



PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

ROMA

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di Confindustria

**Auditorium
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SESSIONE LIVE: CTO

Complex retrograde CTO

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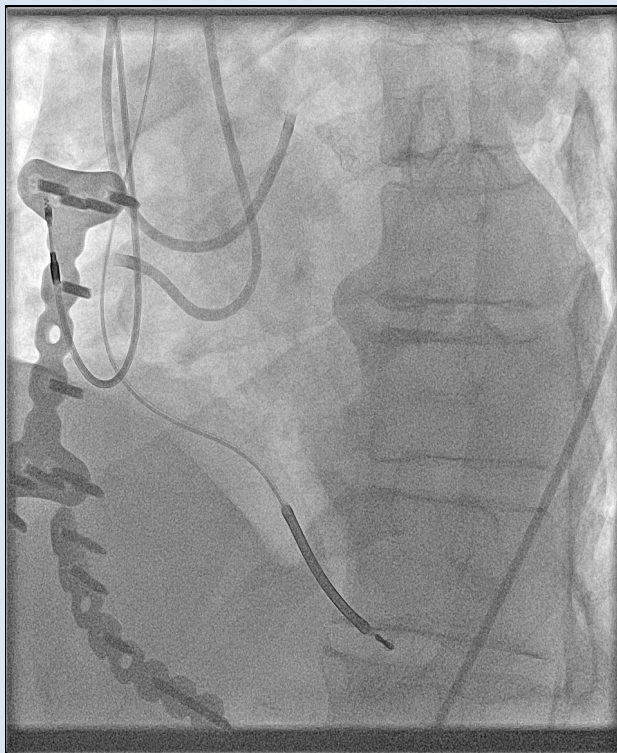
Challenging scenarios in retrograde CTO PCI



- Ipsilateral collaterals
- Very long collaterals
- Ostial occlusions



Ipsilateral epicardial collaterals



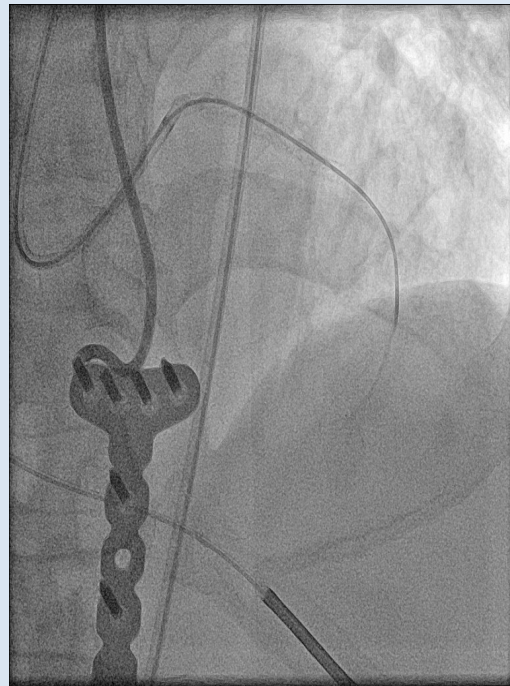
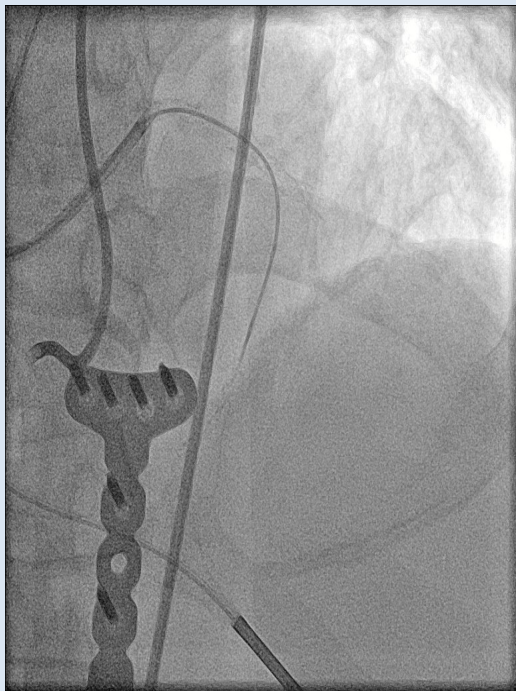
Target lesion:

- Long > 20mm
- Calcified
J-CTO score 2
- Bridging collaterals
- Involving a bifurcation



Retrograde approach

No evident interventional septal collaterals





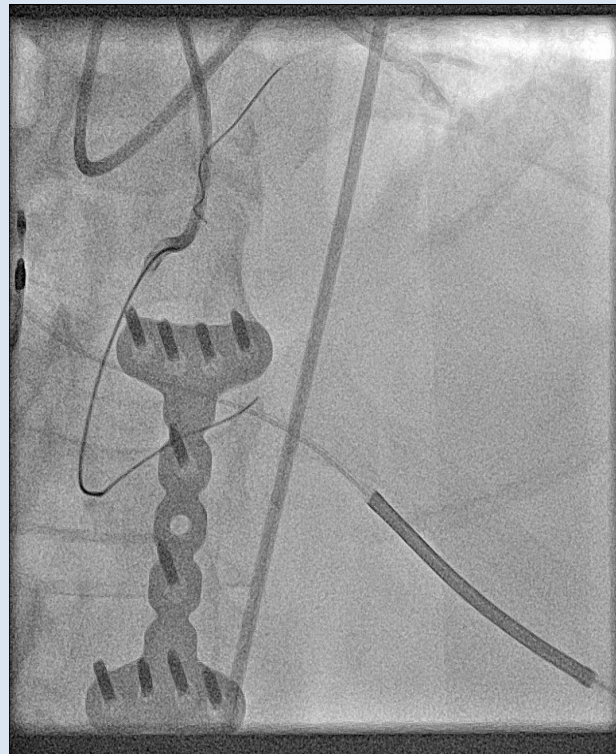
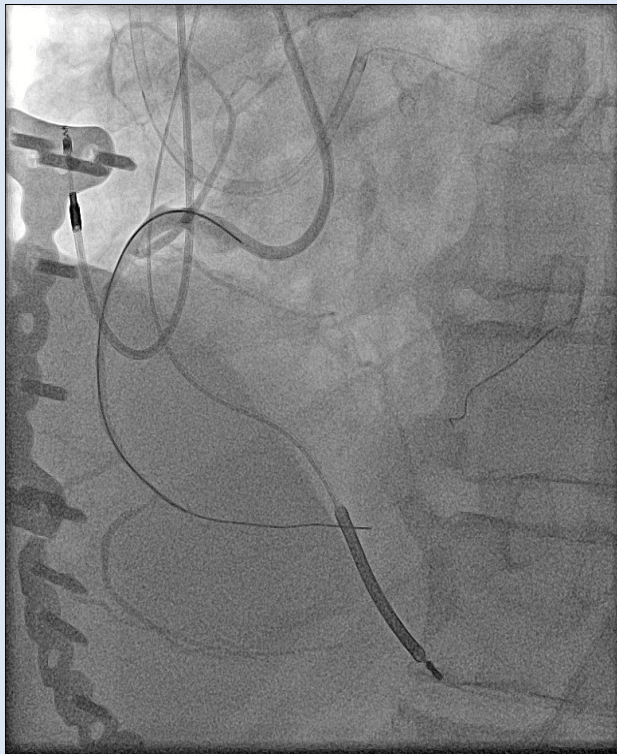
Retrograde approach

Challenging epicardial navigation at the distal connection





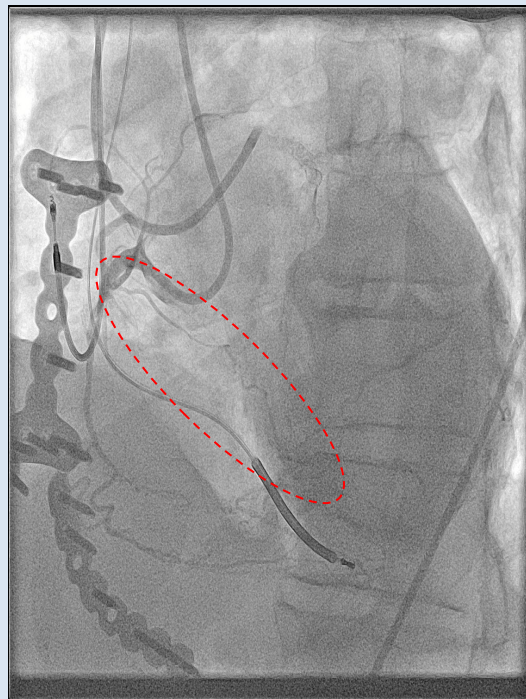
Retrograde approach



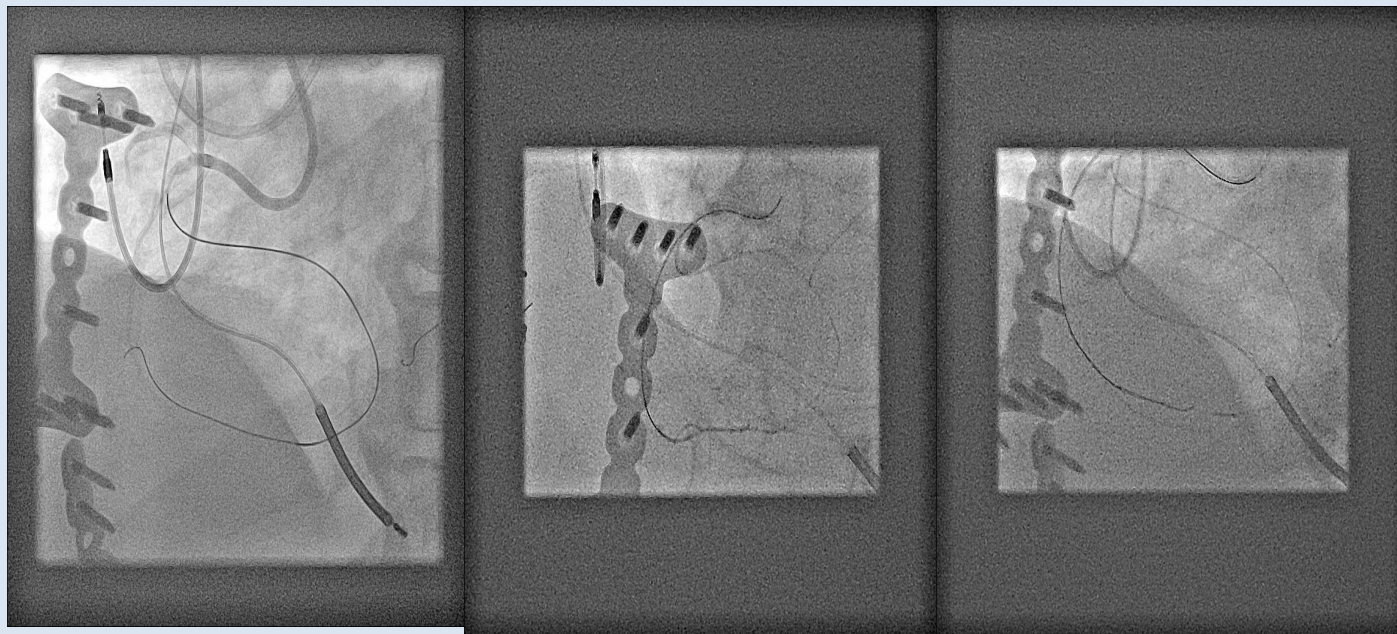


Retrograde approach with ipsilateral collaterals

Ipsilateral epicardial collateral

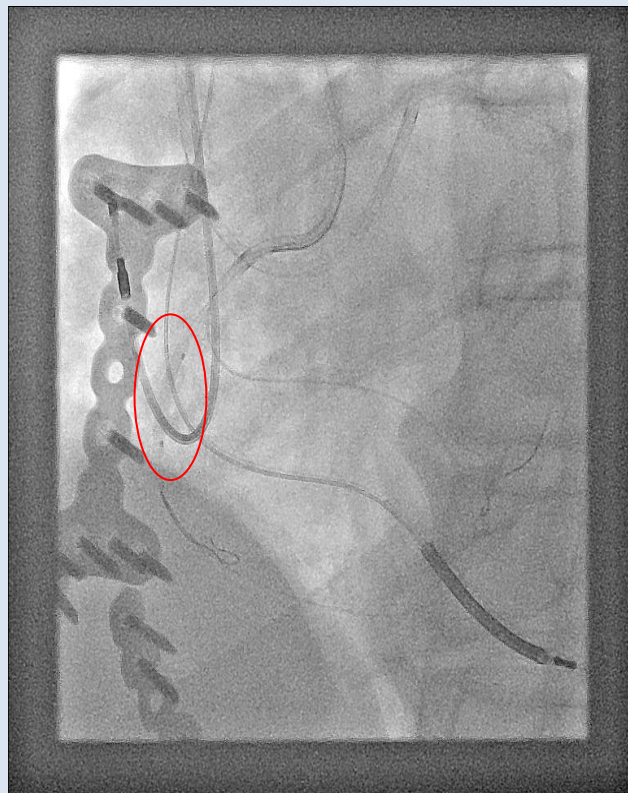


Retrograde approach with ipsilateral collaterals





Intra-vessel Anchoring Balloon



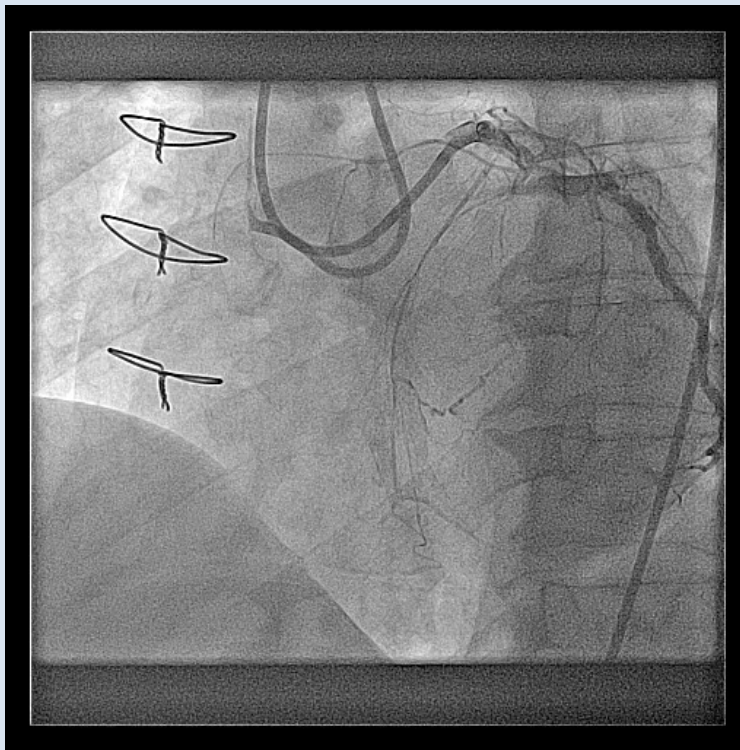


Final result





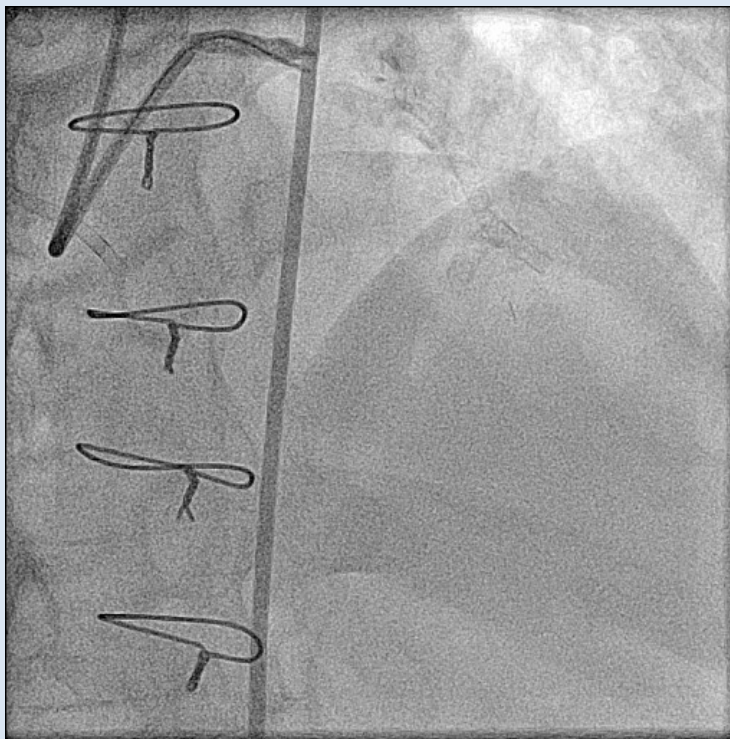
Very long collaterals



- **Ambiguous proximal cap**
- **Very long occlusion**
- **Small bridging collaterals**
- **Tortuous and small epicardial collaterals**
- **Diffusely diseased distal vessel**



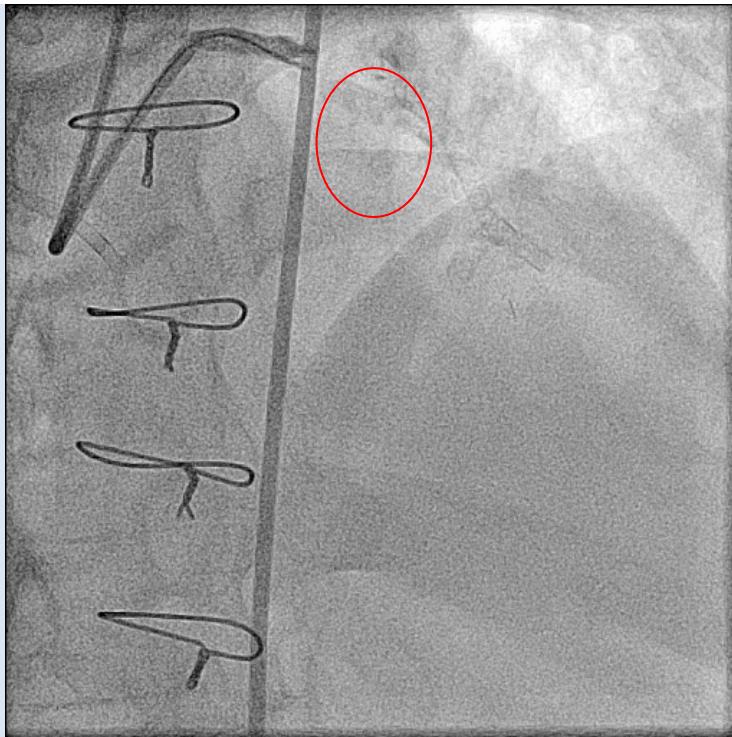
Evaluation septal collaterals



Potential interventional septal collateral.



Evaluation septal collaterals



- **Potential interventional septal collateral.**
- **Non-crossable calcification**



Ballon assisted subintimal entry (BASE) technique

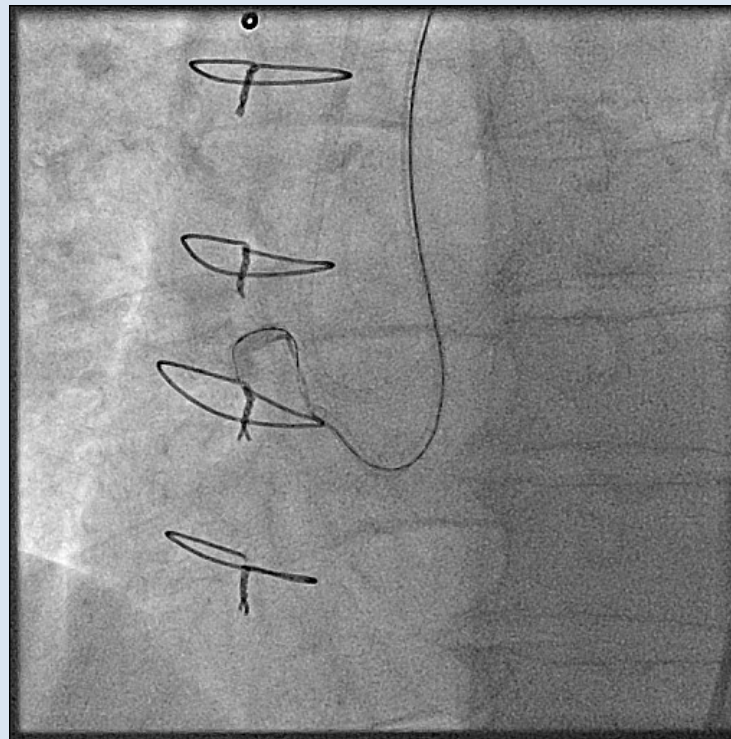
**Balloon inflated in the
proximal true lumen**



**Microcatheter intrapped
between the ballon and
the vessel wall**

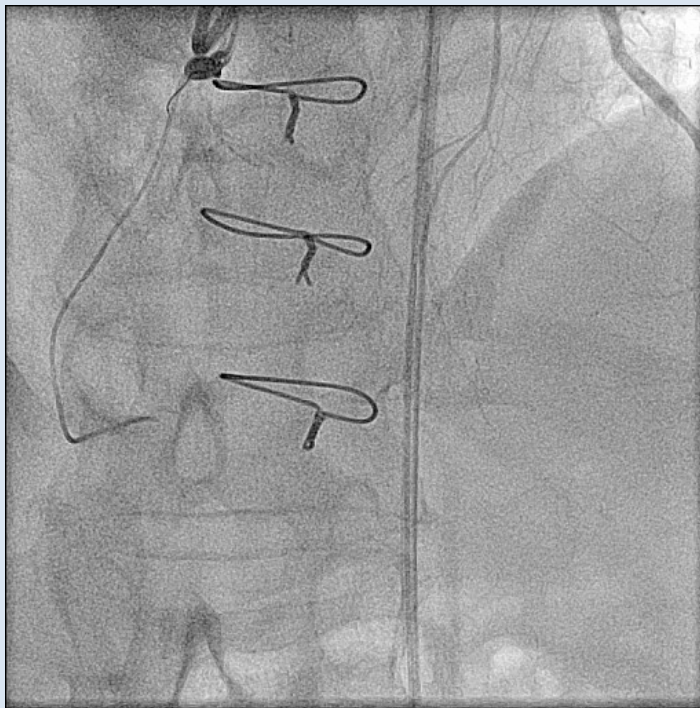


**Knuckle wire advanced in
the subintimal space**





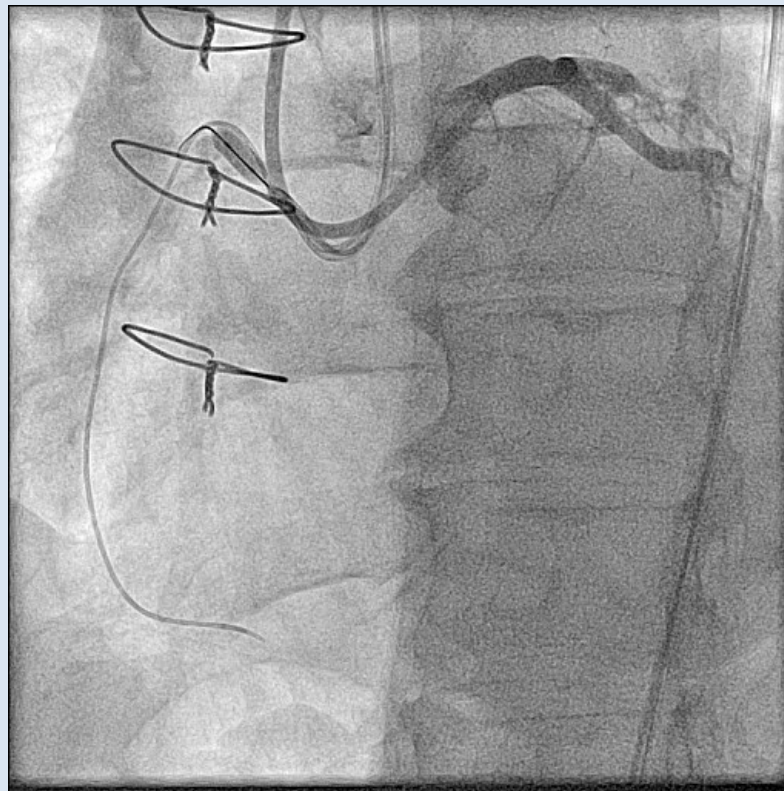
ADR not feasible



- Distal vessel extremely small, diffusely diseased
- Compression from the subintimal haematoma.



ADR not feasible.. What next?

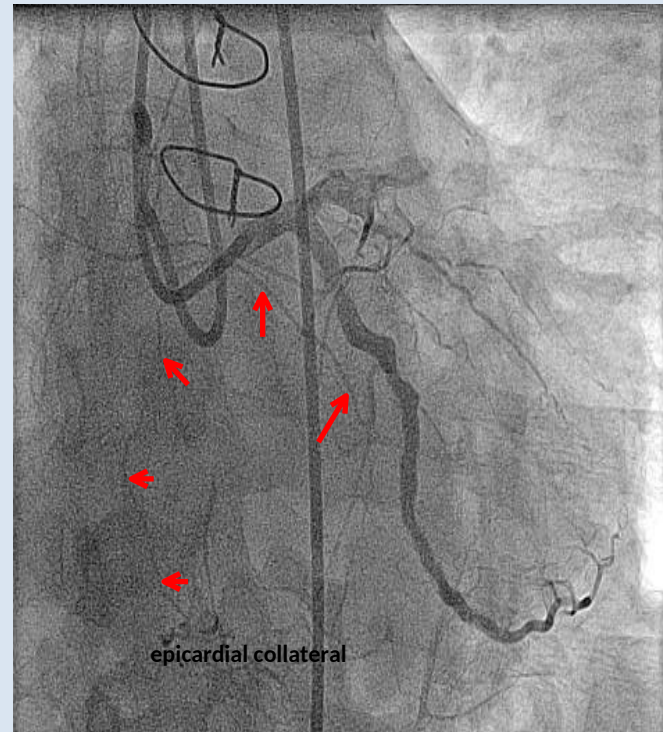
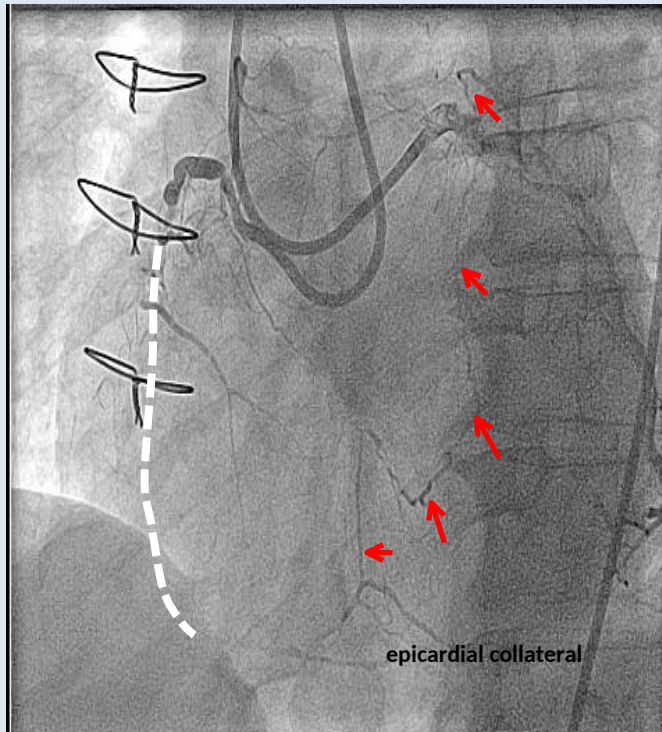




Any suggestion ?

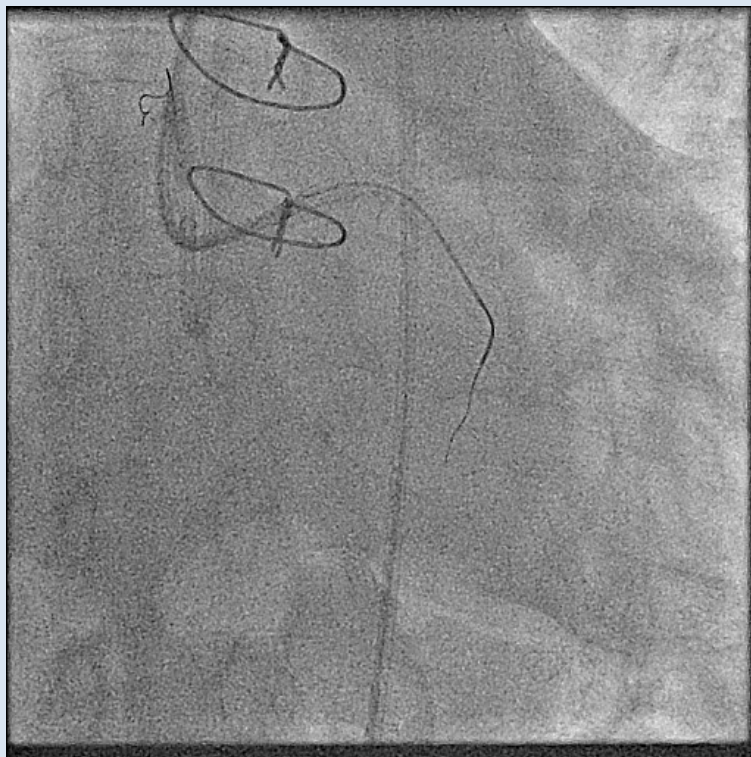


Epicardial collaterals



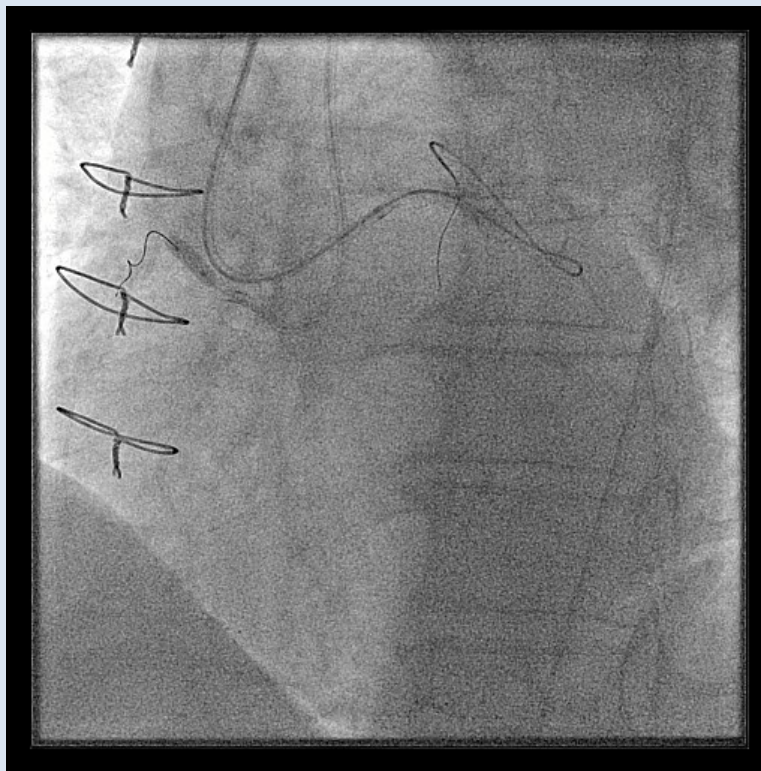


Retrograde epicardial navigation



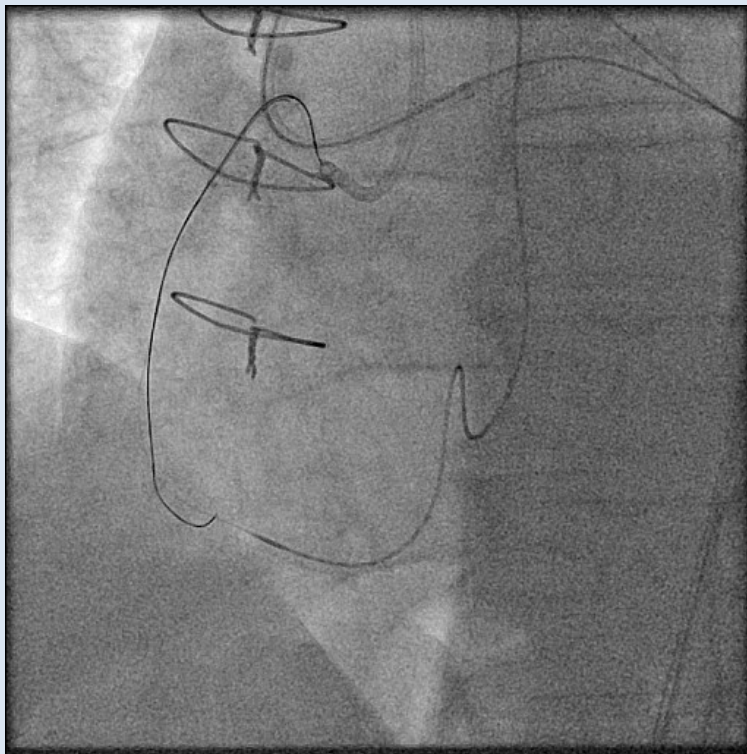
Retrograde epicardial navigation

Extremely low tip load (0.3g) pre-shaped hydrophilic wire for safe epicardial crossing





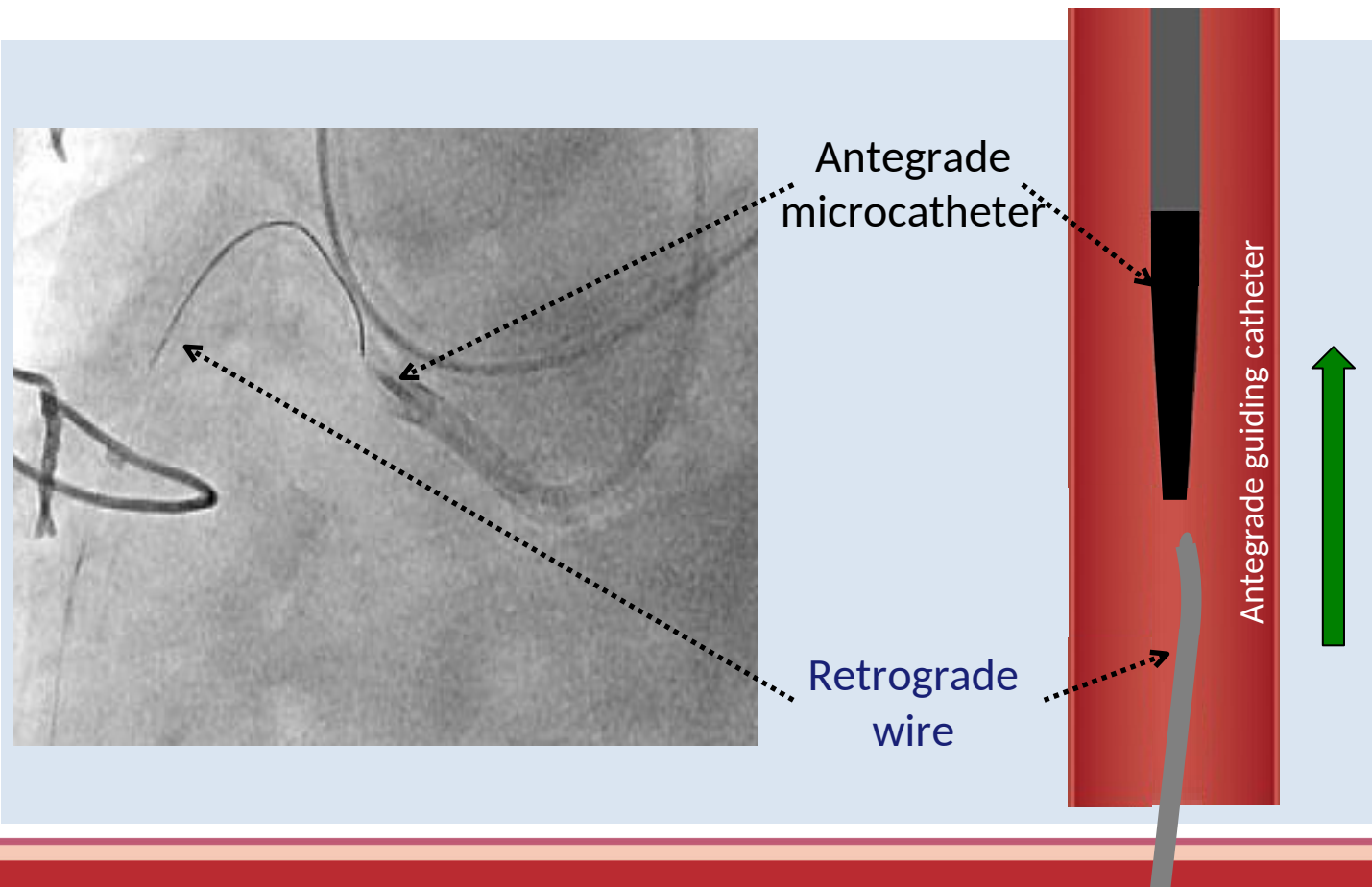
Reverse CART technique



- **Successful RCART**
- **Microcatheter not long enough to externalize**

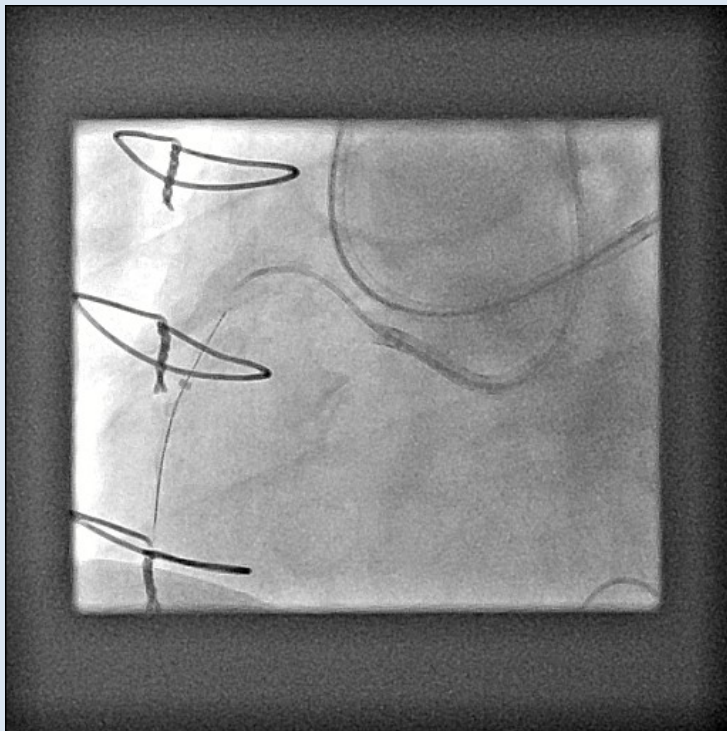


TIP-in technique





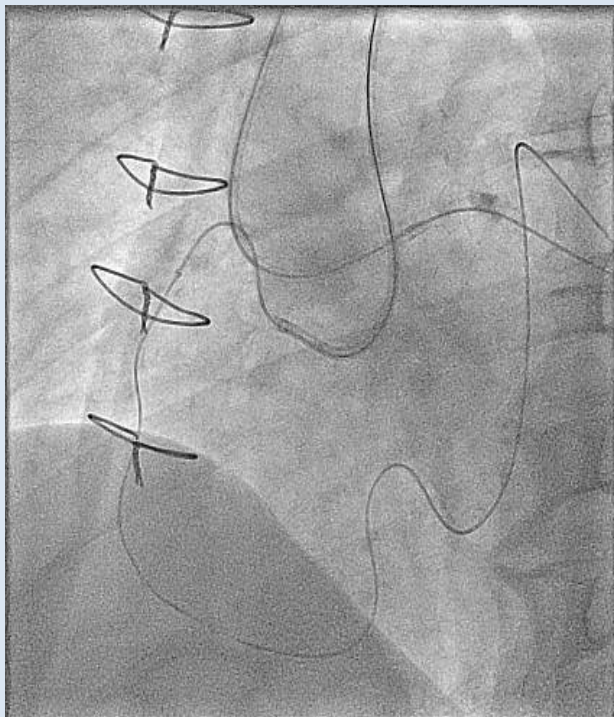
“Chasing” TIP-in technique



- Given the epicardial tortuosity the retrograde wire was not steerable.
- So we had to invent the chasing Tip-in technique



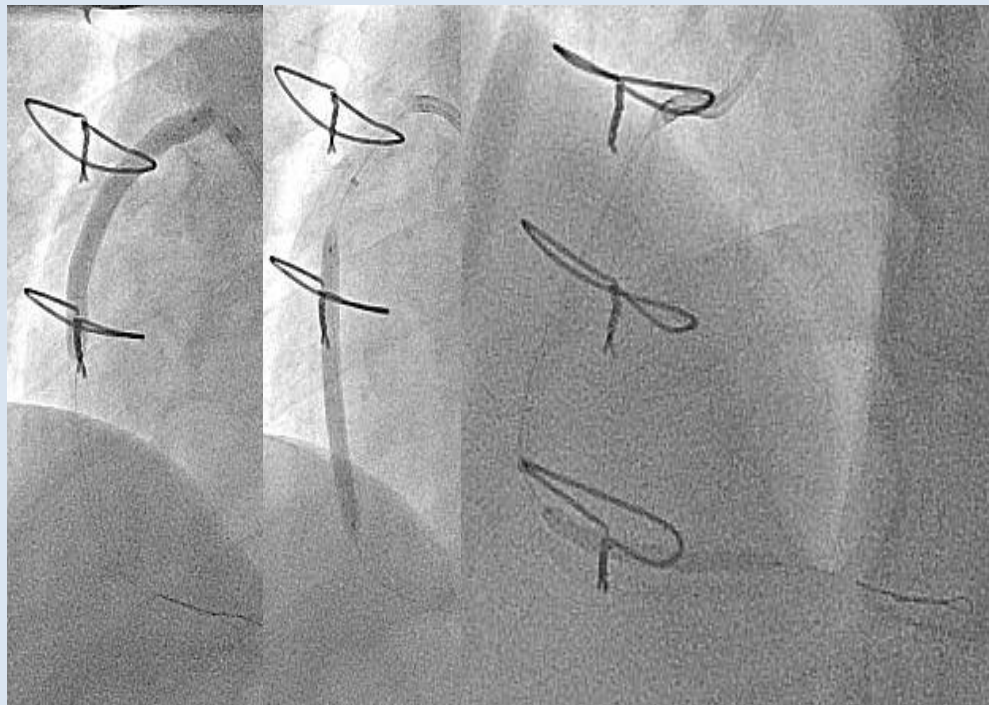
Strategy after tip-in



1. Advancement of the microcatheter on the retrograde wire
2. Retraction of the retrograde wire
3. Advancement of the antegrade wire through the antegrade microcatheter
4. Removal of the antegrade microcatheter
5. Stenting in the subintimal space

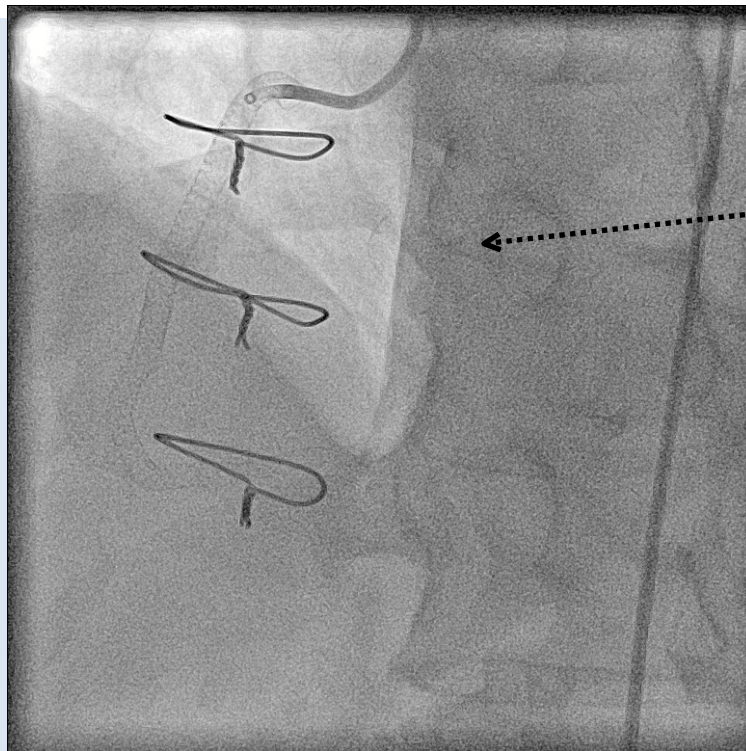


Finalization





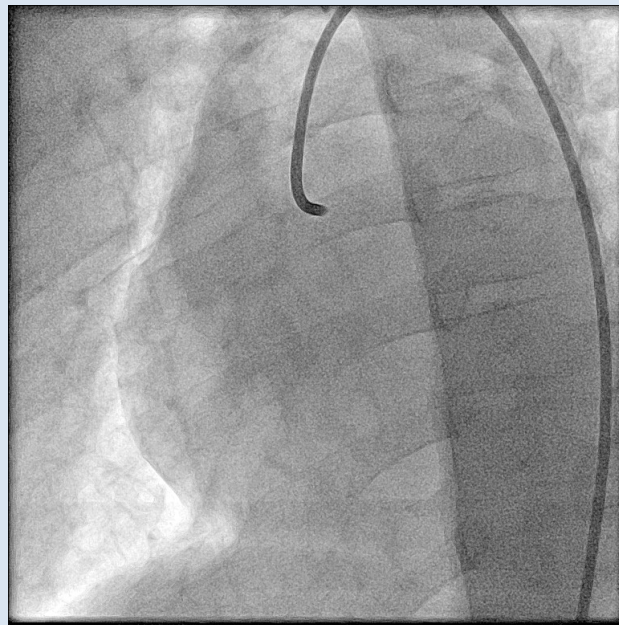
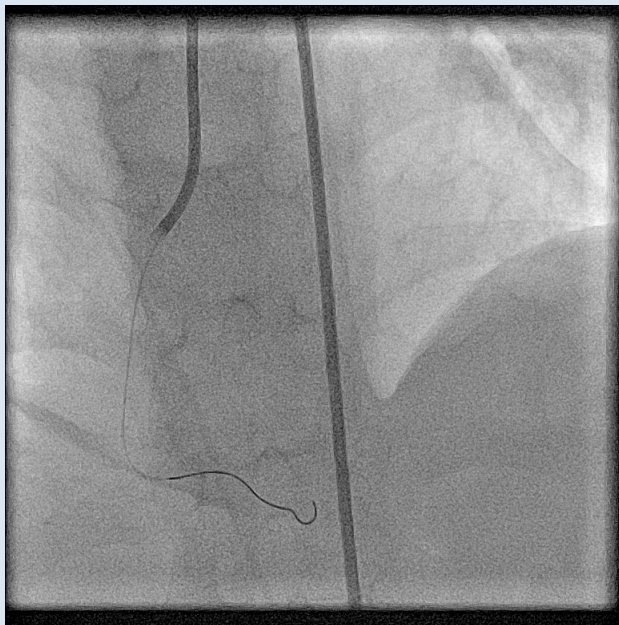
Finalization



**Epicardial collateral
used for retrograde
approach**

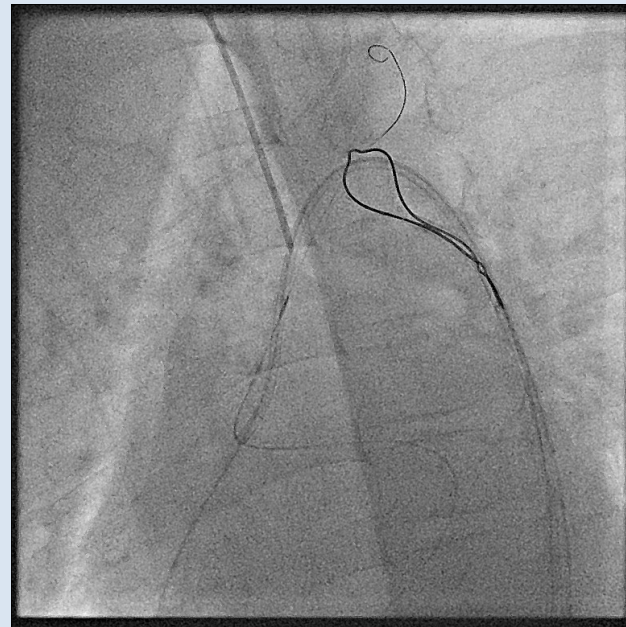


Ostial occlusions



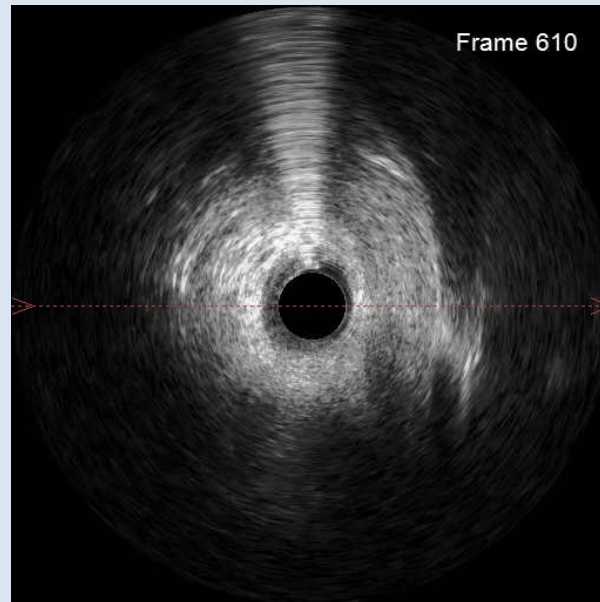
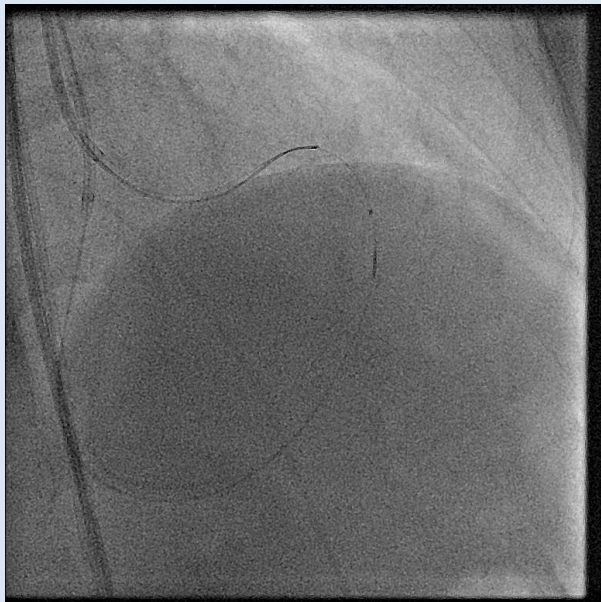


Ostial occlusions





Ostial occlusions





Ostial occlusions





Conclusions

- Multiple techniques might be needed to finalize a retrograde CTO case
- Mastering several CTO techniques and a rapid shift from one to another is fundamental
- Epicardial collaterals should be left as last resort but not avoided