Multivessel CTO Strategy: OCT-Guided LAD CTO Recanalization and IVUS-Guided Proximal Cap Puncture for RCA CTO After Failed Hybrid Attempt

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Clinical History & Investigations

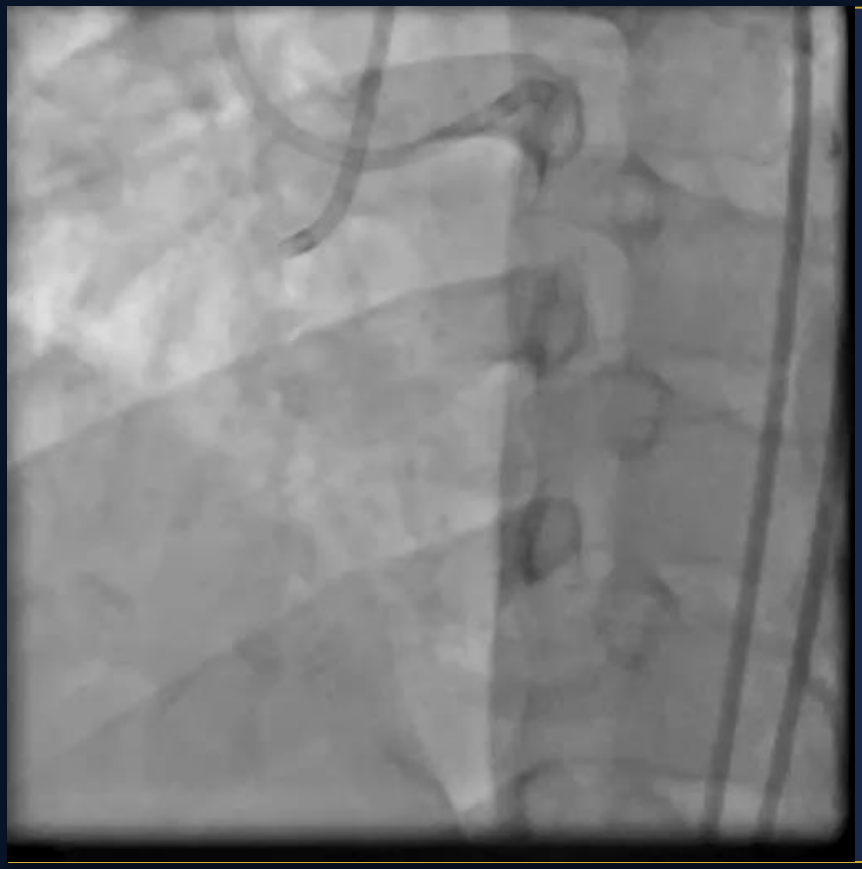
Clinical History

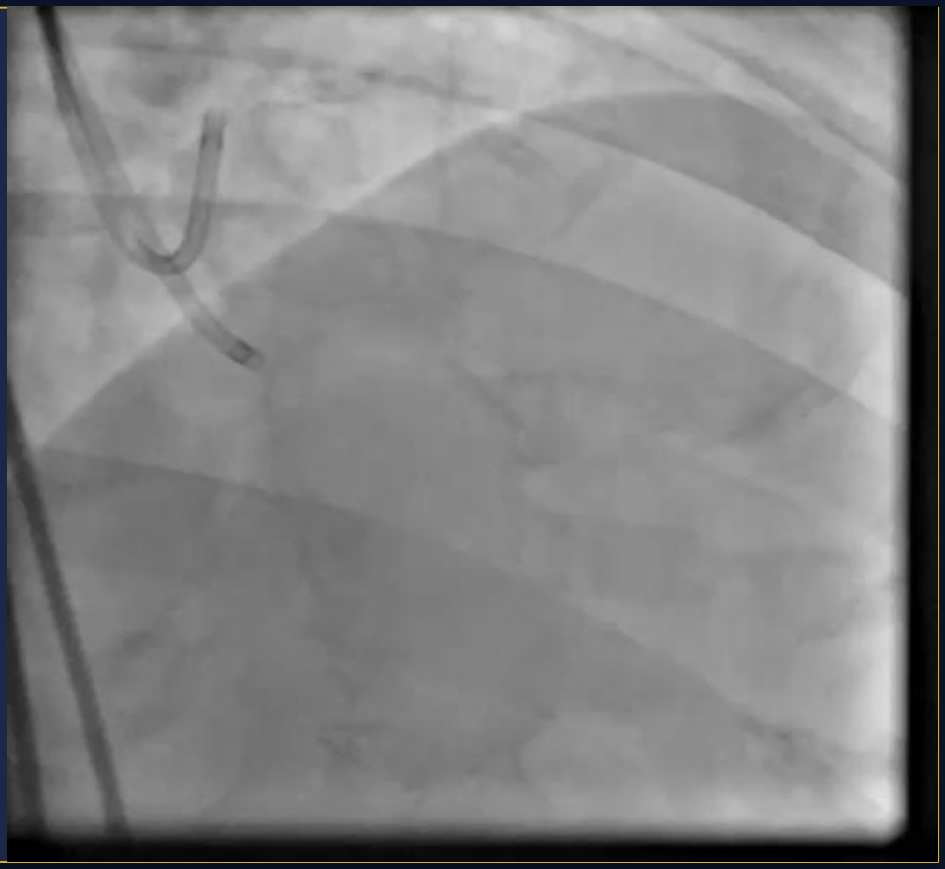
- M S.A 45 years old
- History of Systemic Hypertension and Hypothyroidism
- Old CAD with PCI to mid LAD in 2018
- Presented with Dyspnea of Exertion NYHA II and Stable Angina CCS II since 4 months

Investigations

- **ECG findings:** NSR at 70 Bpm, negative T waves in V1-V3
- **Echocardiography:** Slight Inferior wall hypokinesia, EF: 57%
- **TMT**: Positive

Baseline Coronary Angiography





Proximal RCA has 50% tubular disease followed by chronic total occlusion. Distal RCA seen filling through bridging collaterals

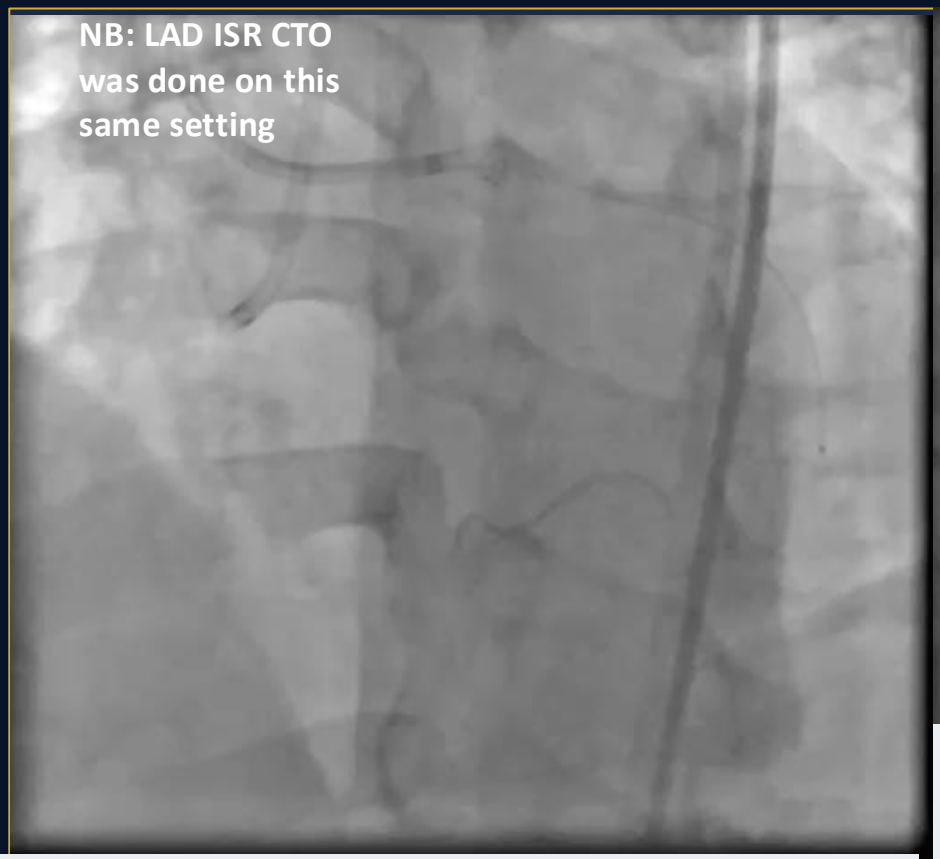
Proximal LAD stent has 60 -70% ISR followed by CTO

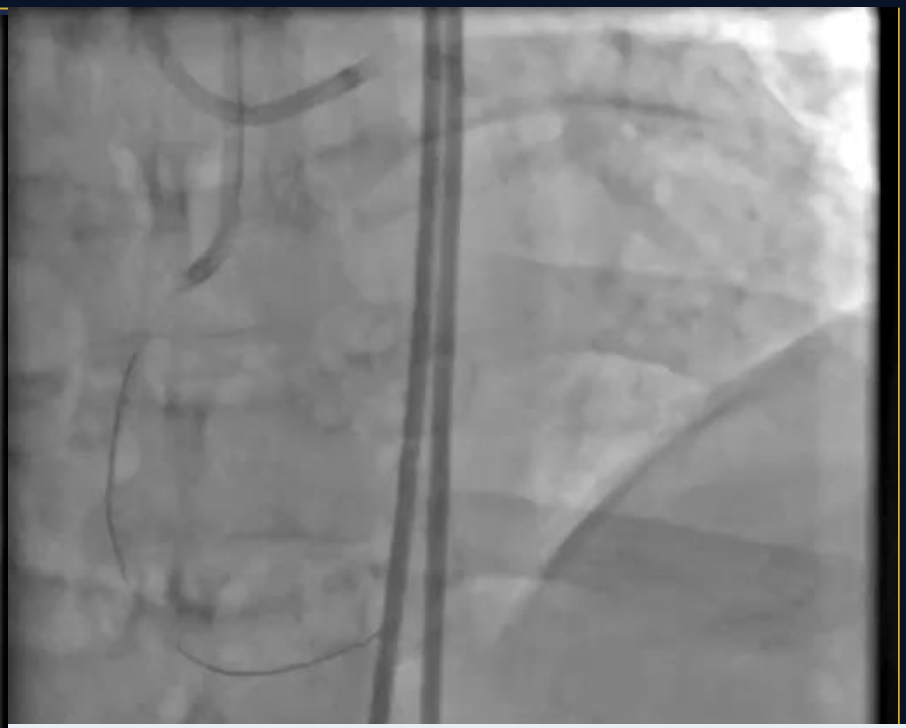
Plan:

LAD CTO: OCT guided Antegrade Approach with DCB

RCA CTO: Retrograde approach using distal LCX-RPDA epicardial collateral

Initial Strategy – Hybrid Attempt





Retrograde Approach: (Distal LCX- RPDA epicardial collateral)

Fielder FC with Microcatheter support

Escalation into a SUOH III wire that crossed

Angiocheck from JR catheter showed the wire was extra-plaque

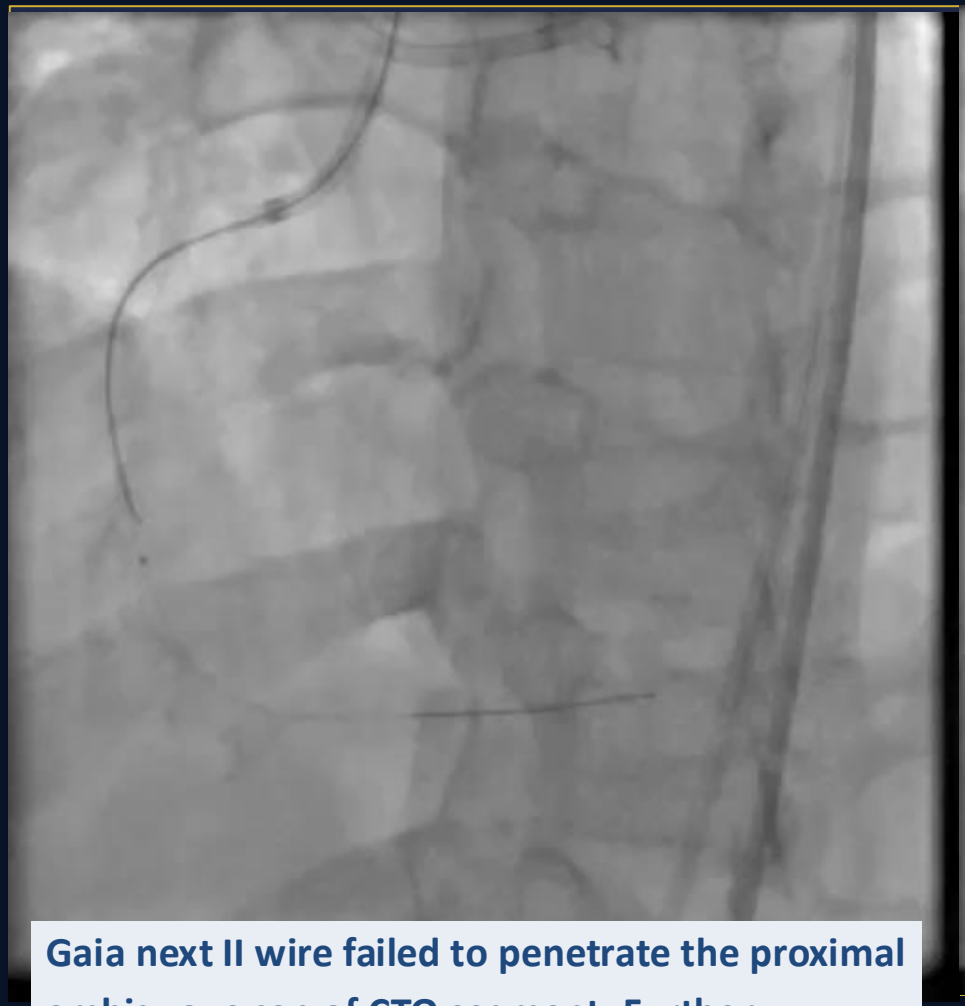
Antegrade Approach:

Fielder FC with Microcatheter support

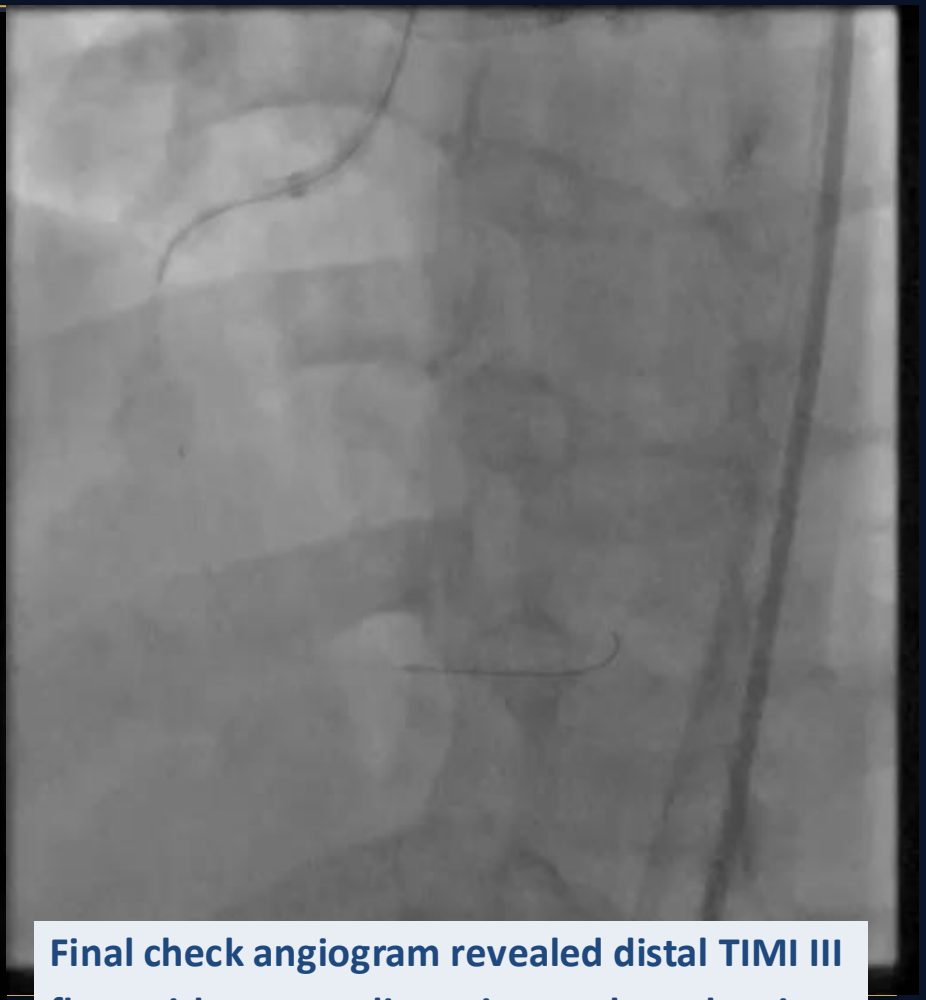
Escalation into a GAIA N II that crossed the CTO segment + microcatheter wedging through the CTO Body

Angiocheck from EBU catheter showed the wire on a distal Early PDA

Procedure Limitation – Contrast Threshold

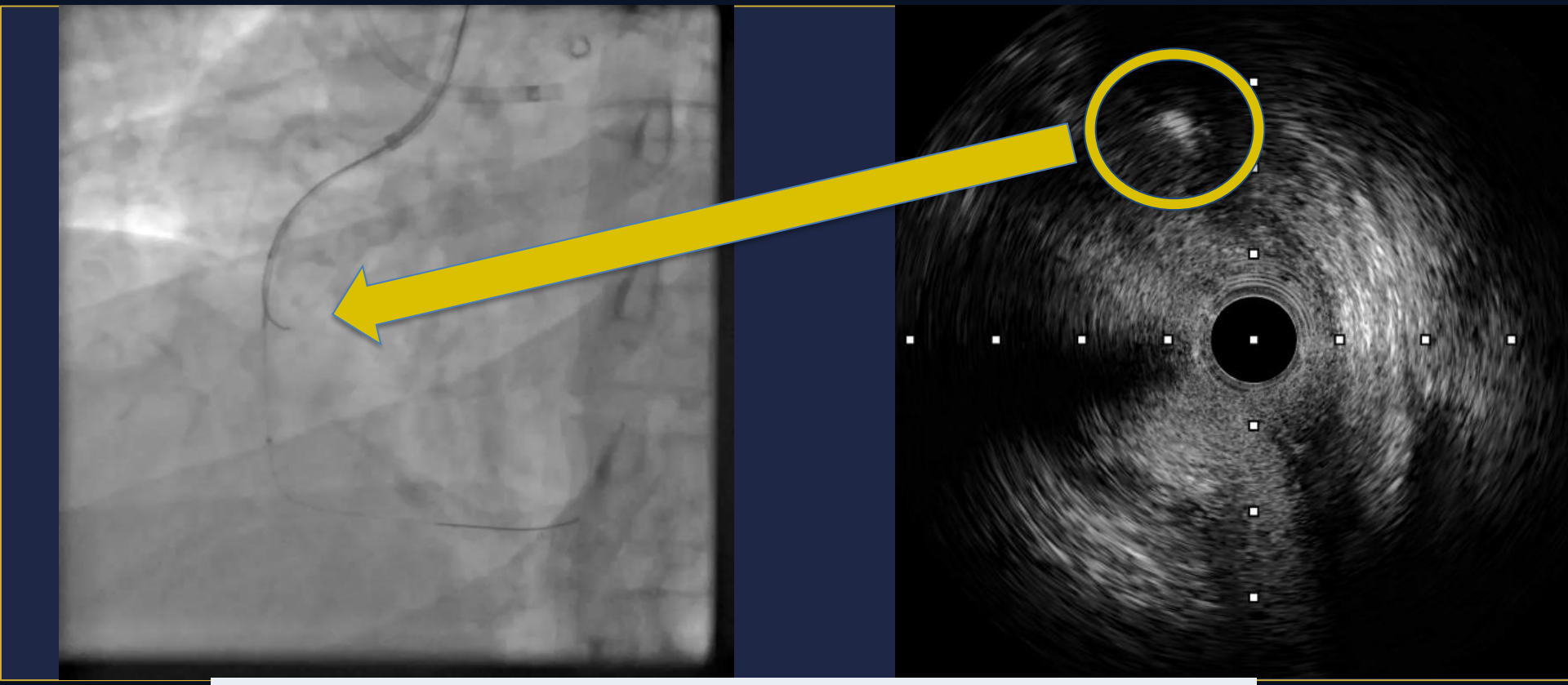


Gaia next II wire failed to penetrate the proximal ambiguous cap of CTO segment. Further procedure was stopped as the contrast volume exceeded the safer limits.



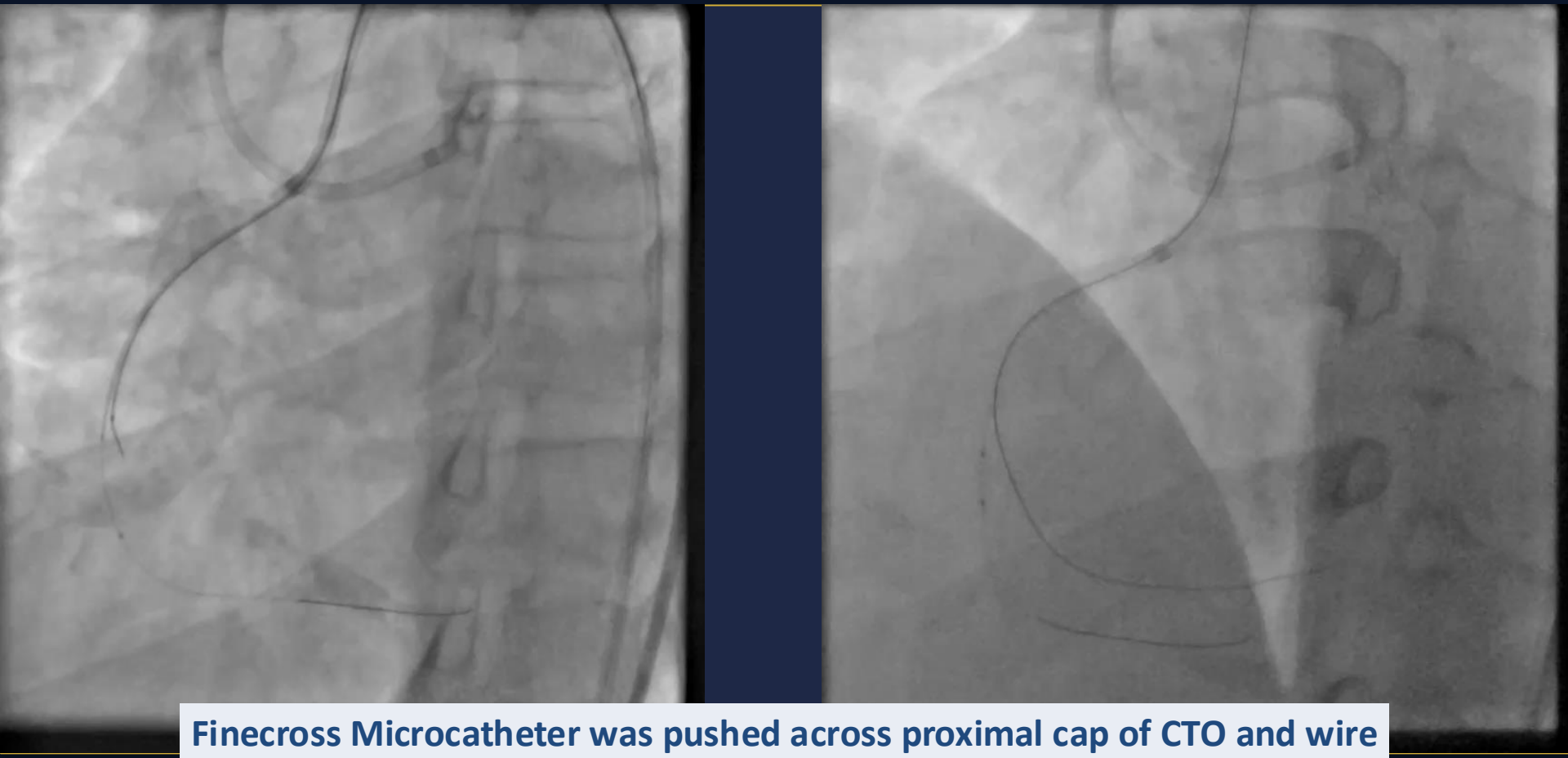
Final check angiogram revealed distal TIMI III flow without any dissection or thrombus in early PDA

Second attempt (48 hours later)
IVUS Guided Proximal Cap Puncture



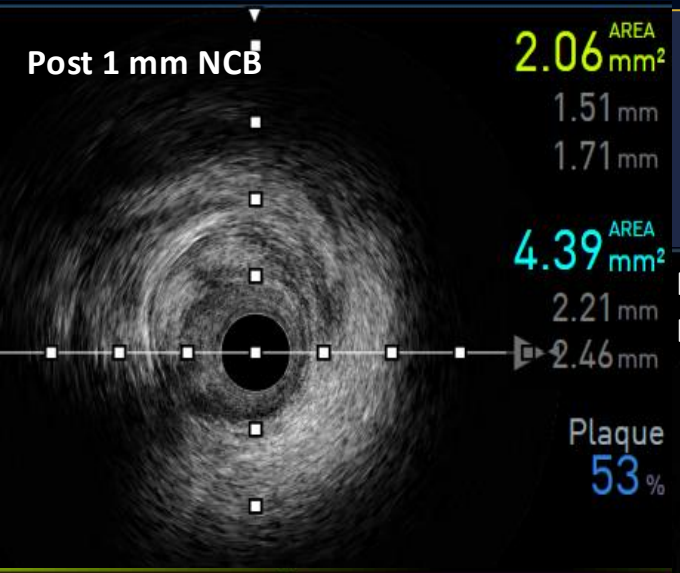
- IVUS run across early PDA showed proximal cap of CTO located 2mm proximal and opposite to RV branch.
- IVUS live run assisted proximal cap puncture was done with Gaia next III wire

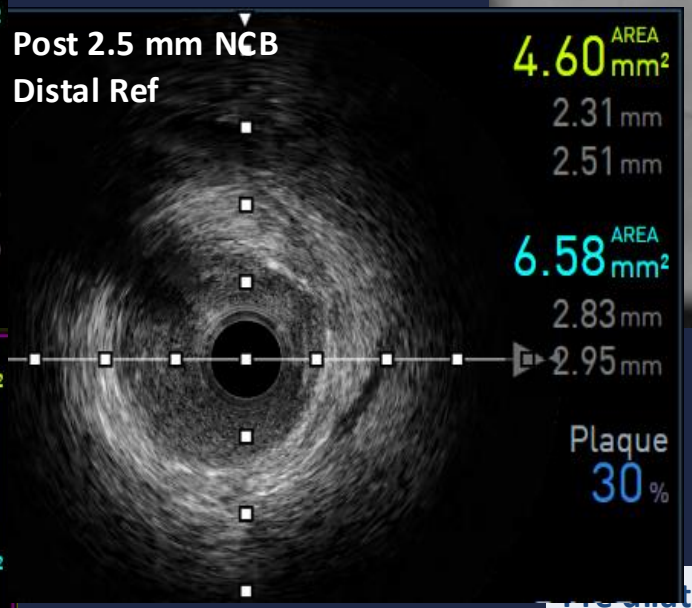
CTO BODY crossing

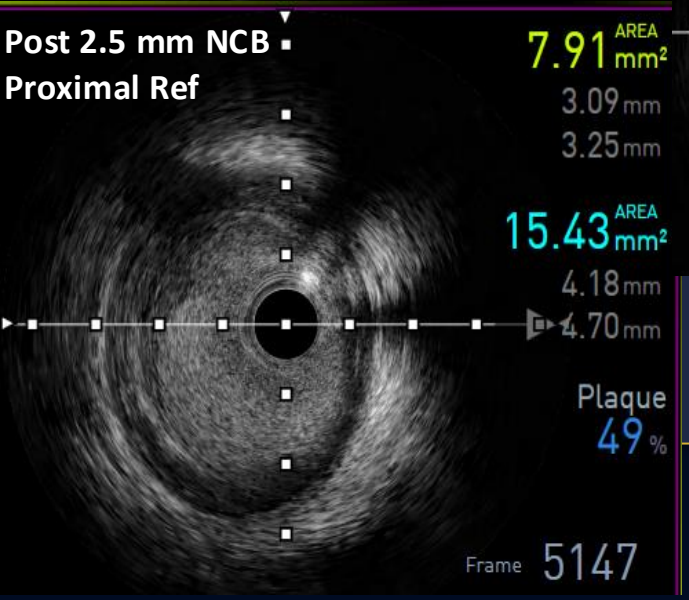


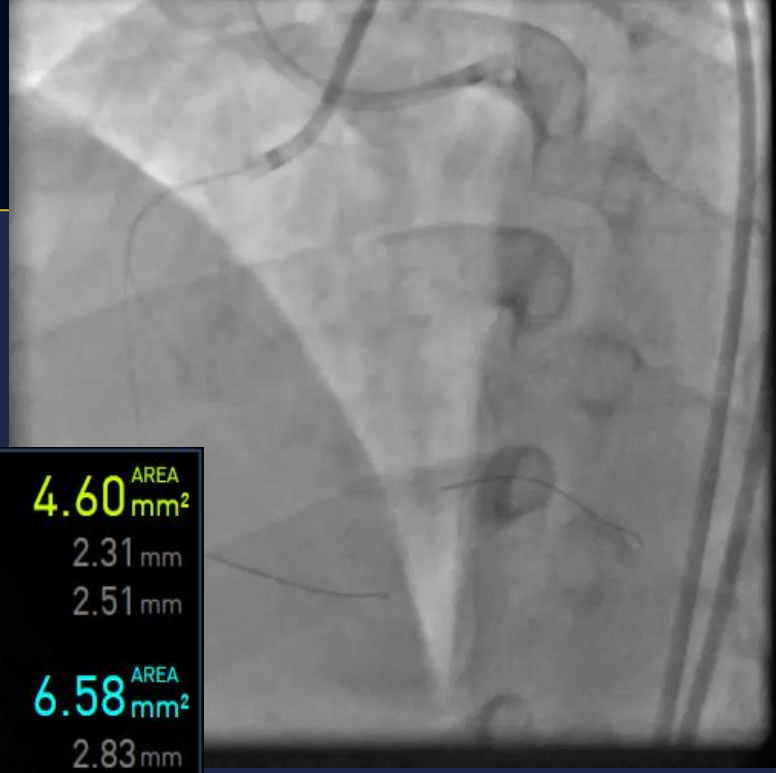
Finecross Microcatheter was pushed across proximal cap of CTO and wire was de-escalated to Fielder XT R and it crossed the CTO segment into RPLB, keeping 2.5 x 8mm Quantum apex balloon anchored in RPDA. Contralateral check shot confirmed the distal wire in true lumen.

Lesion Preparation
Pre PCI IVUS run



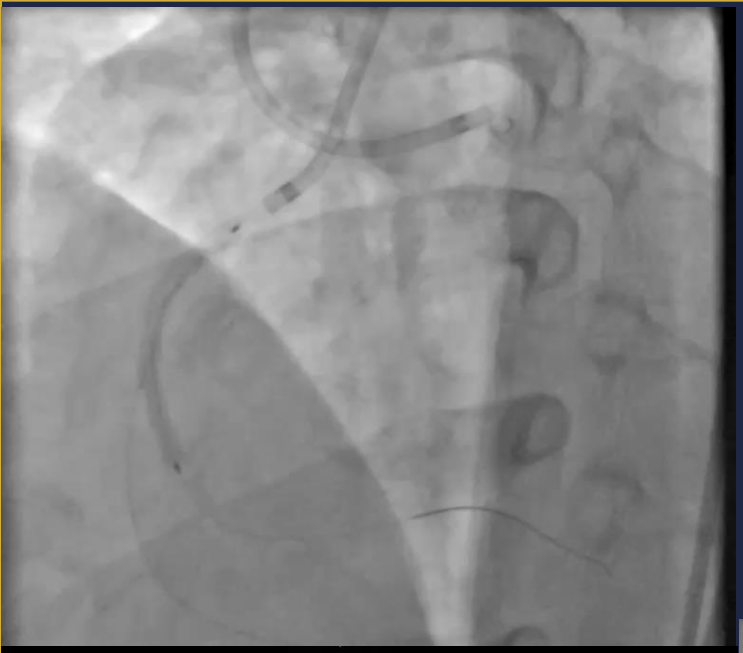


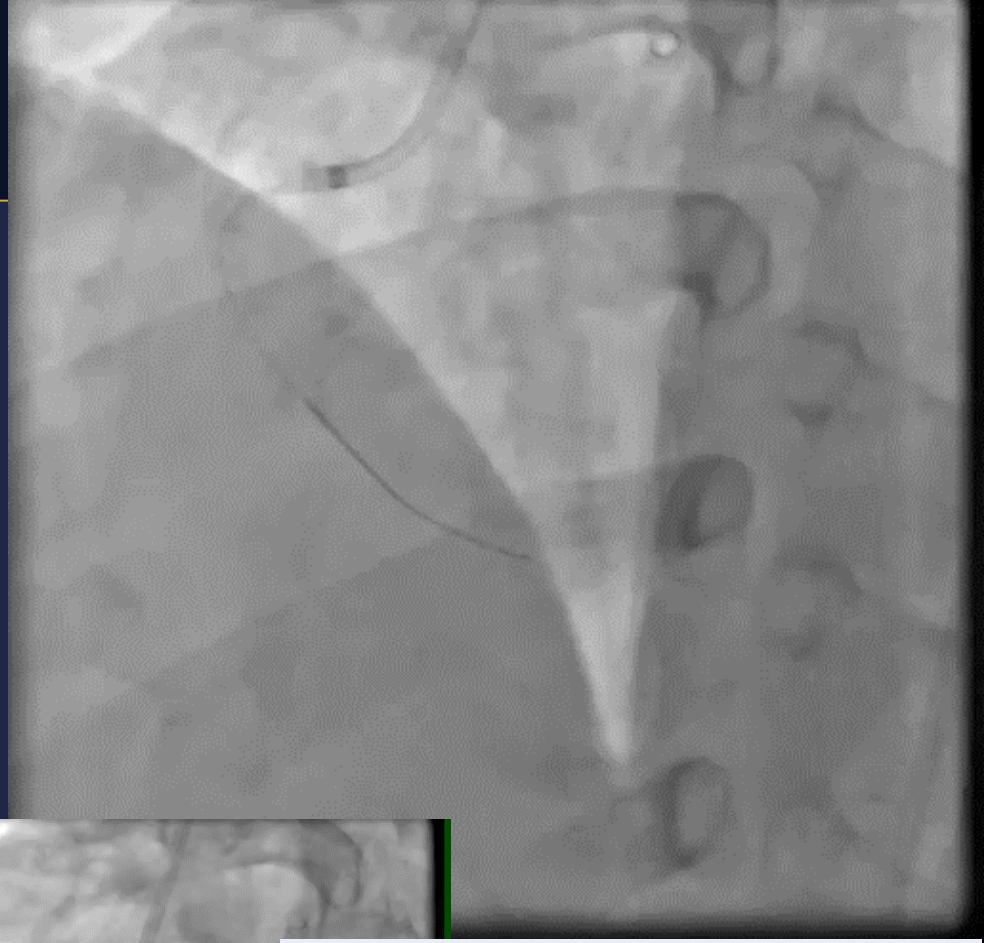


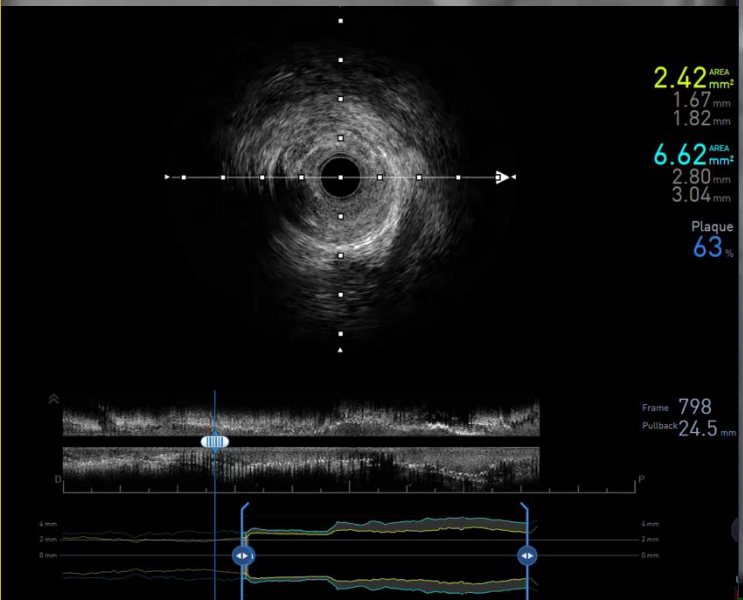


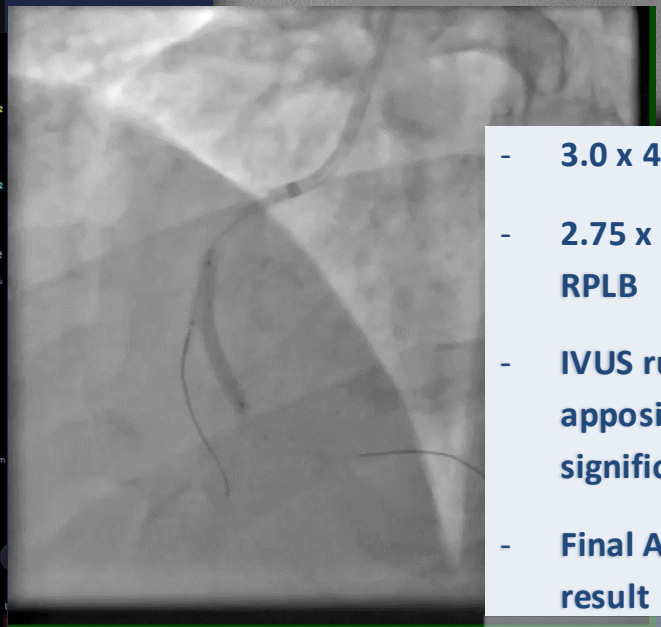
Pre dilation was done to RCA CTO segment with 1.0 x 5mm and 1.5 x 10mm NC balloons. Pre PCI IVUS run across RPLB-RCA showed true luminal course of wire all through out with significant diffuse fibrocalcific disease. Pre dilation was repeated in mid RCA-RPLB with 2.5 x 8mm NC balloon.

Stenting and DCB + Final Angiographic Result









- 3.0 x 48mm XIENCE SKYPOINT DES
- 2.75 x 30mm AGENT DCB into distal RPLB
- IVUS run : good stent apposition/expansion and no significant distal edge dissection
- Final Angio: TIMI III Flow with excellent result

Take-Home Messages

- CTO strategy must adapt when retrograde fails
- Contrast management is critical in complex PCI
- IVUS guidance can enable precise proximal cap puncture
- Imaging improves success in ambiguous CTO caps