postdilation
Prox RCA NCB 3.5x20 mm @ 18 atm
Mid RCA NCB 3.0x15 mm @ 20 atm

Patient dizzy, hypothension
Angio check: Type 3 perforation
NCB 3.0 mm incomplete seal





Block and deliver strategy
NCB 3.0 mm still inflated
Rapid deflation and antegrade wiring
NCB 3.0 + 3.5x20 mm complete seal

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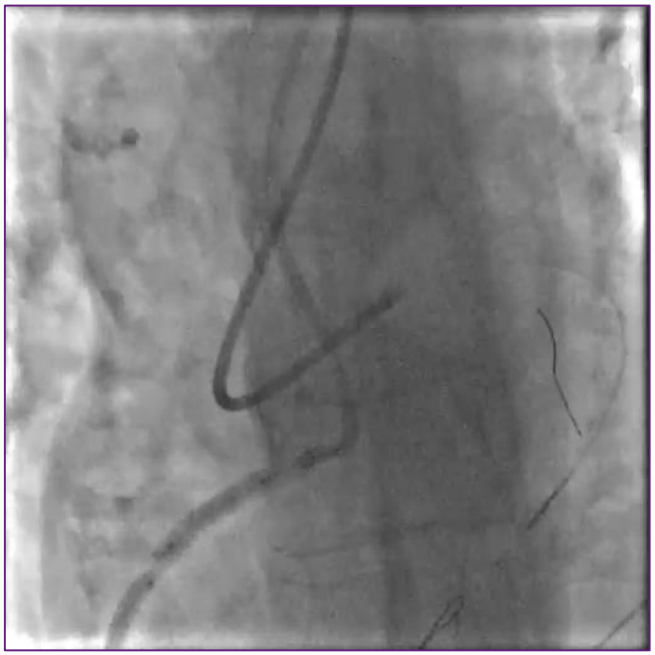

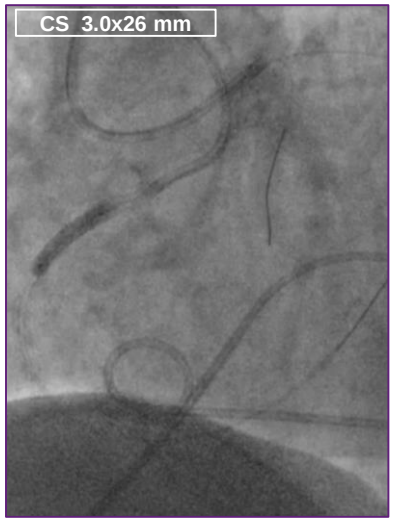

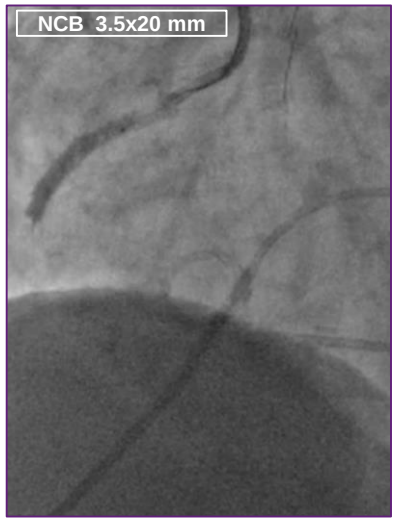

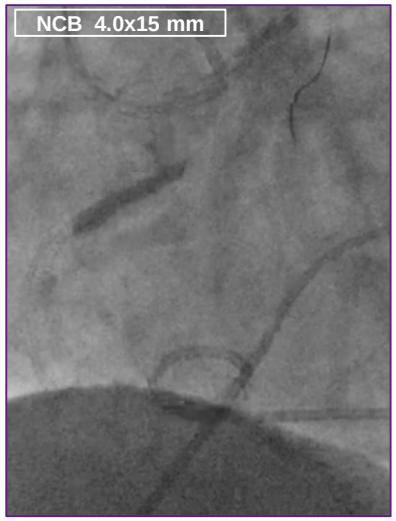

Pericardial drainage: 400 ml blood
Patient stable, still small leak
Changed 3.0 ballon for covered stent

In-stent Papyrus 3.0x26 mm @18 atm
Post NCB 3.5x20 mm @10 atm
Prox-ostium NCB 4.0x15 mm @18 atm

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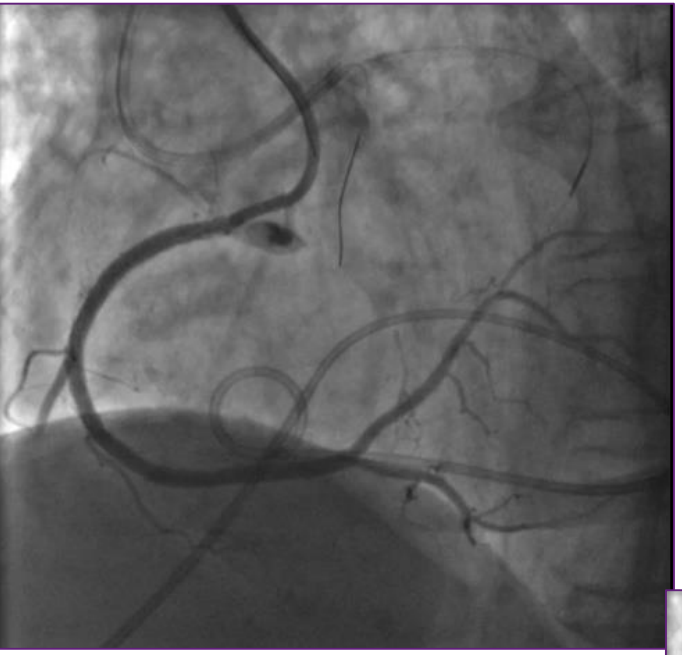
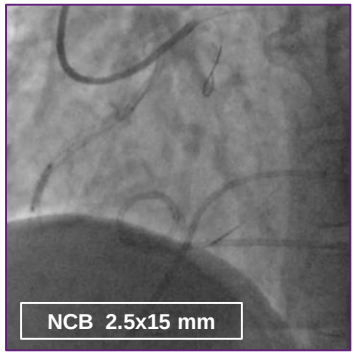
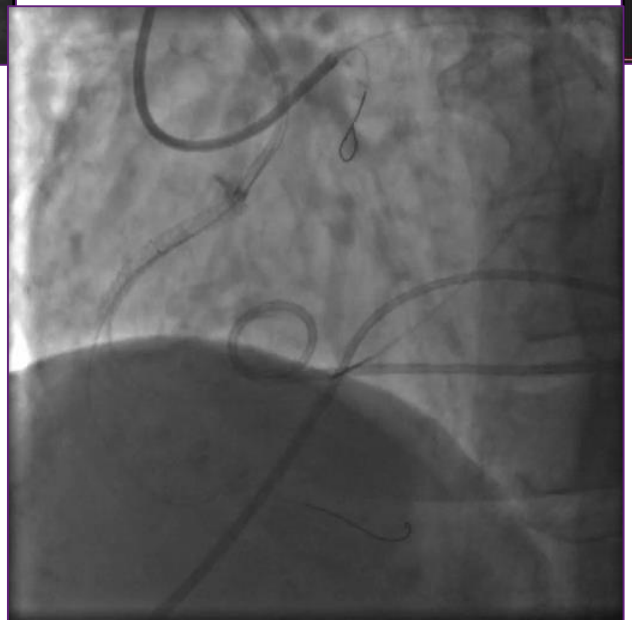
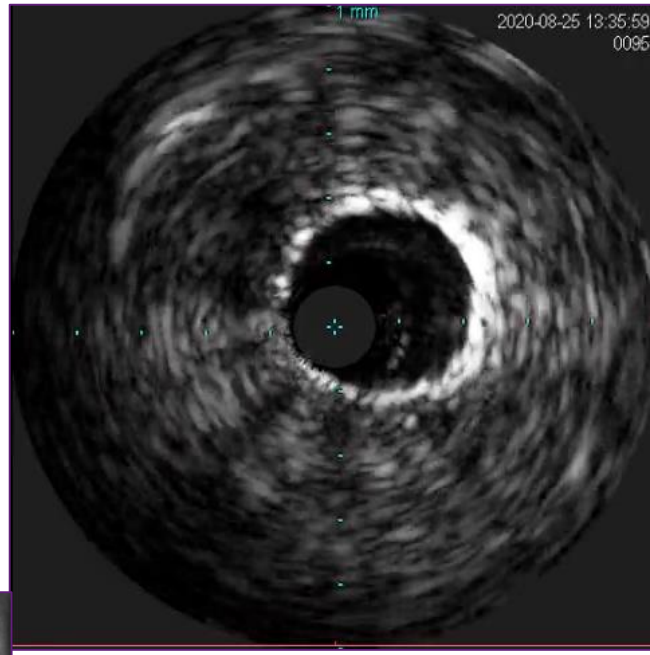


Complete sealing with covered stent
Intraluminal thrombus
Big RV branch embolic occlusion



Struts opening towards RV branch
NCB 2.5x15 mm @14 atm
Eliminate 6 Fr thrombus aspiration
RV branch reopening





IVUS check, good stent expansion and apposition

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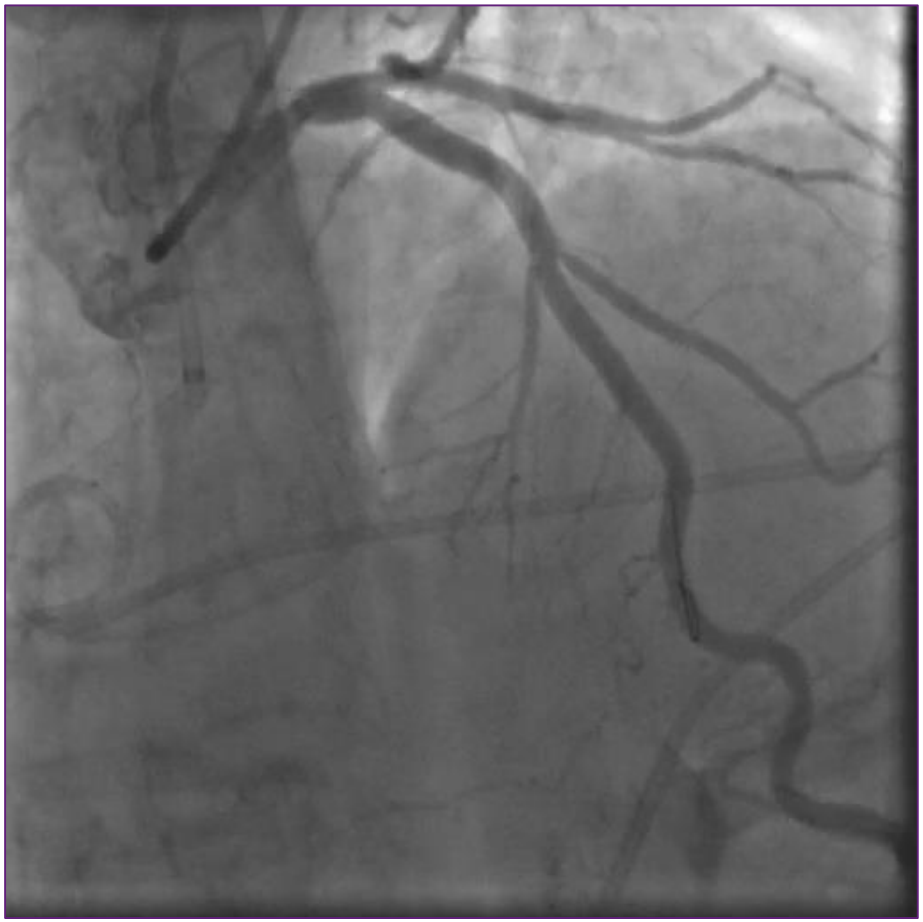
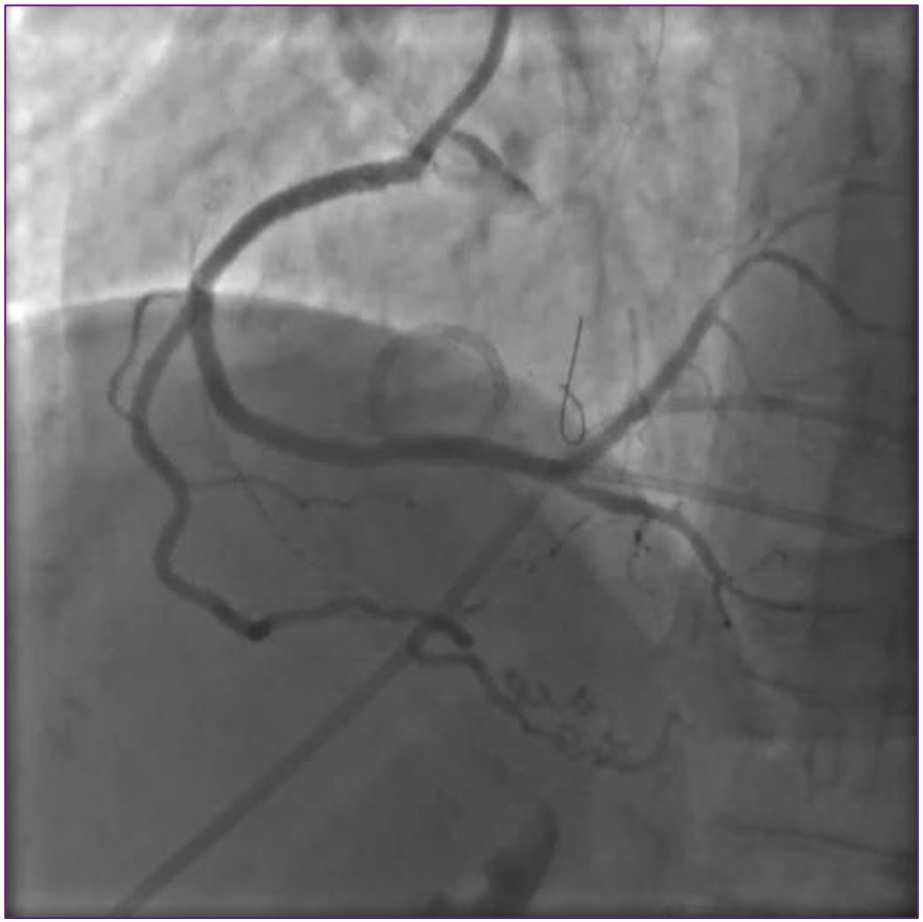


Donor vessel check after retrograde gear removal



Final result

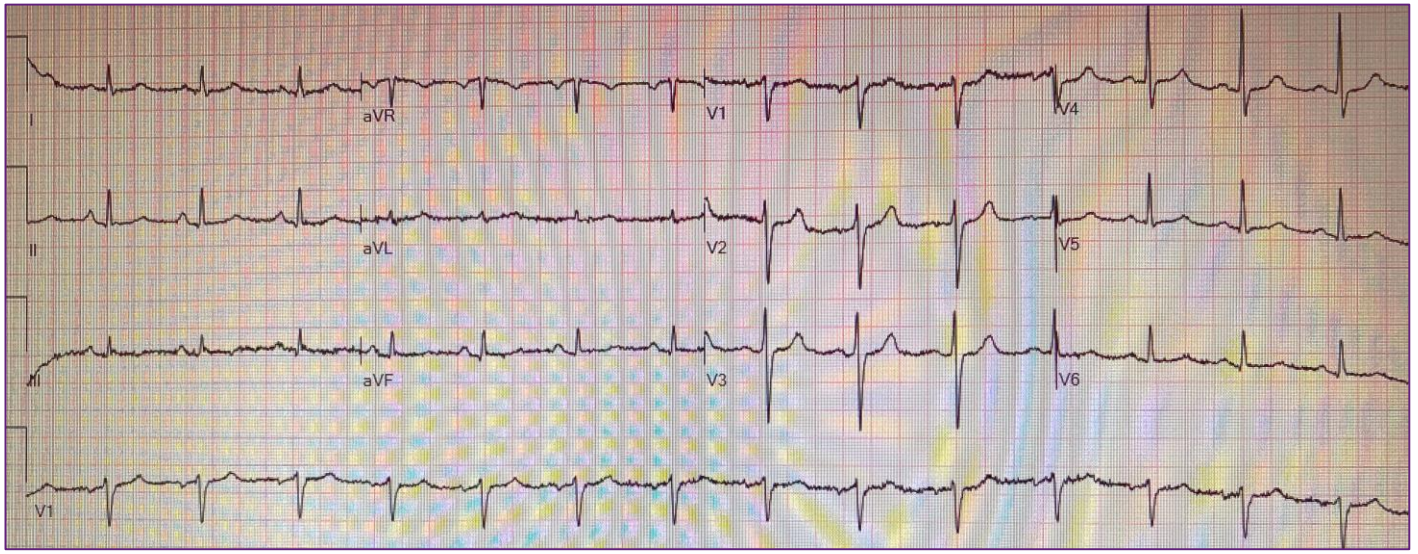
Pericardial drainage removal 24 h later (collection bag empty). Discharged on day 2, asymptomatic

20/12/2020: 4-Month Follow-up

20/12/2020 Outpatient clinic visit: Asympthomatic for dyspnoea and angina, no bleedings.

Rx: ASA 100 mg, Clopidogrel 75 mg, Bisoprolol 5 mg, Ramipril 2.5 mg, Atorvastatin 40 mg
ECG: Sinus rhythm. Normal.
Echo: Mild LV dilation, inferior wall basal segment hypokinesia. EF 55%.

Follow-up continues



Case Remarks

- **IVUS is extremely helpful not only for guiding cap puncture or assessing guidewire re-entry in true lumen but also for vessel sizing and in finding potential threats, like calcium spots and negative remodelling, that could lead to vessel's rupture.**

- **Fast recognition of a coronary perforation is crucial: always suspect it and check for it in case of sudden hypothension, diaphoresis, dizziness or lipothymia during a CTO procedure. It's highly recommendable to keep at hand a dedicated emergency cart with pericardial drainage kit and a full range of covered stent and coil's size.**

- **Block and deliver (BAD) is faster than Ping-Pong technique and equally effective in perforation treatment; a single 7 Fr guiding catheter allows simultaneous usage of a 3.5 mm balloon to stop the bleeding and passage of a covered stent or a microcatheter to deliver coils and seal the breach.**

- **In case of coronary perforation, even without eparin reversal, thrombus formation, wether inside a guiding catheter full of gears or intra-coronary during prolonged balloon inflation, is sometimes an issue to be dealt with.**

- **Frequent flushing of the guiding catheter is mandatory to reduce thrombosis risk but sometimes isn't enough.**

- **Manual thrombus aspiration is the first line therapy in coronary thrombosis / embolization with a good success rate as stand alone treatment.**