Wire and Microcatheter Selection and Handling for Calcified CTO PCI

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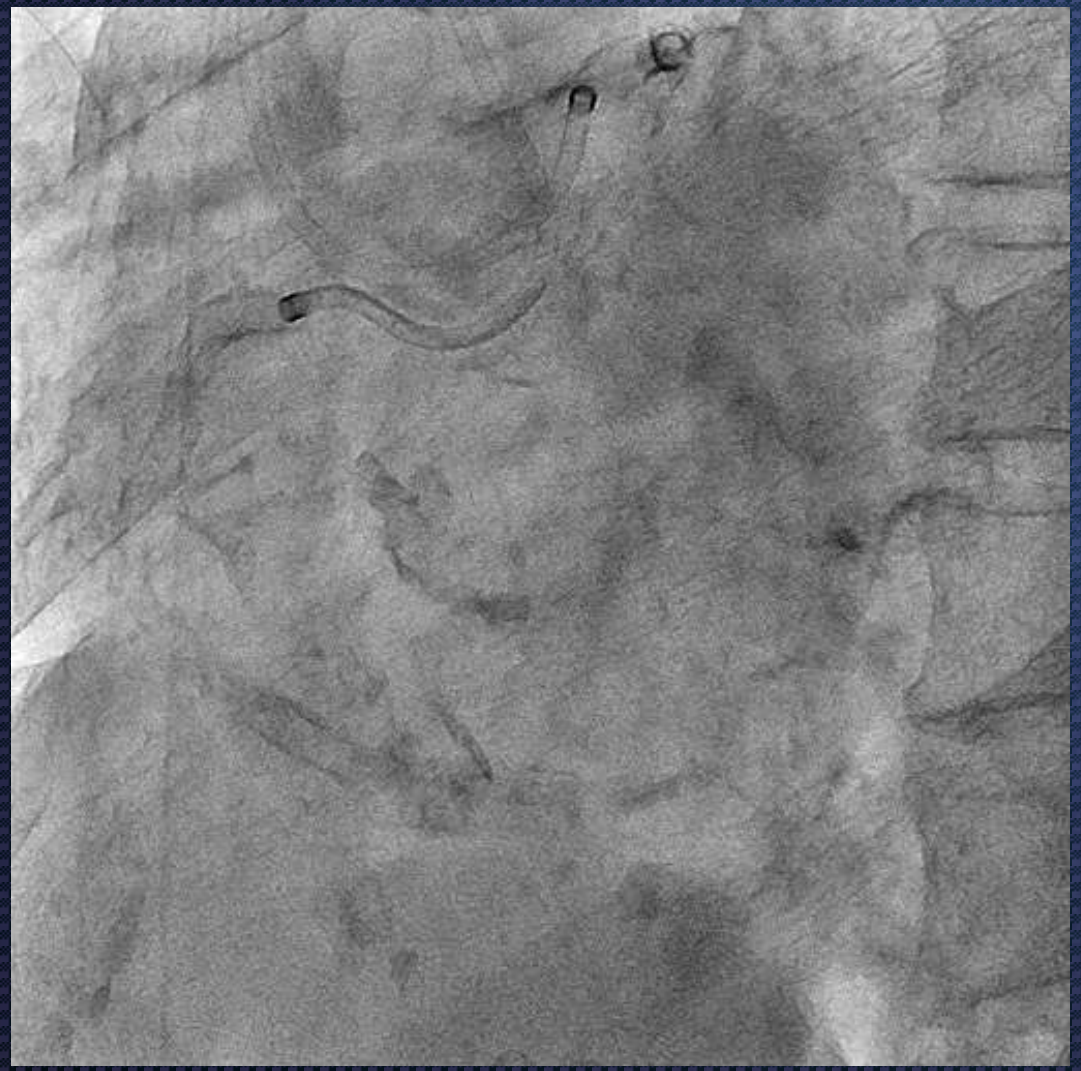
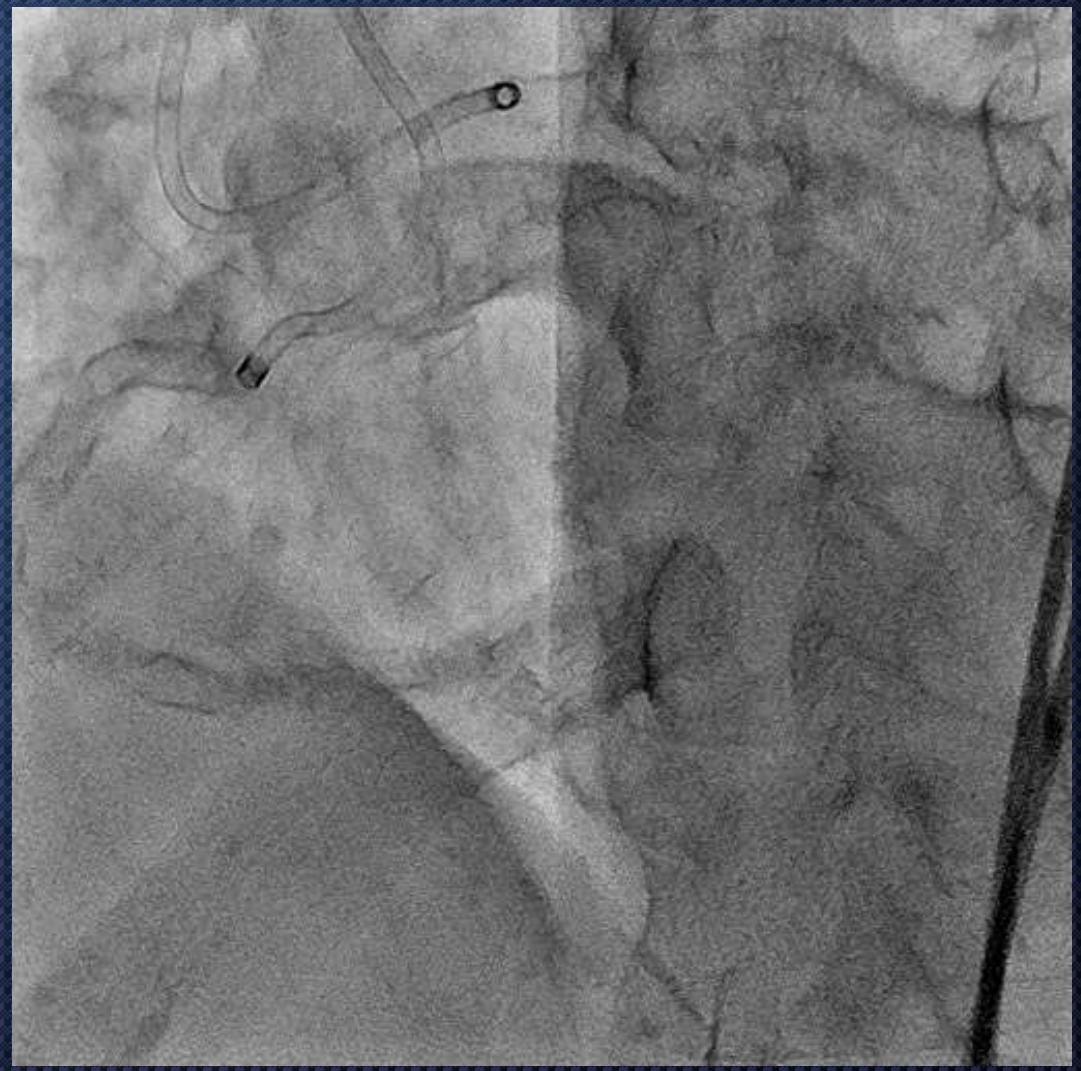
Approach to calcified CTO

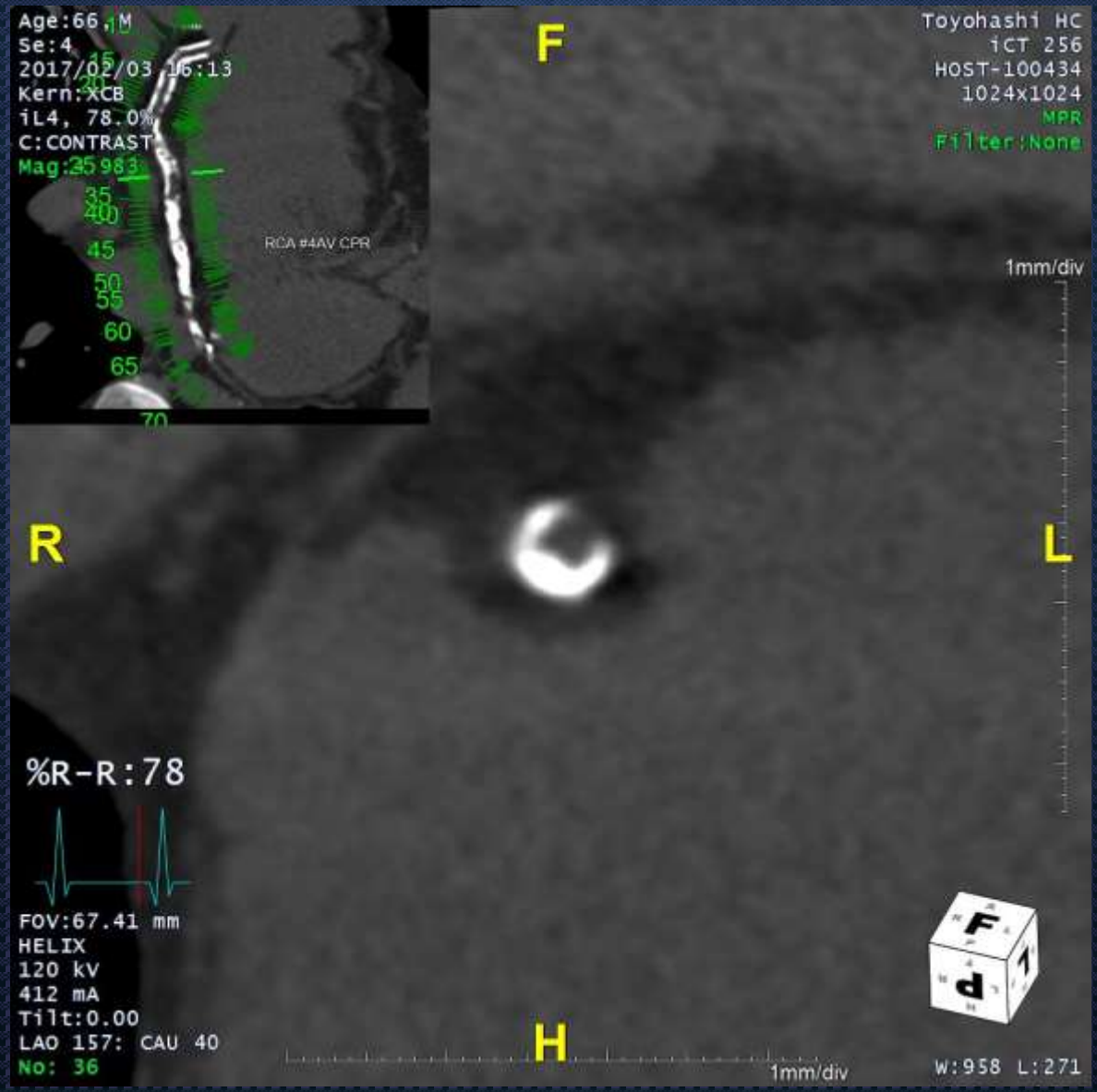
- **Coronary calcification in CTO lesion is one of the independent predictors for the failure of CTO-PCI.**

Case 1: RCA CTO (Failure due to calcification)

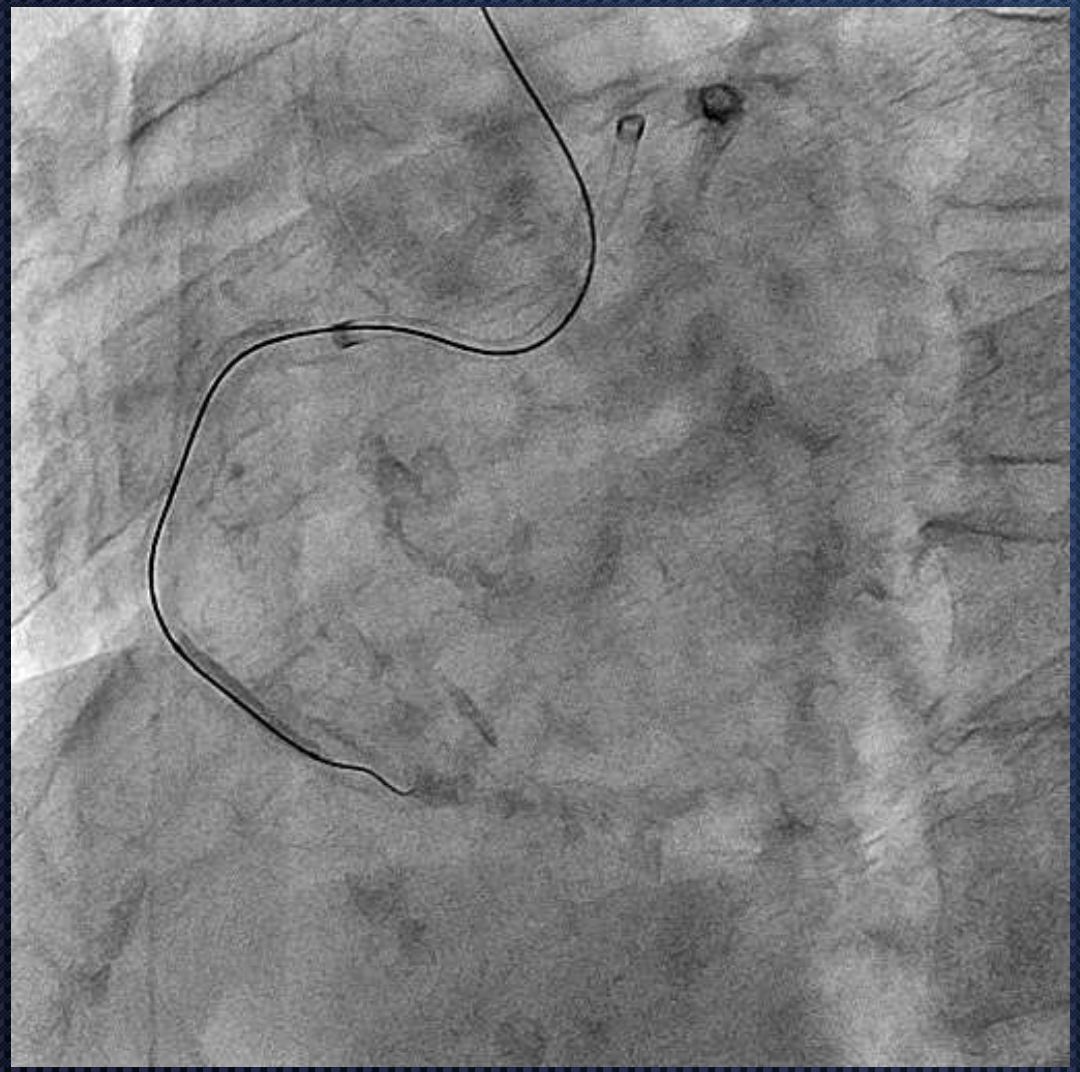




Case 1: Coronary CT (Plain)



Case 1: RCA CTO

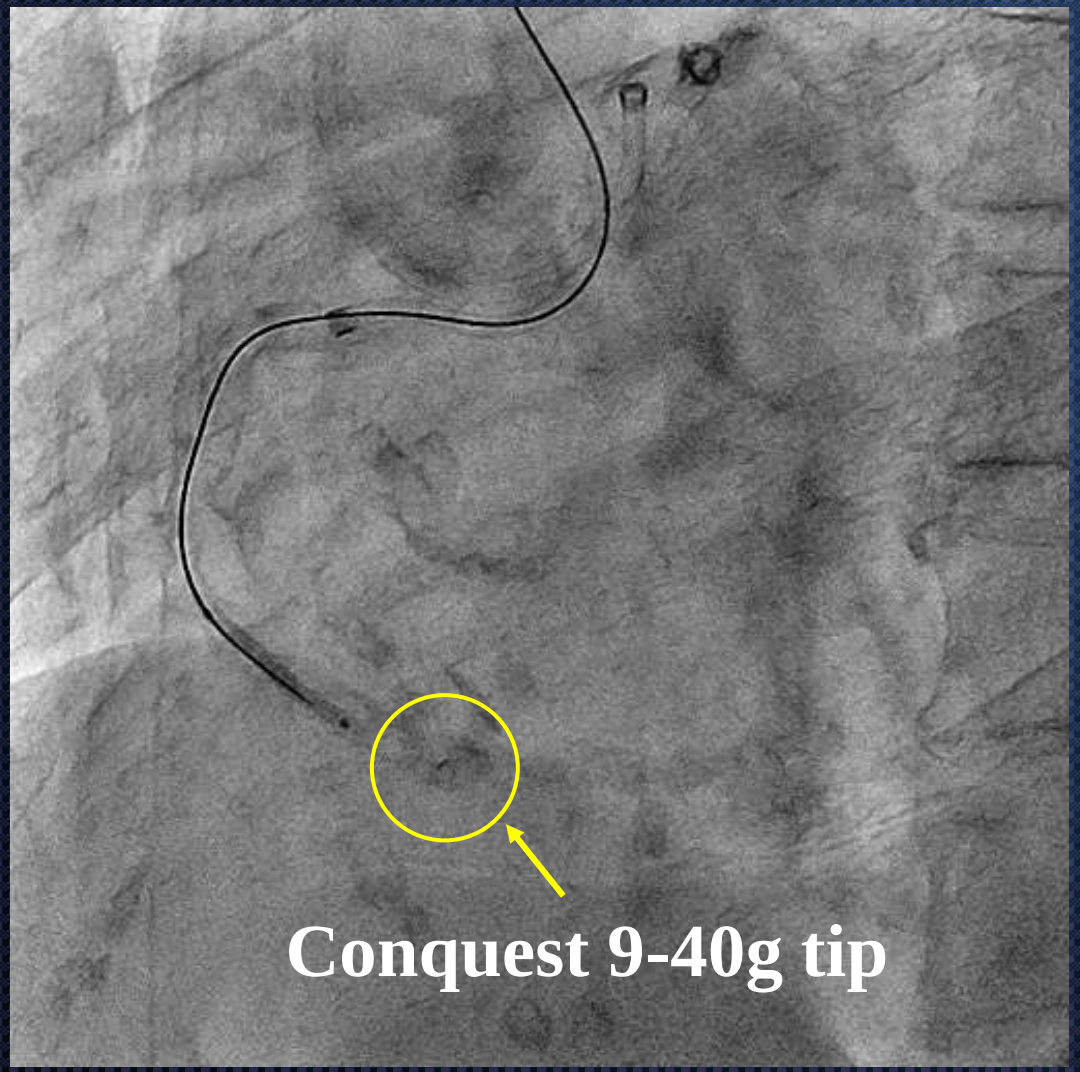


- ✓ 3.0mm OTW balloon for anchoring
- ✓ GAIA2→GAIA3→Conquest12g →Conquest 8-20g→Conquest 9-40g

Case 1: RCA CTO

- ✓ **Penetration of proximal cap was impossible.**

Case 1: RCA CTO



- ✓ Conquest 9-40g was fractured.
- ✓ Fortunately, rope coil was not stretched and remained around the wire tip.

Approach to calcified CTO

- Coronary calcification in CTO lesion is one of the independent predictors for the failure of CTO-PCI.
- After crossing GW, various techniques are needed to cross microcatheter, balloon, and stent.

Approach to calcified CTO

- **Difficulty of crossing devices (Microcatheter, balloon, stent, etc)**
  - ✓ **Getting stronger back-up force**
    - **Shape of guiding catheter**
    - **Balloon anchoring**
    - **Mother-child technique**
  - ✓ **Getting bigger space and changing bias**
    - **Two wires**
    - **Rotational atherectomy**
    - **Scoring balloon (Cutting, NSE, AngioSculpt)**

Approach to calcified CTO

- Difficulty of crossing devices (Microcatheter, balloon, stent, etc)
  - ✓ Getting stronger back-up force
    - Shape of guiding catheter
    - Ballo
    - Moth

LCA: XB, SPB, EBU
RCA: AL, SAL
7Fr or 8Fr is better to get stronger back-up

  - ✓ Getting bigger space and changing bias
    - Two wires
    - Rotational atherectomy
    - Scoring balloon (Cutting, NSE, AngioSculpt)

Approach to calcified CTO

- **Difficulty of crossing devices (Microcatheter, balloon, stent, etc)**
  - ✓ **Getting stronger back-up force**
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    - **Balloon anchoring**
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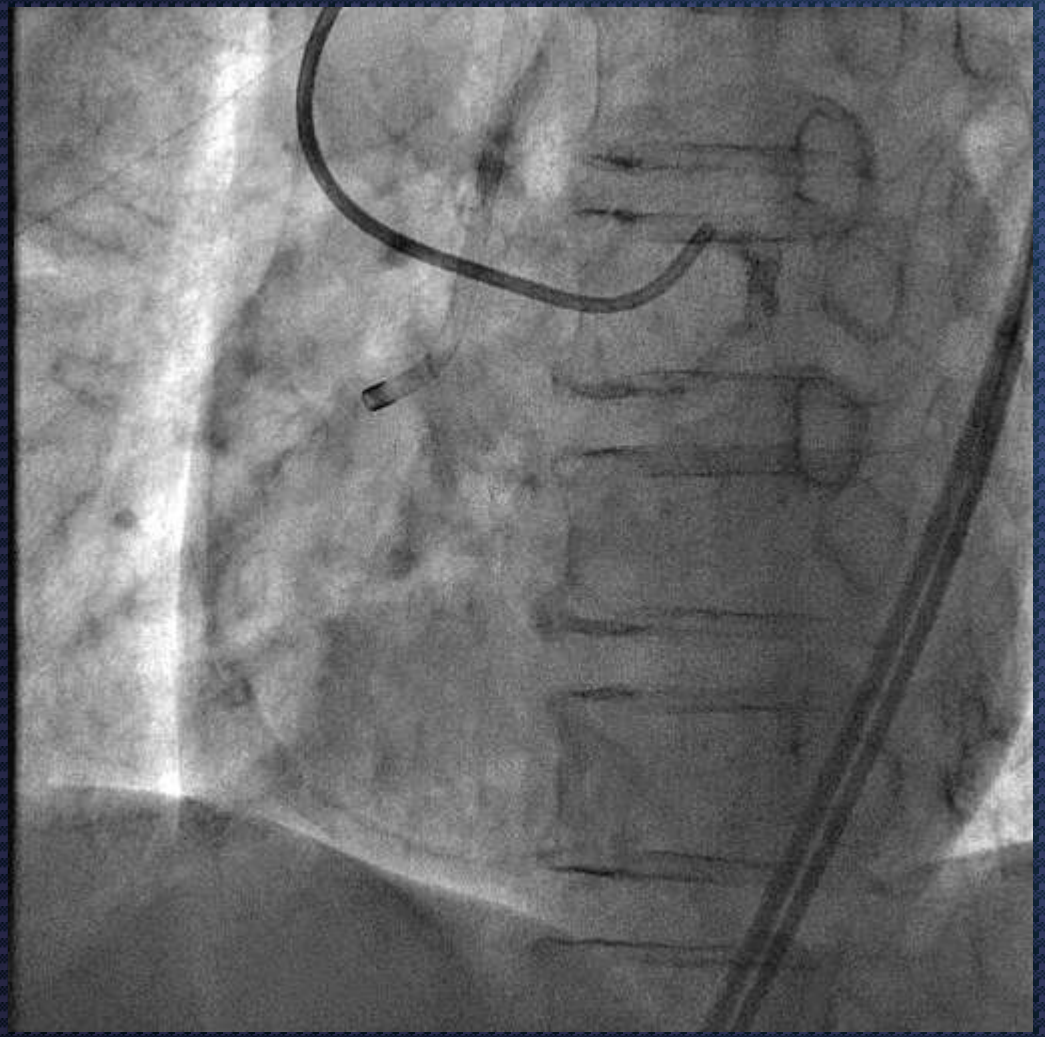
Case 3: RCA CTO (Balloon anchoring, two wires, Scoring balloon)

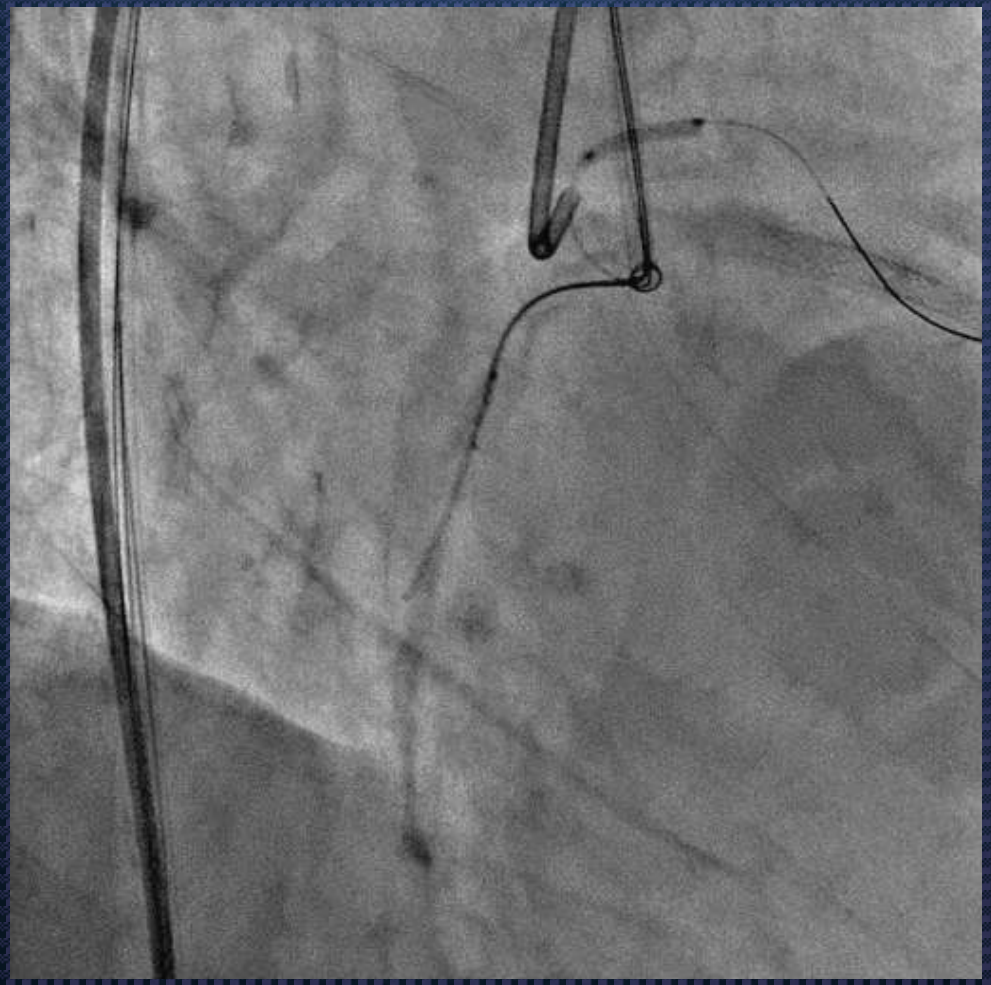


LAO

RAO CAU

Case 3: RCA CTO (Balloon anchoring, two wires, Scoring balloon)

GAIA Next 3



RAO CAU

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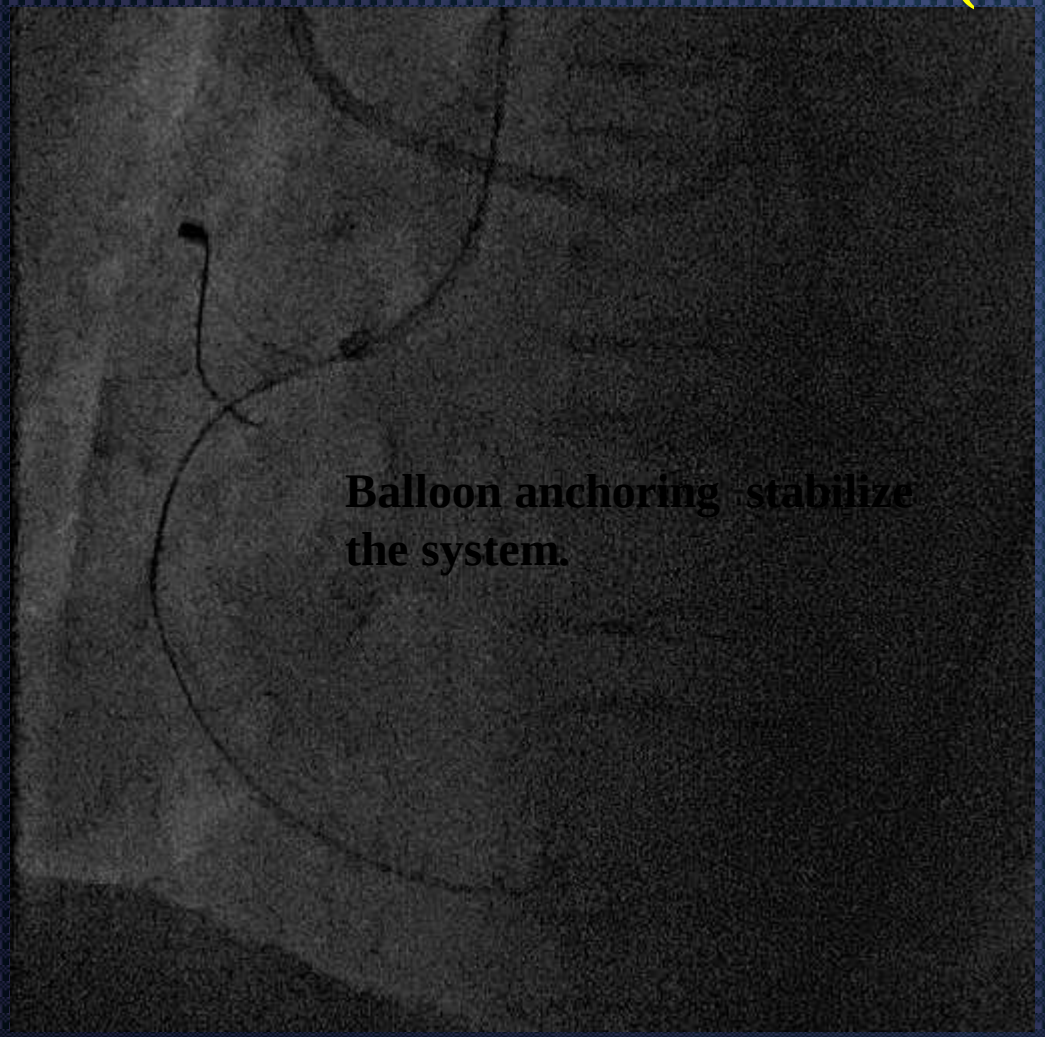
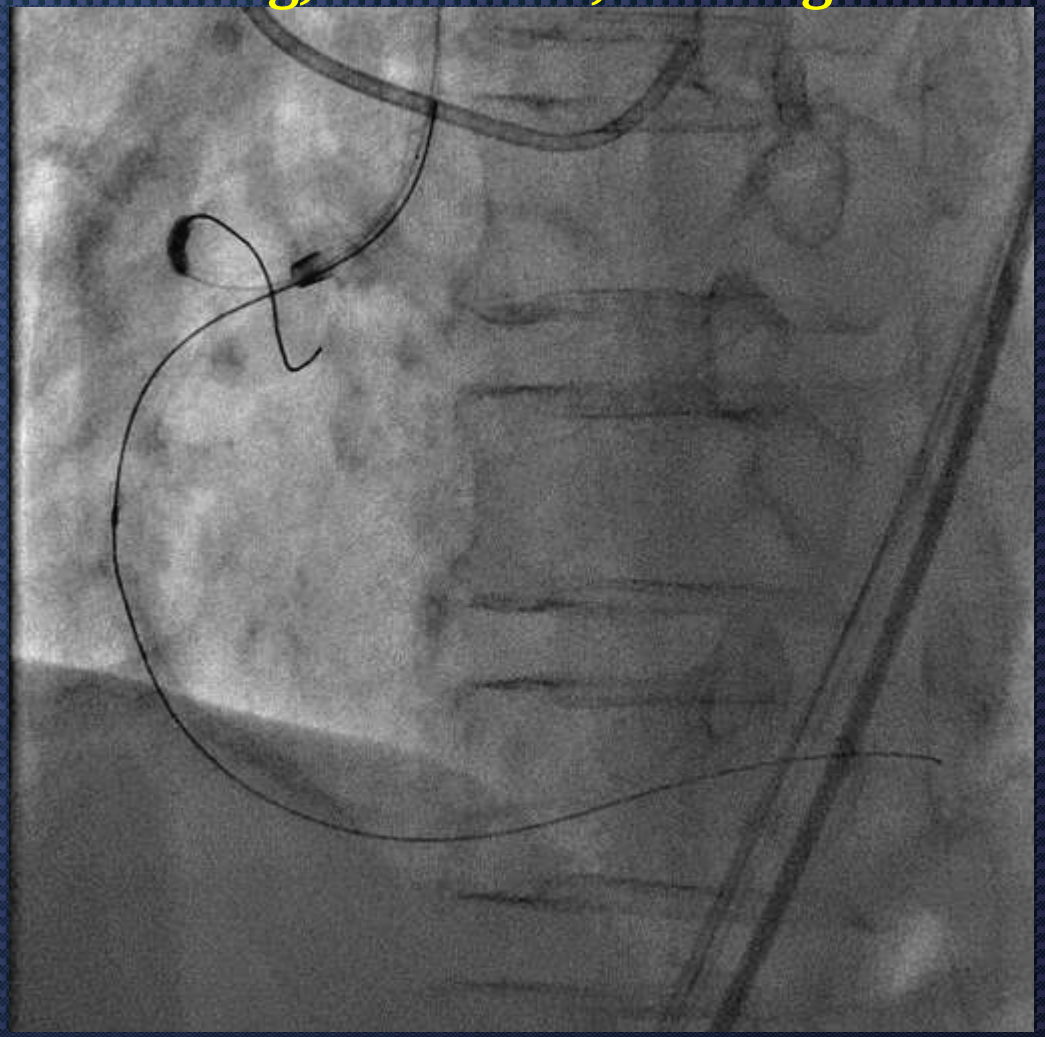


CARAVEL uncross



1.25 balloon uncross

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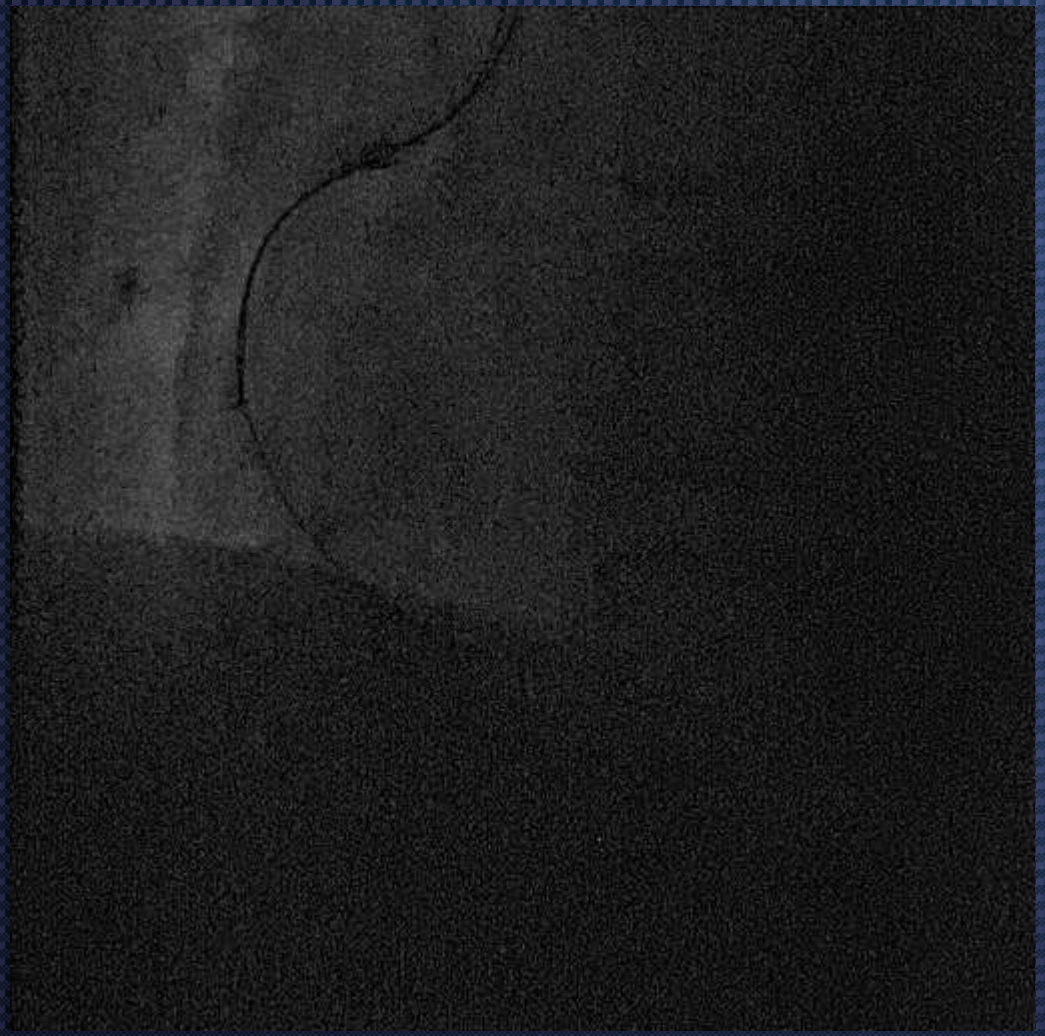
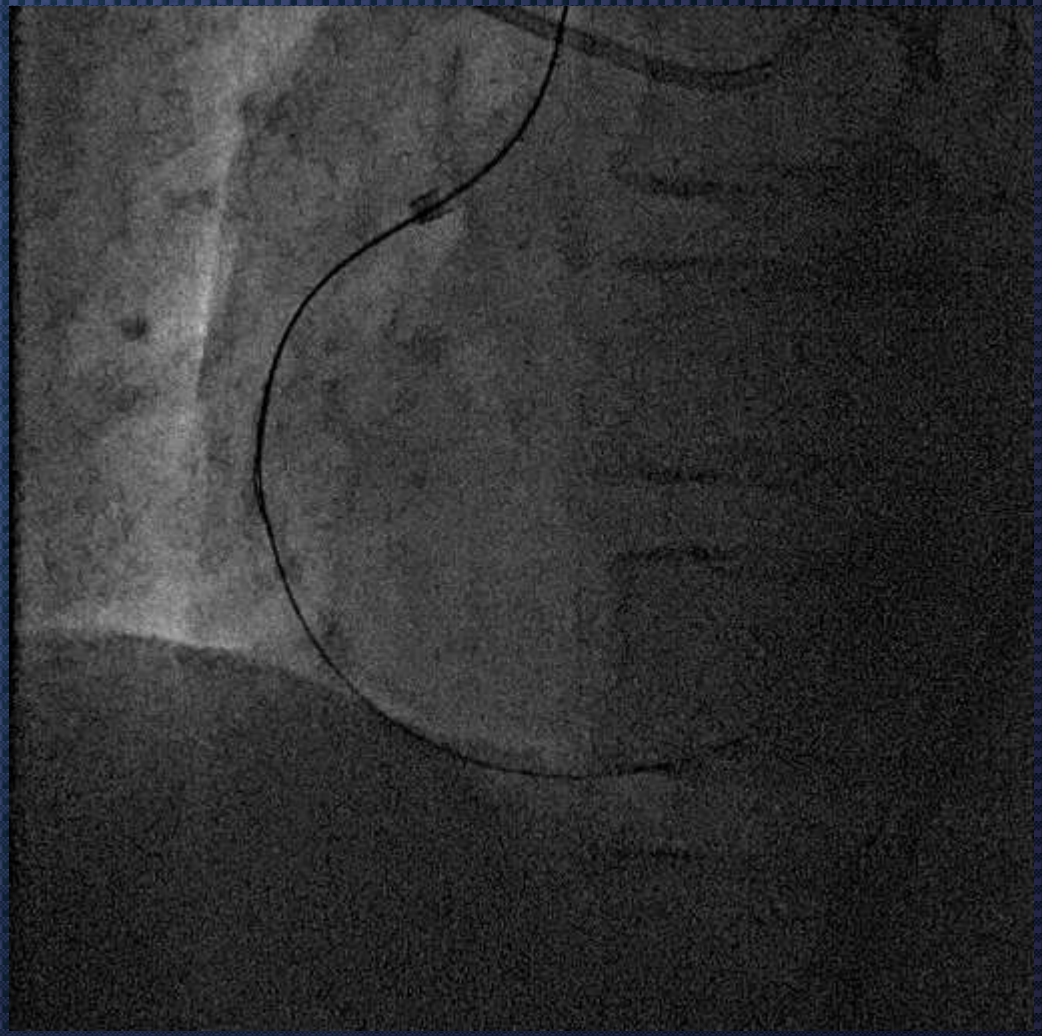
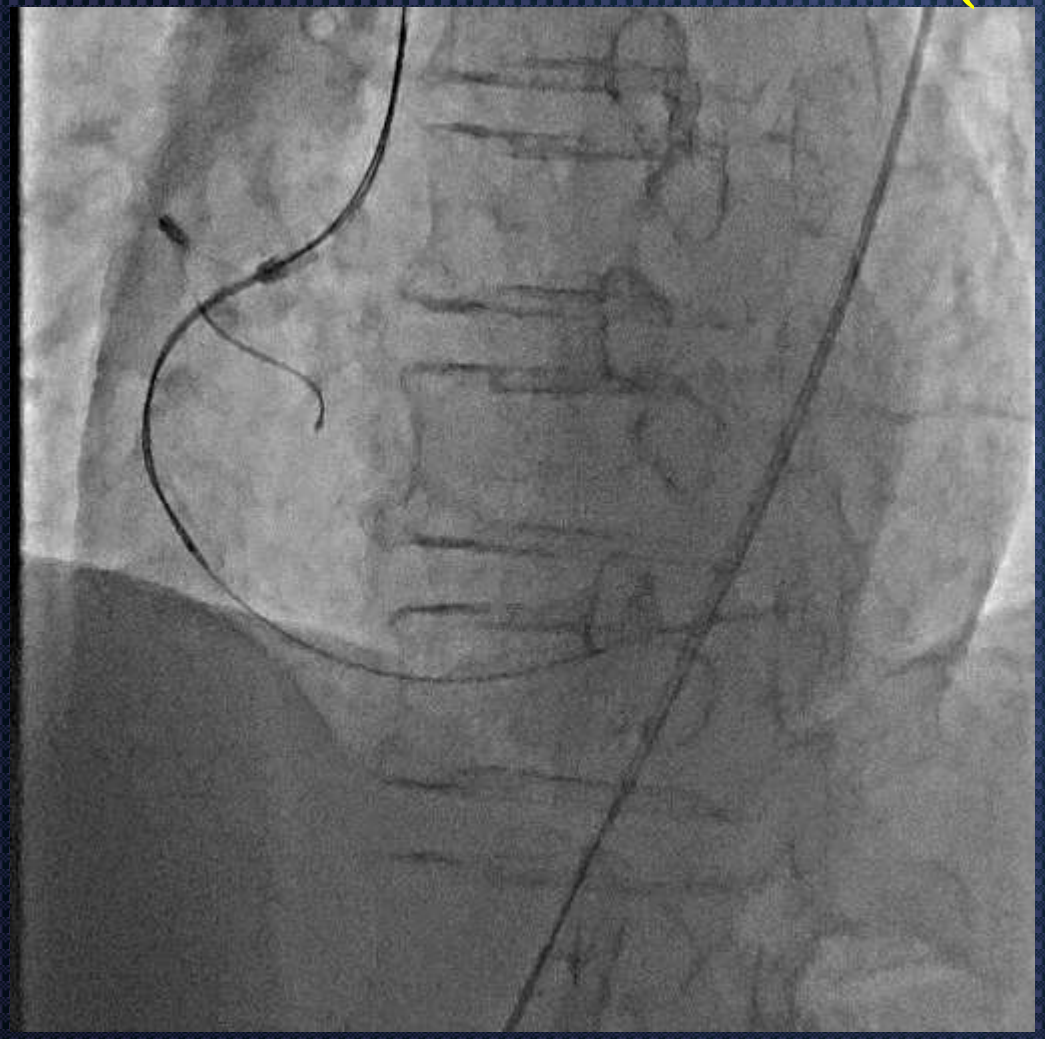


GAIA Next2

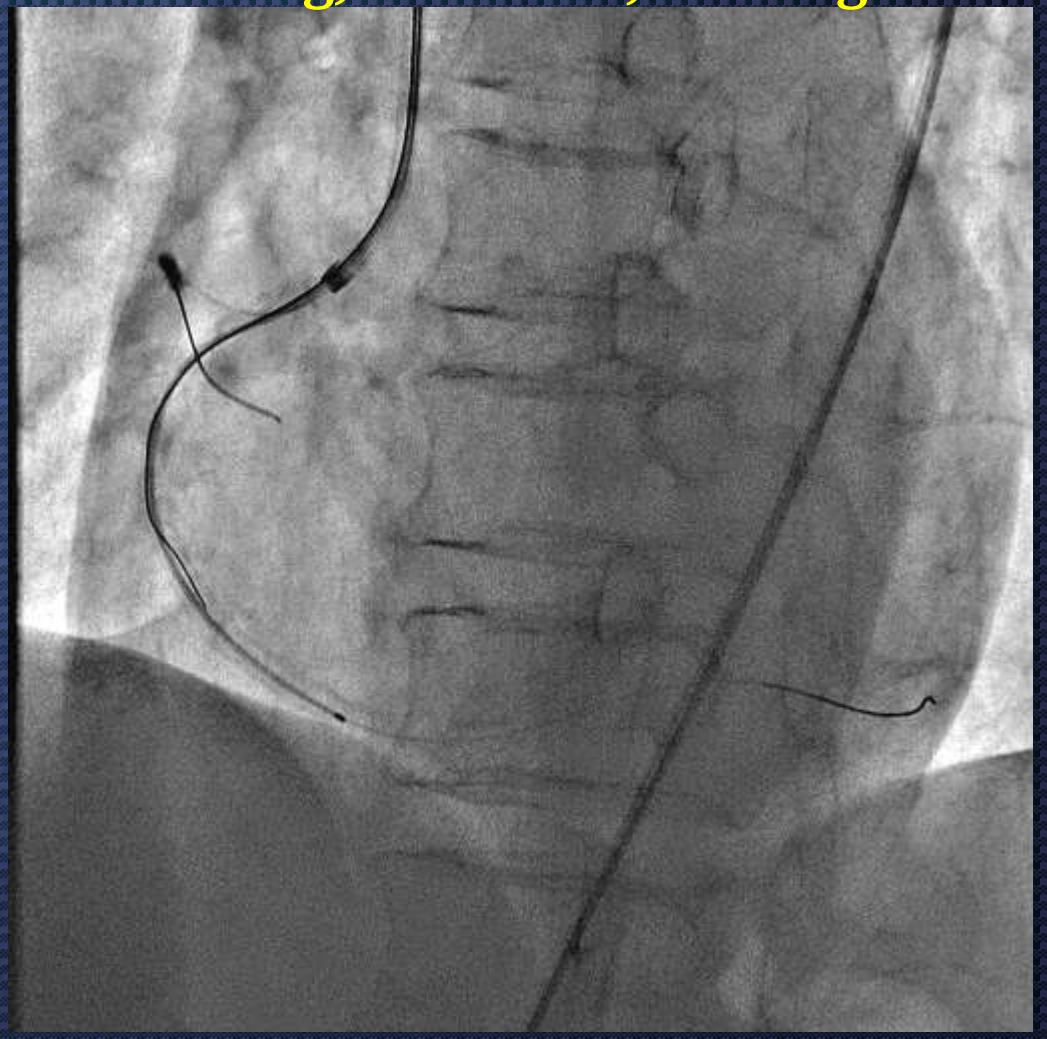


Conquest 12g

Case 3: RCA CTO (Balloon anchoring, two wires, Scoring balloon)

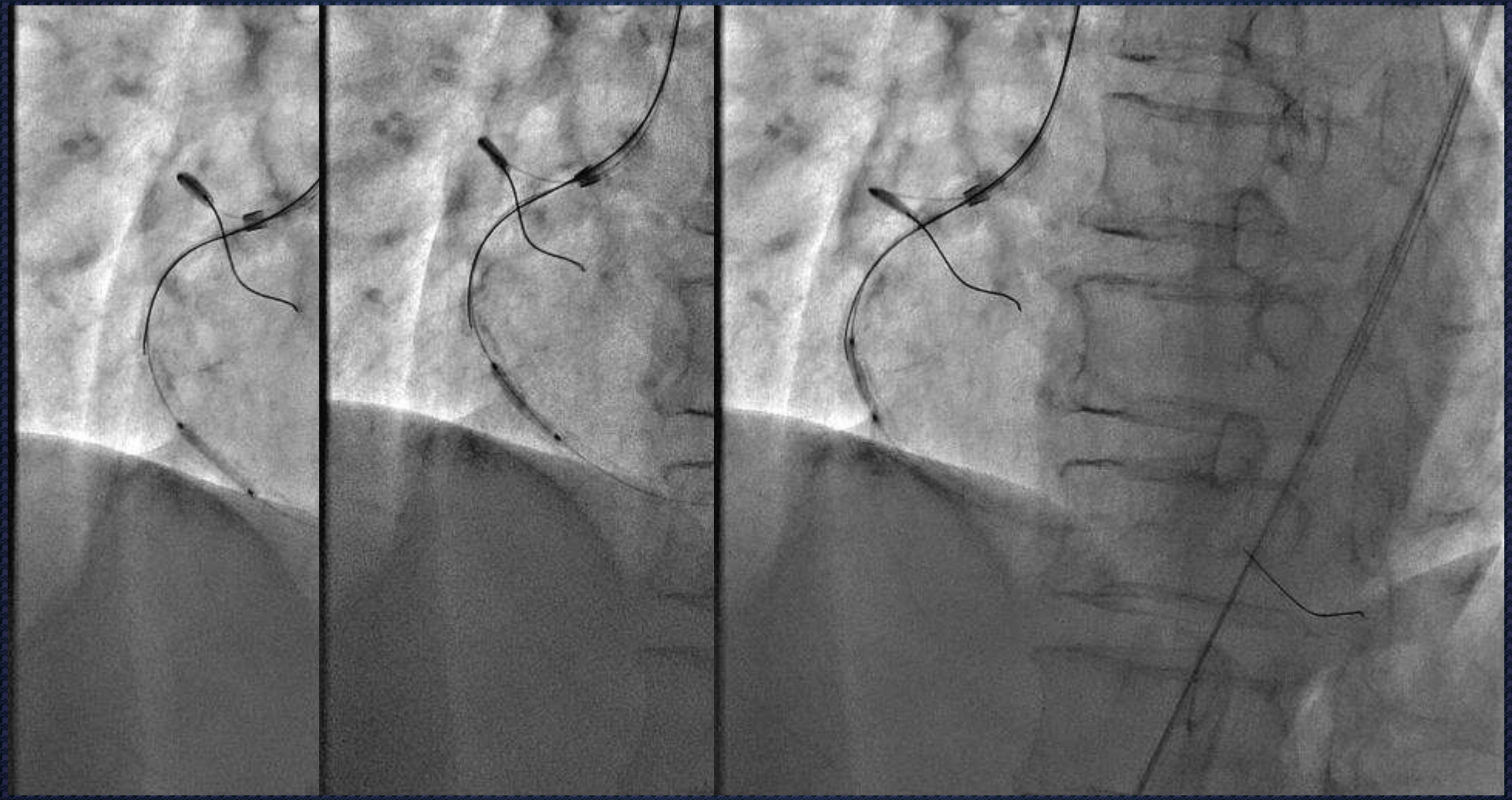


ZIZAI（FineCross）



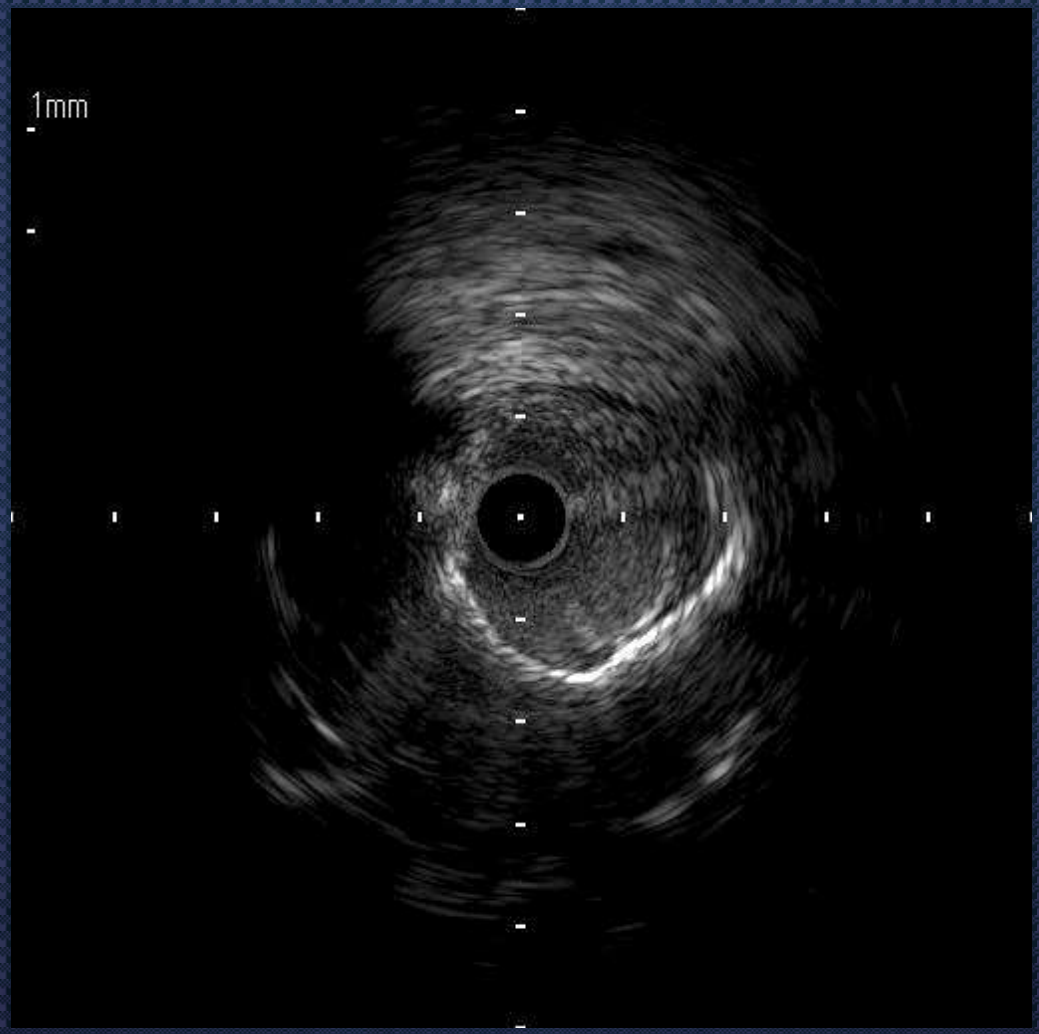
Tornus pro

Case 3: RCA CTO (Balloon anchoring, two wires, Scoring balloon)



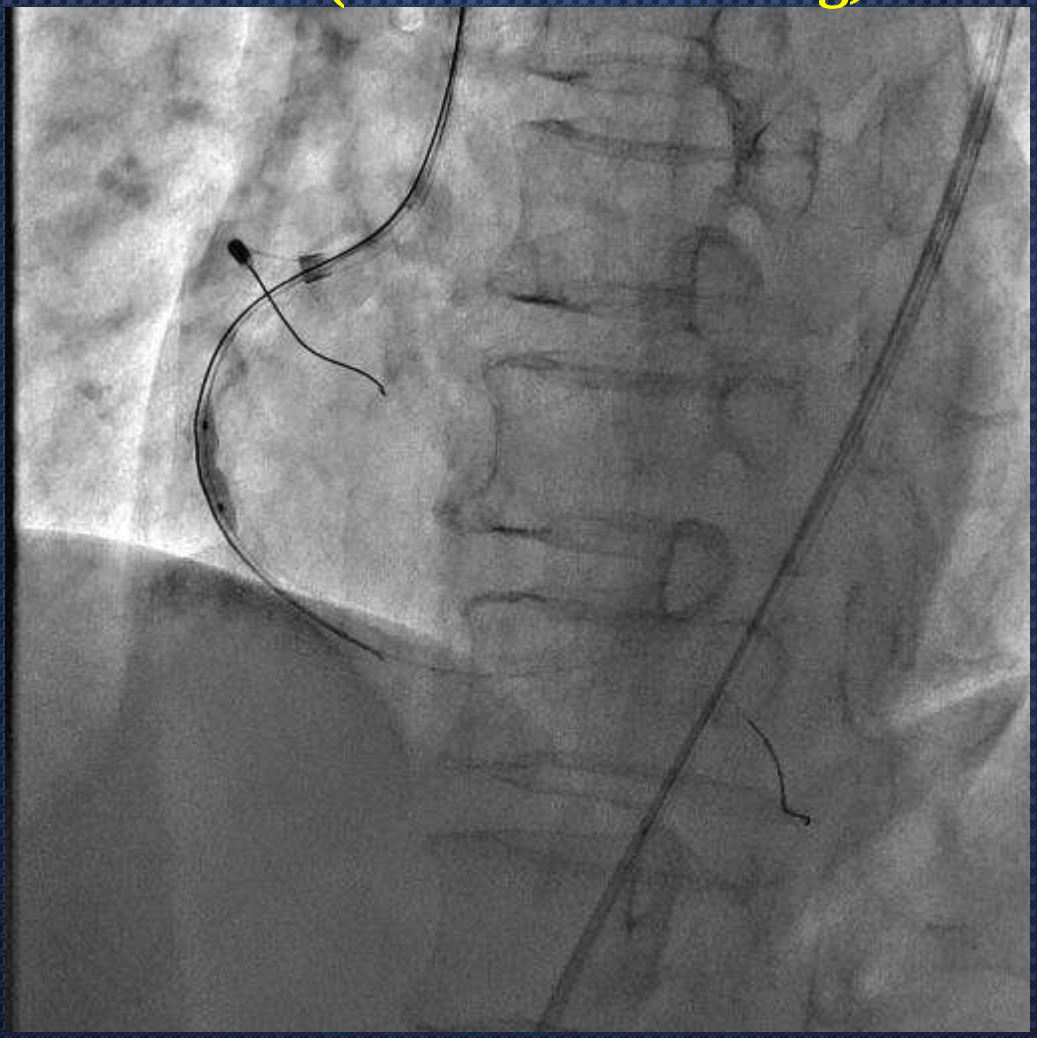
2.0mm POBA

Case 3: RCA CTO (Balloon anchoring, two wires, Scoring balloon)



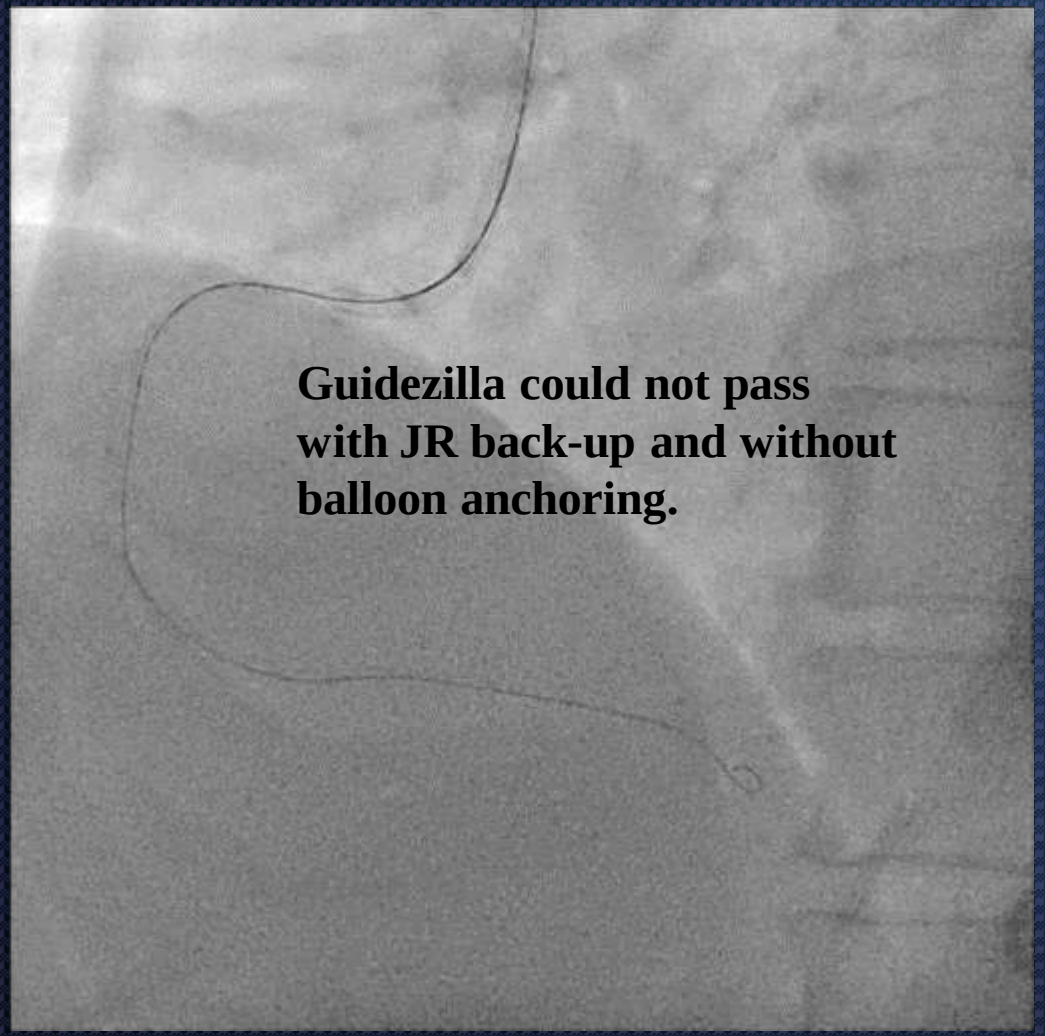
IVUS

Case 3: RCA CTO (Balloon anchoring, two wires, Scoring balloon)

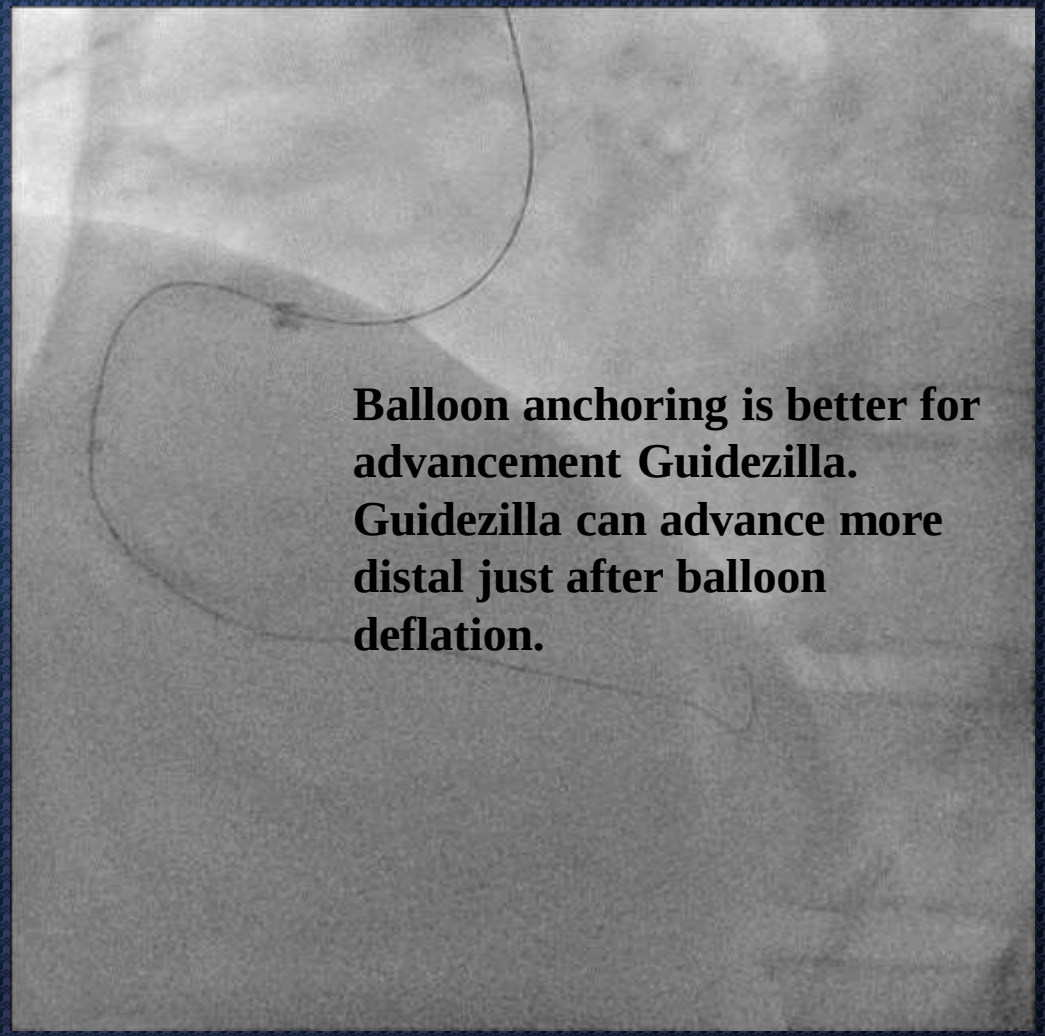


2.5mm NC balloon 20atm

Mother-child technique

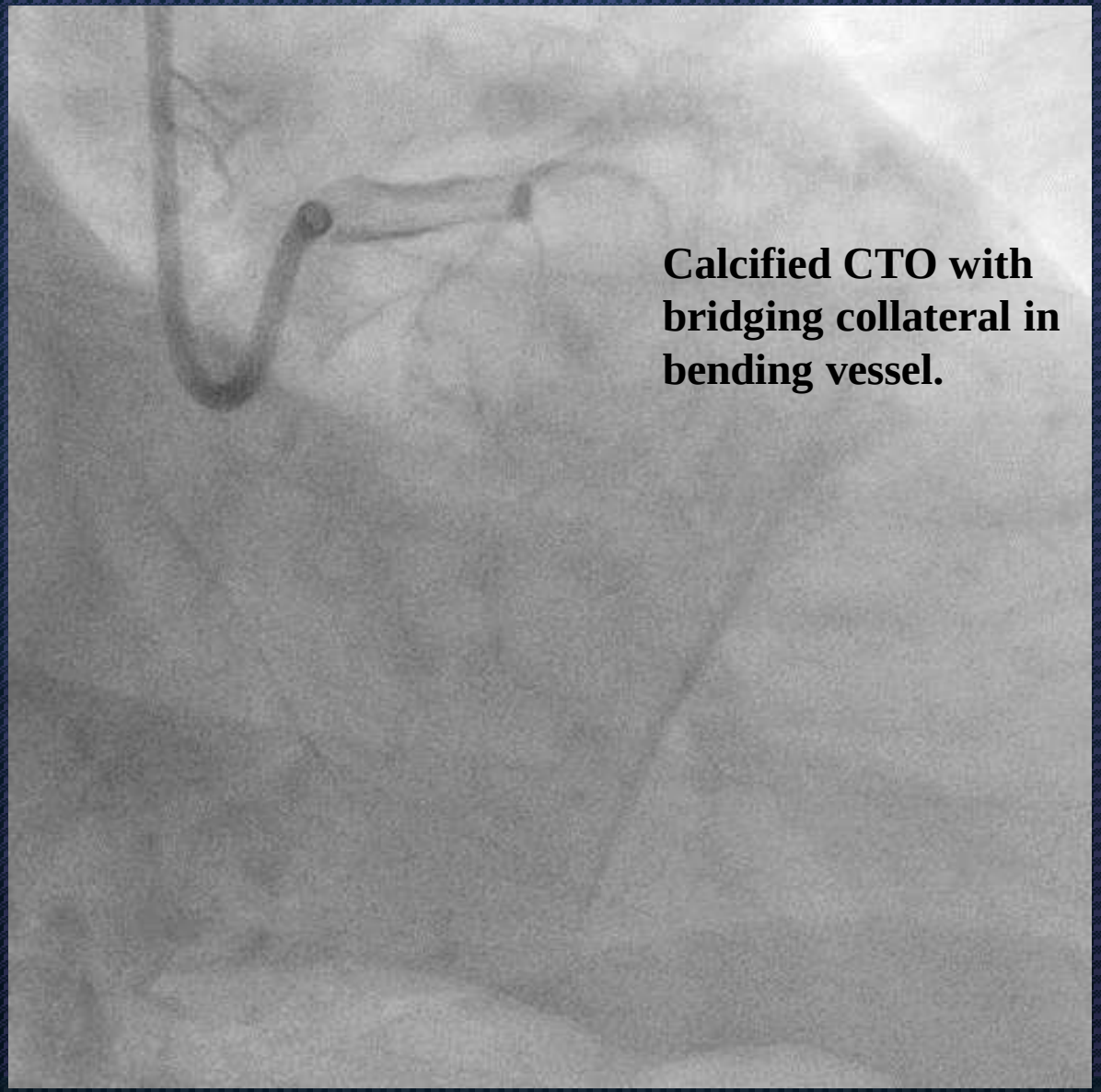


Guidezilla could not pass with JR back-up and without balloon anchoring.



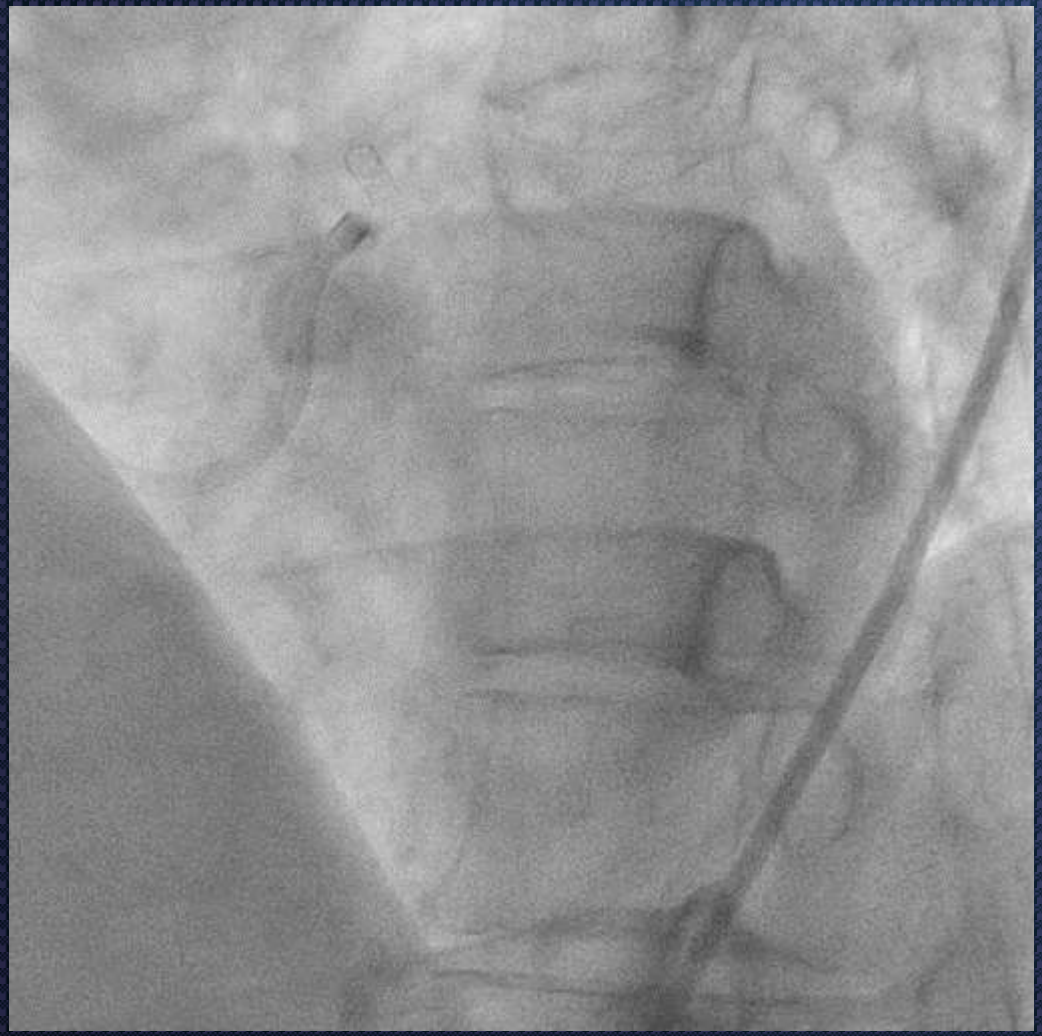
Balloon anchoring is better for advancement Guidezilla. Guidezilla can advance more distal just after balloon deflation.

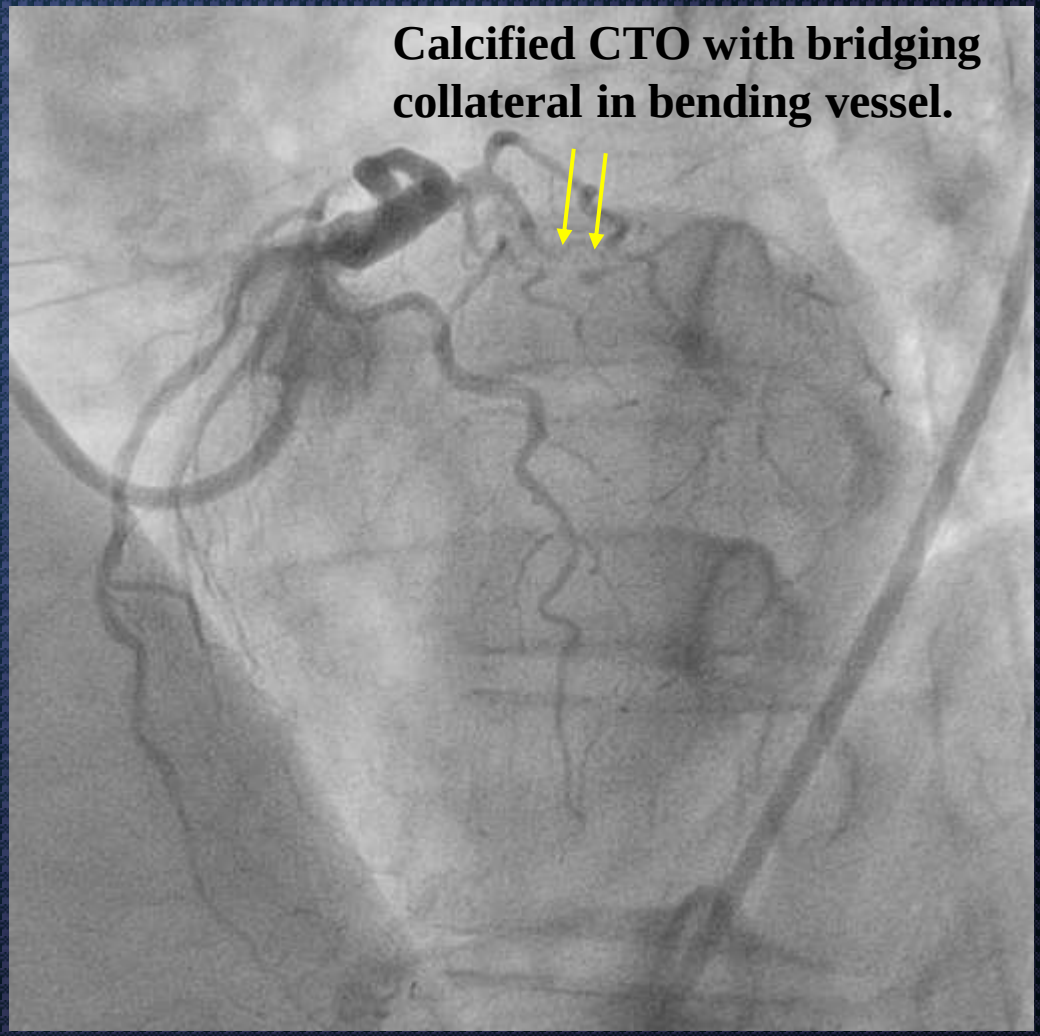
Case 4: LCX CTO (Rotablator, mother-child techniques)



Calcified CTO with bridging collateral in bending vessel.

Case 4: LCX CTO (Rotablator, mother-child techniques)





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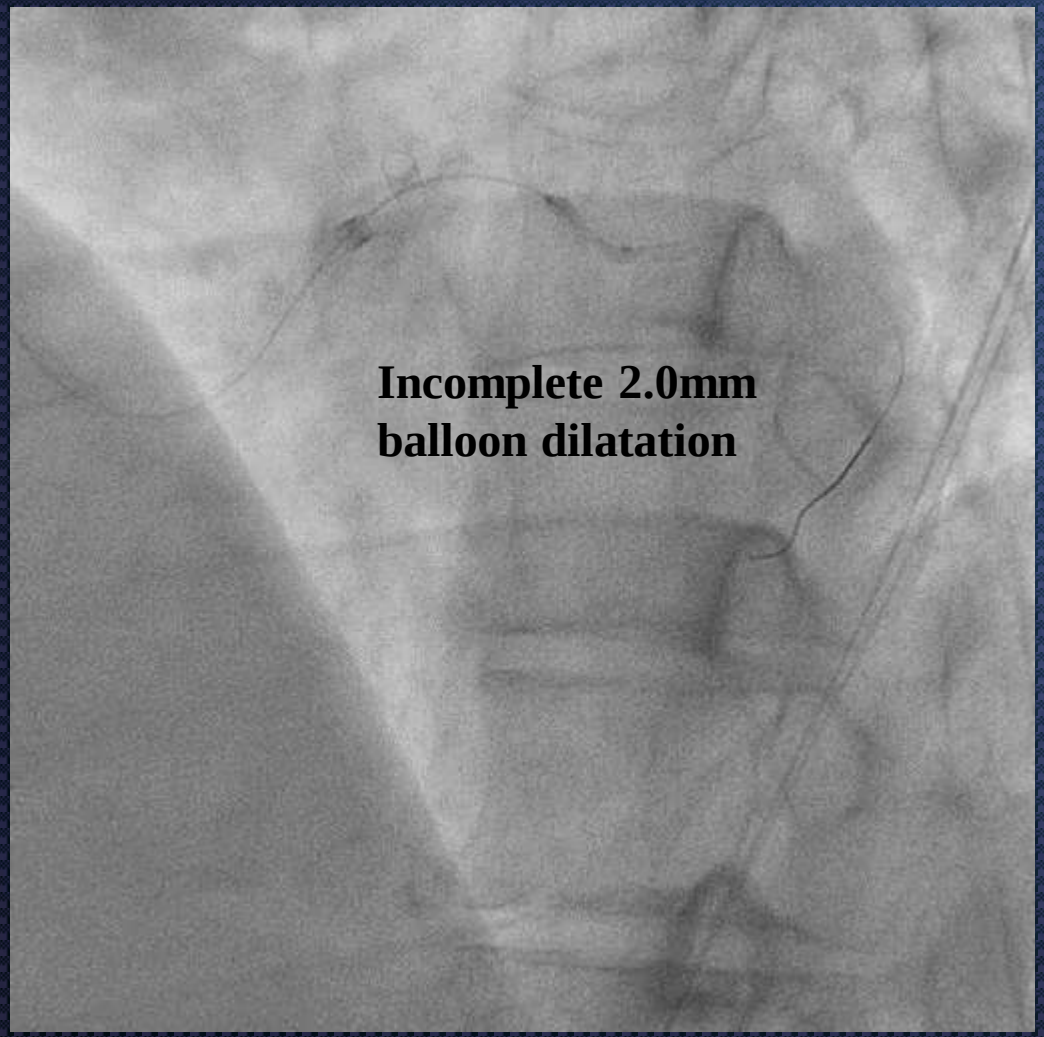

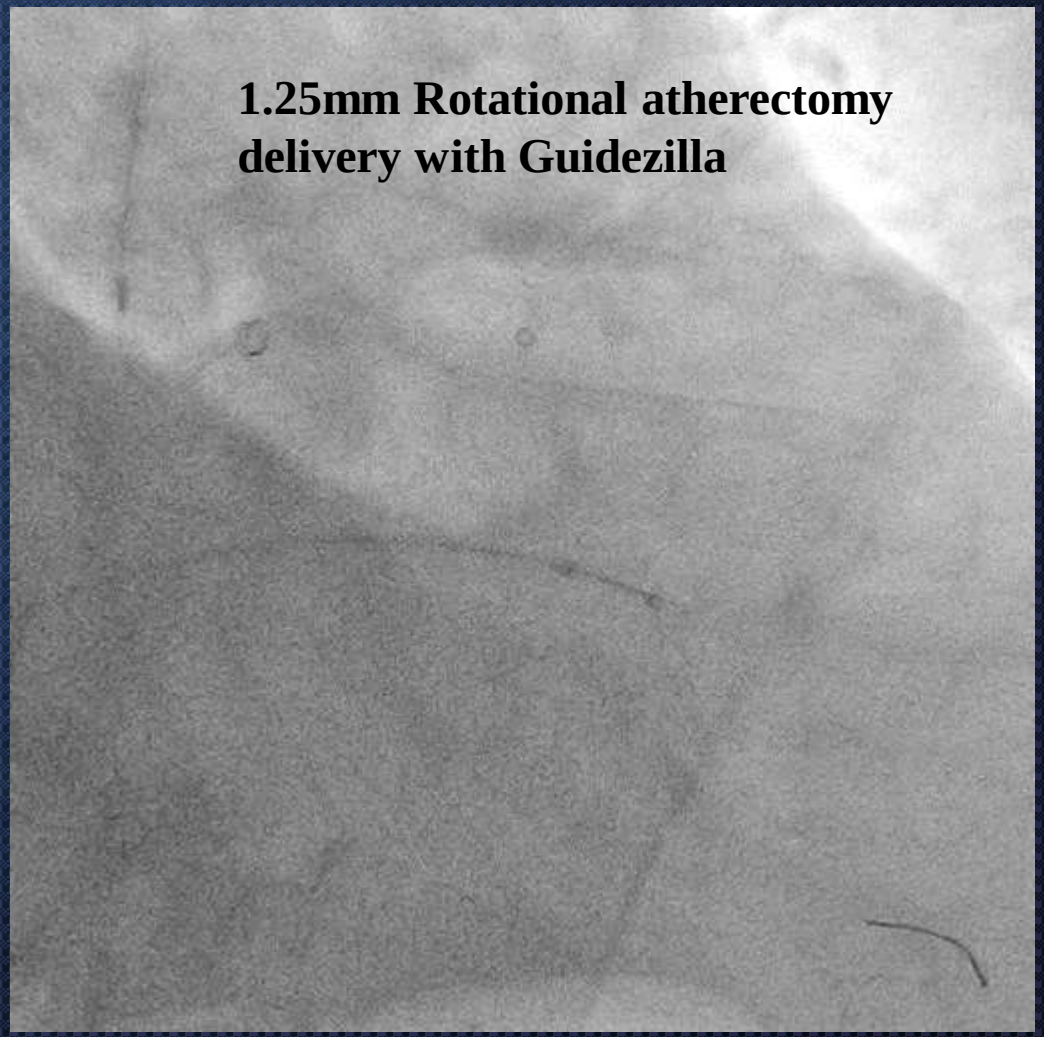

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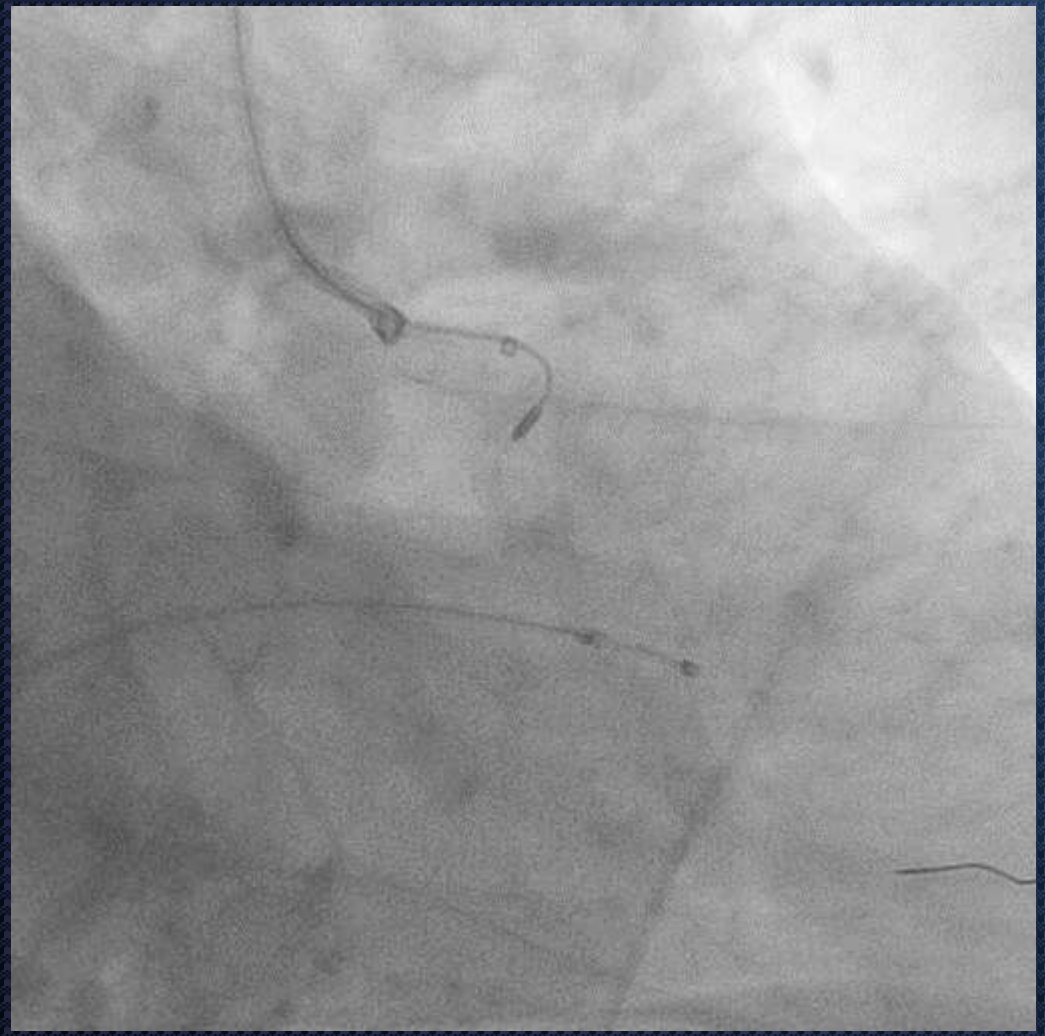

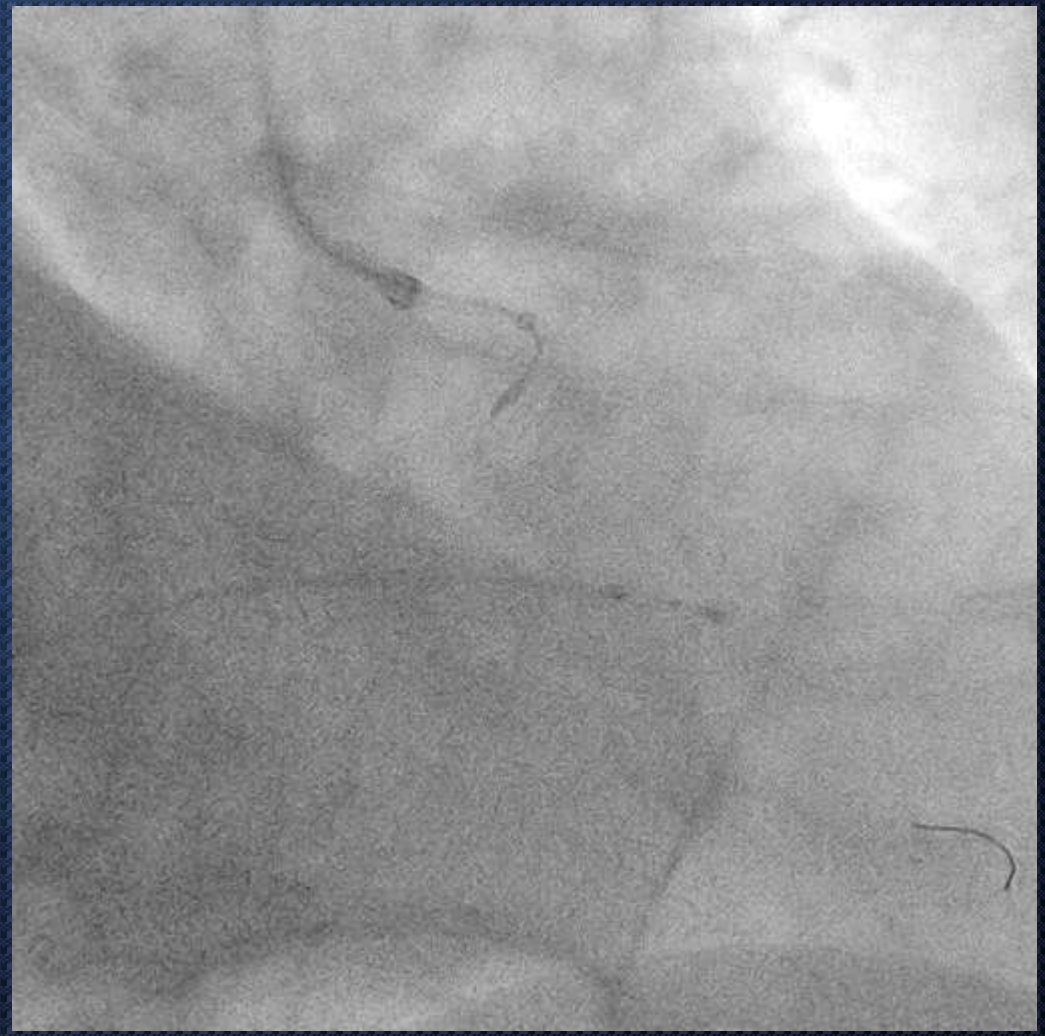

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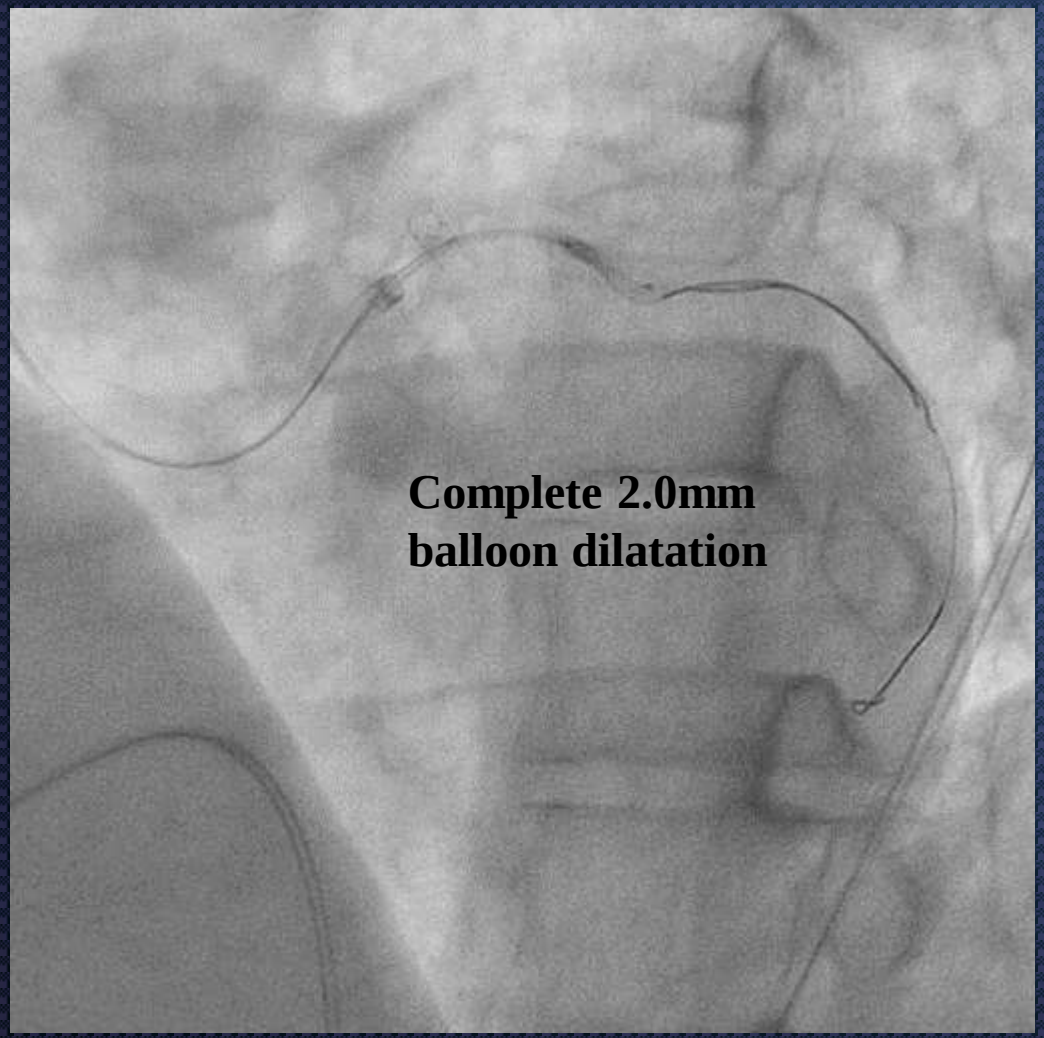
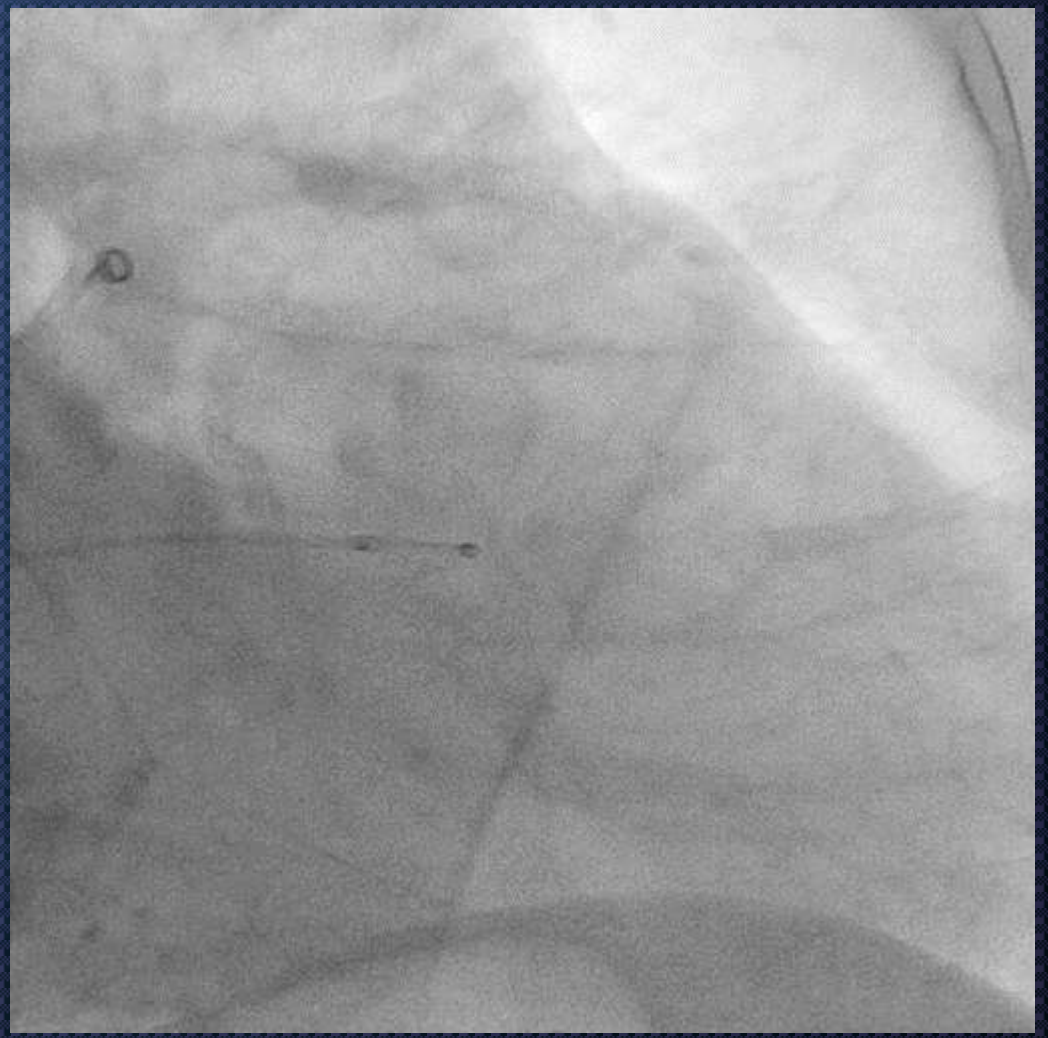
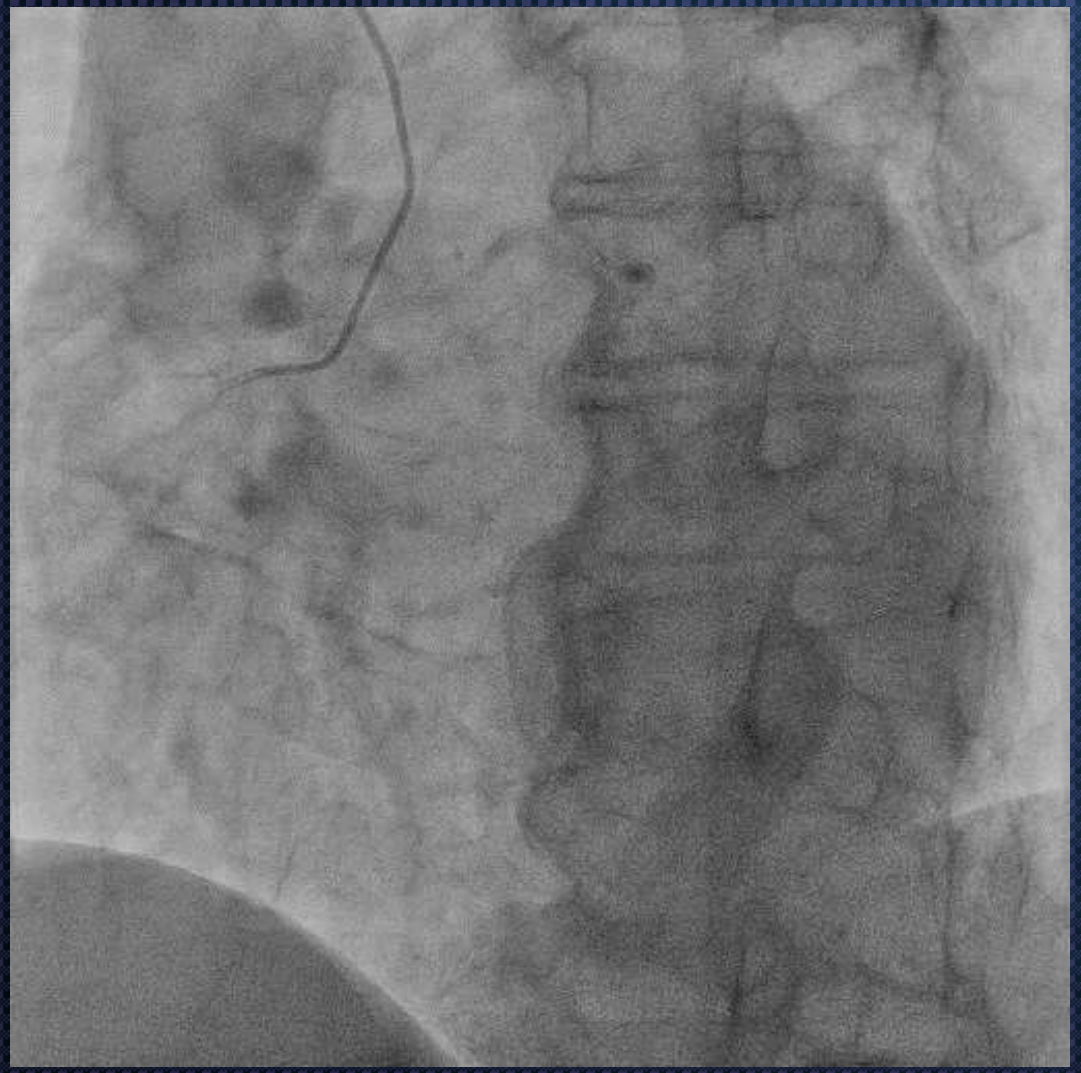
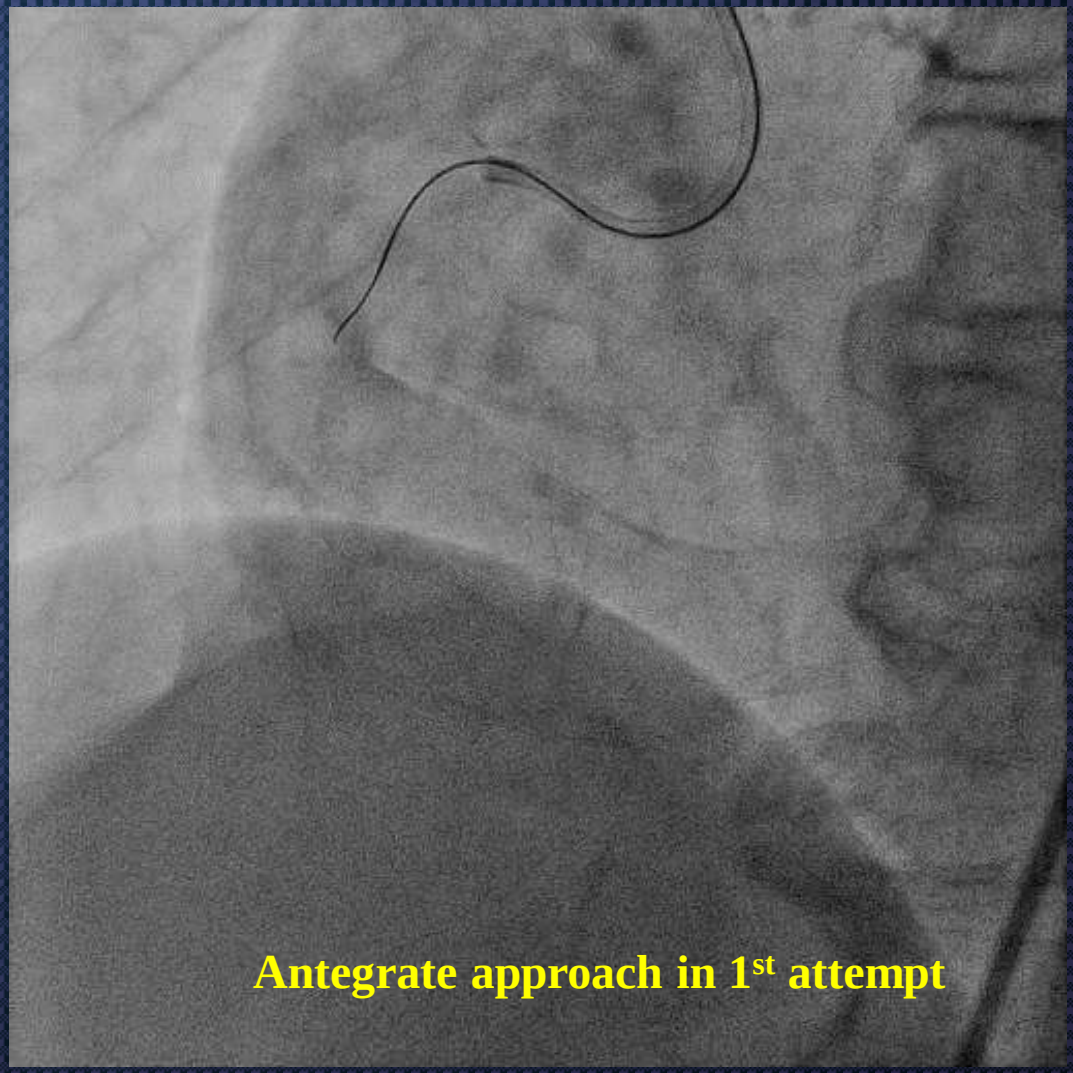




Case 5: RCA CTO (Two wire, mother-child techniques)





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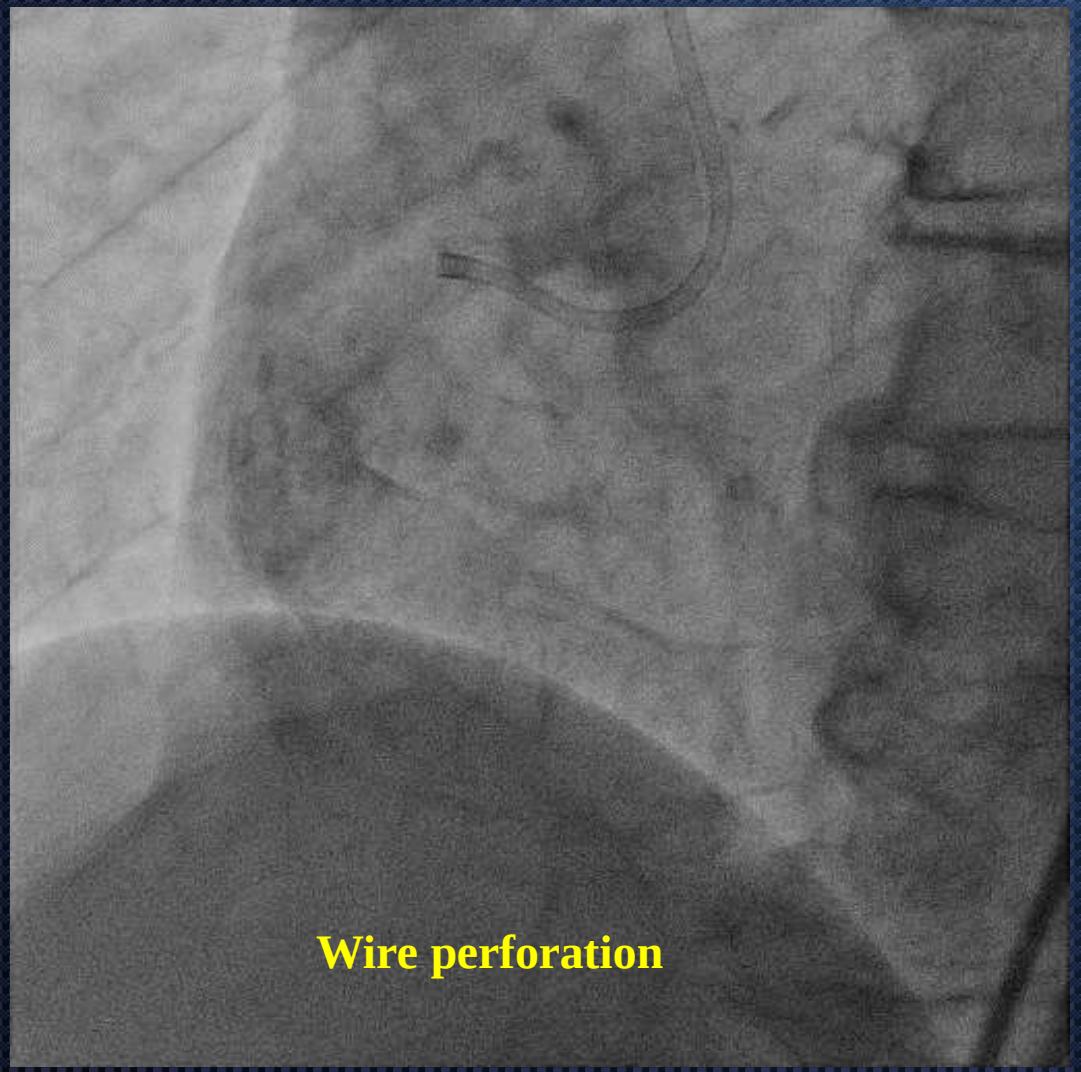
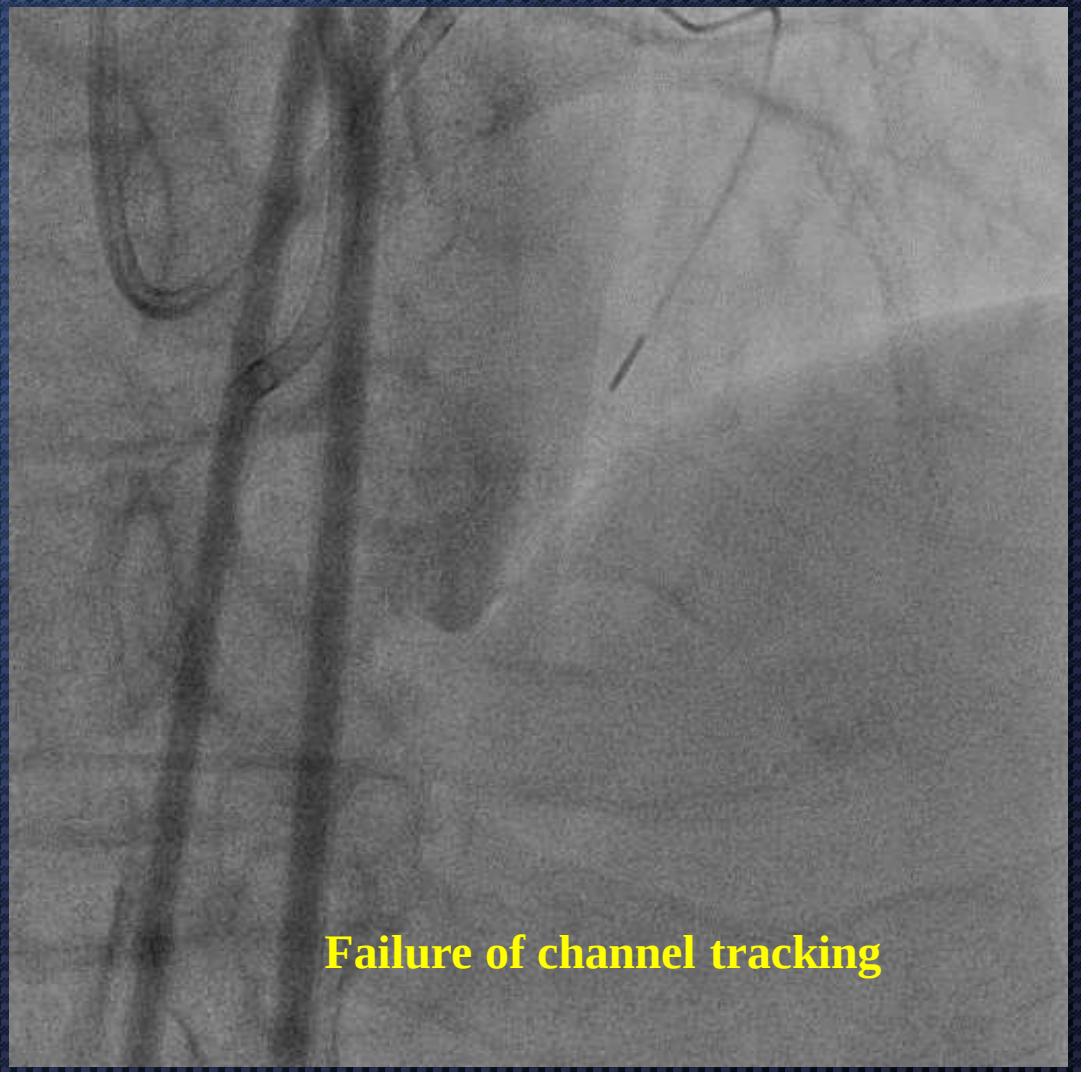
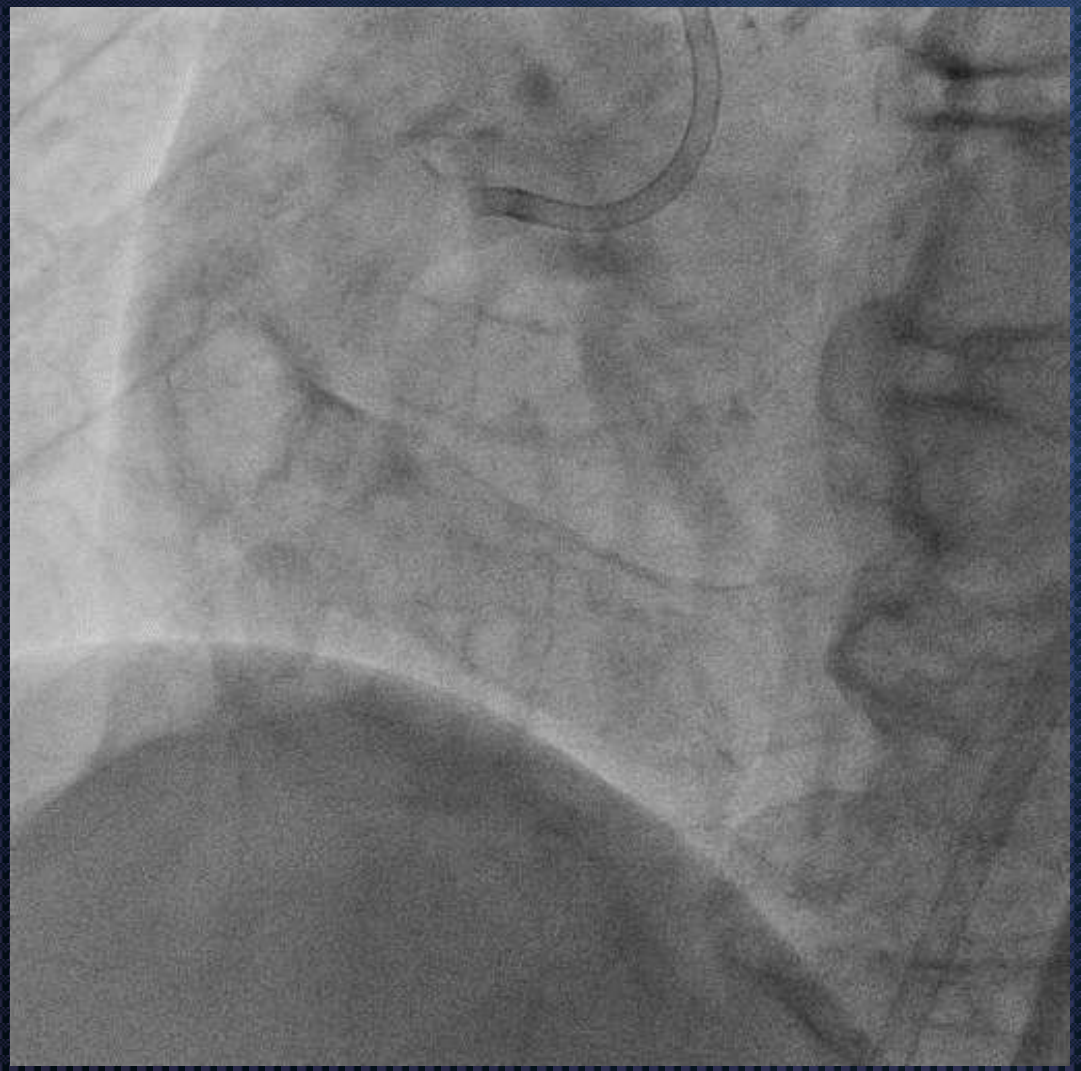


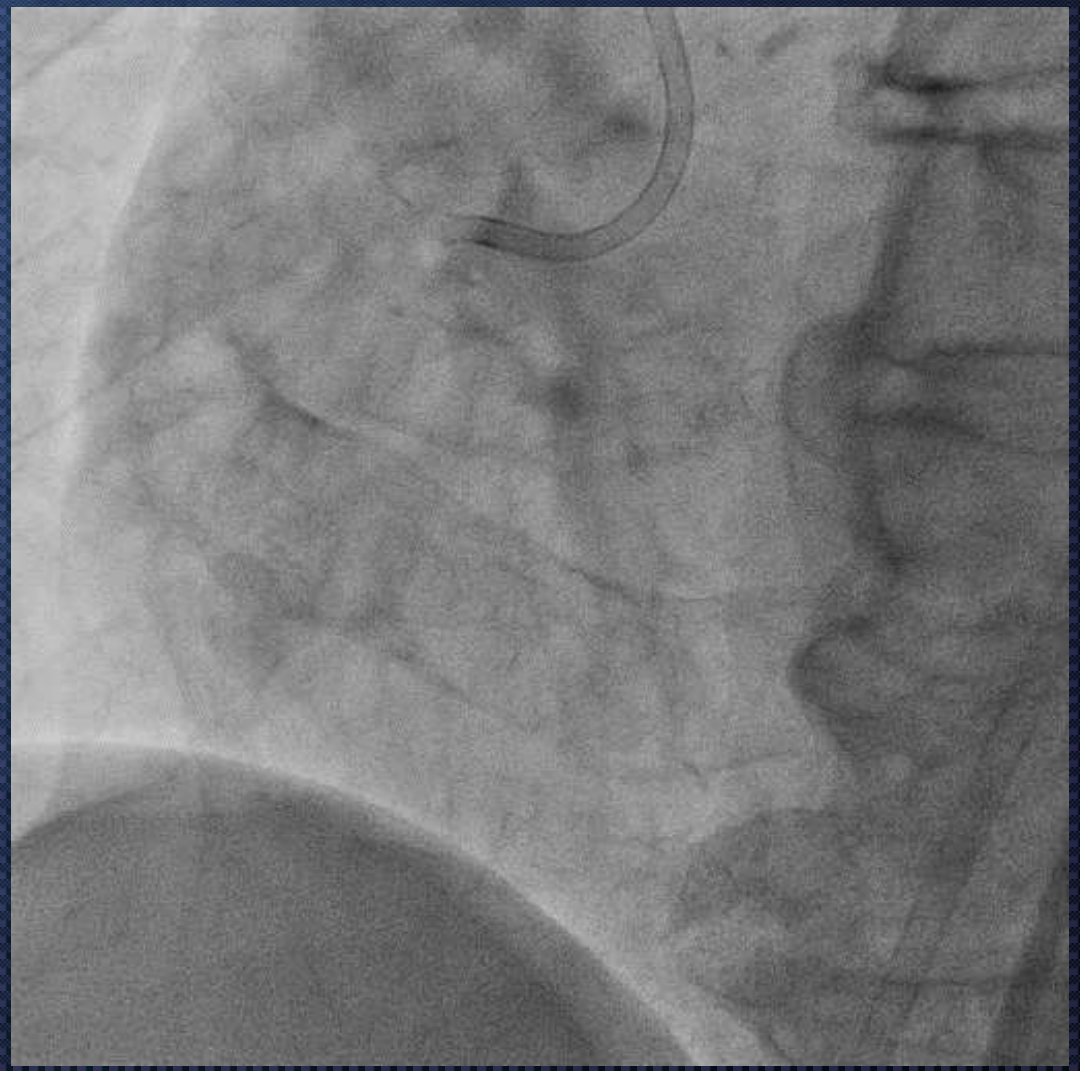
Wire perforation



Failure of channel tracking

Case 5: RCA CTO (Two wire, mother-child techniques)





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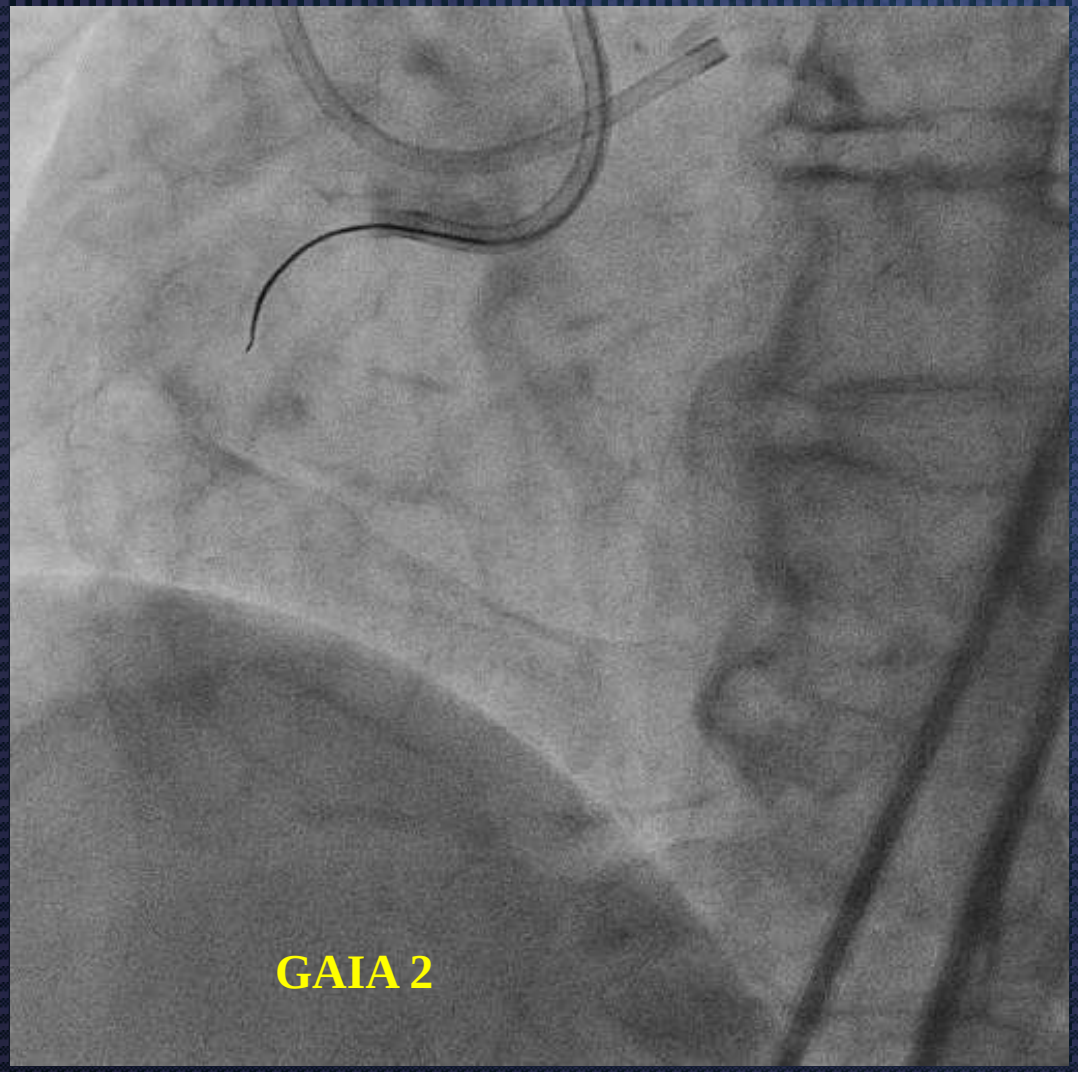

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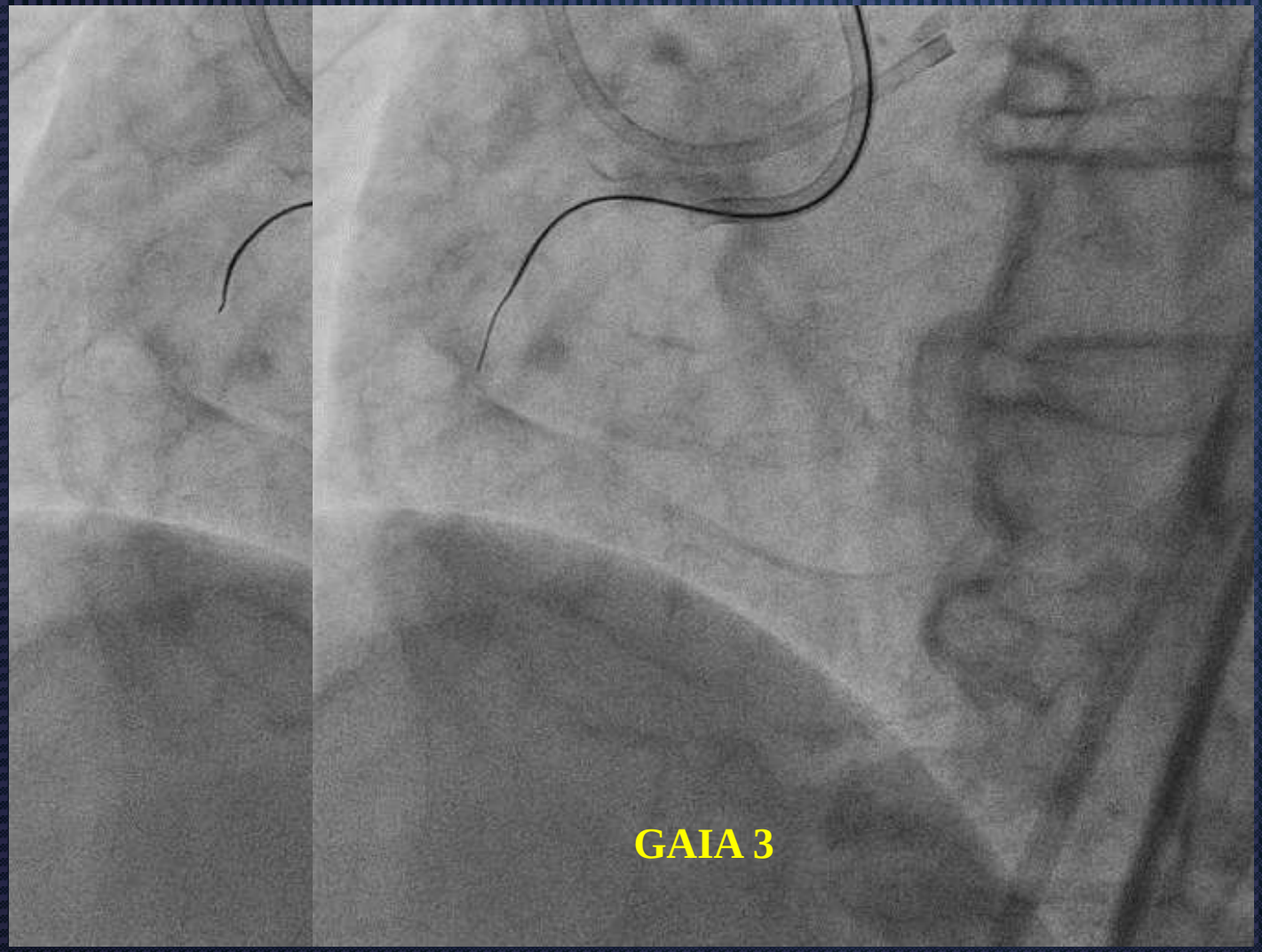

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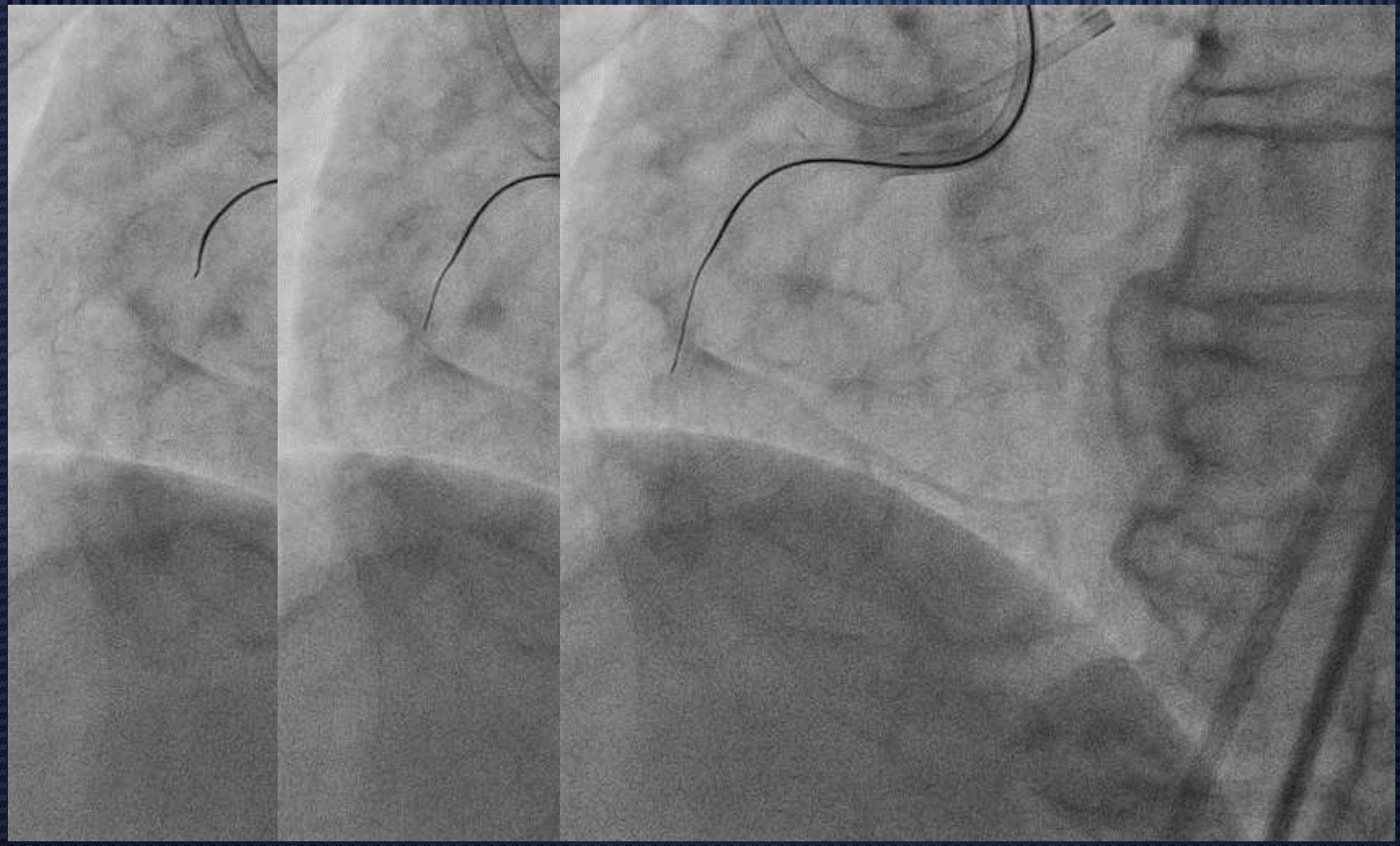

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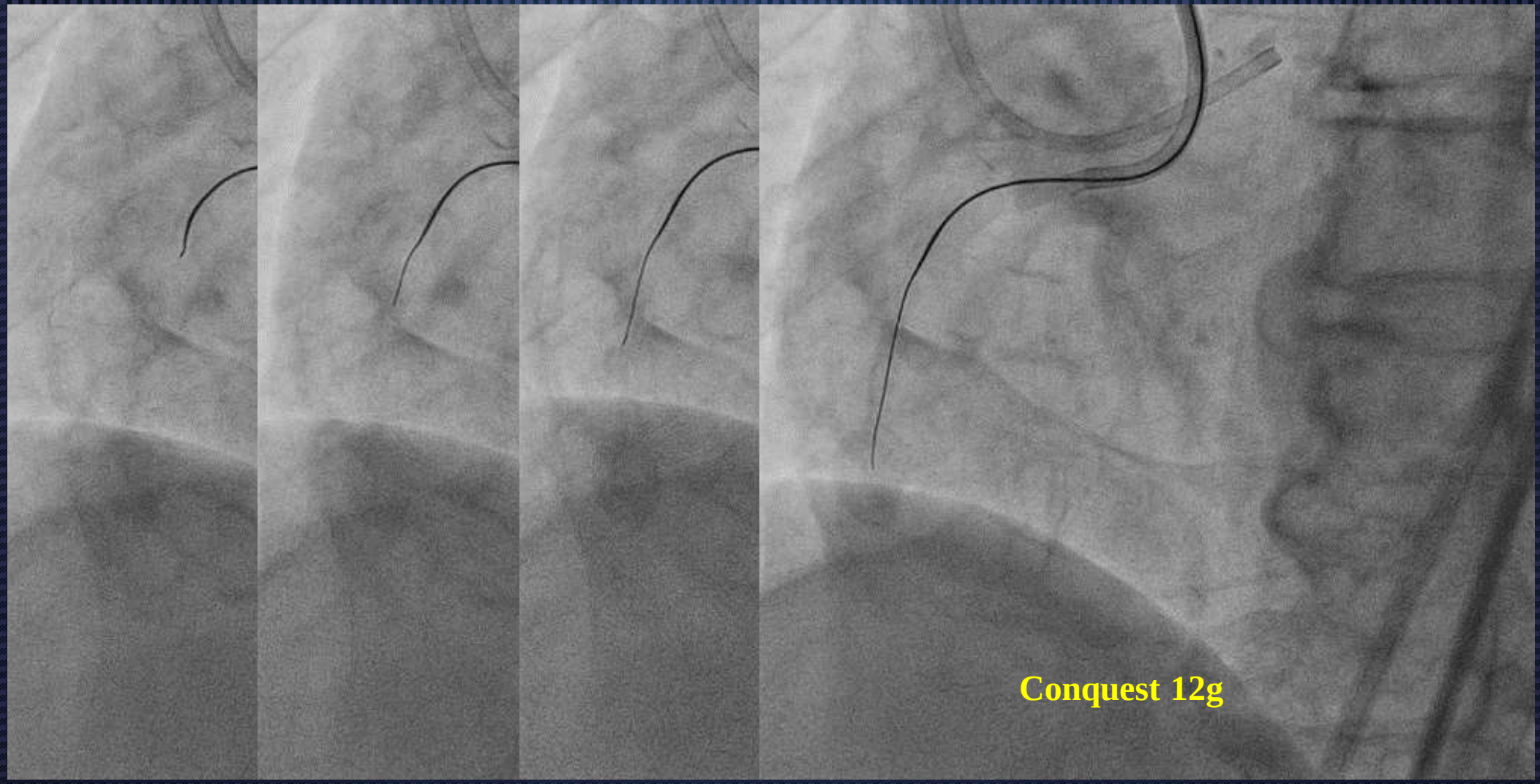

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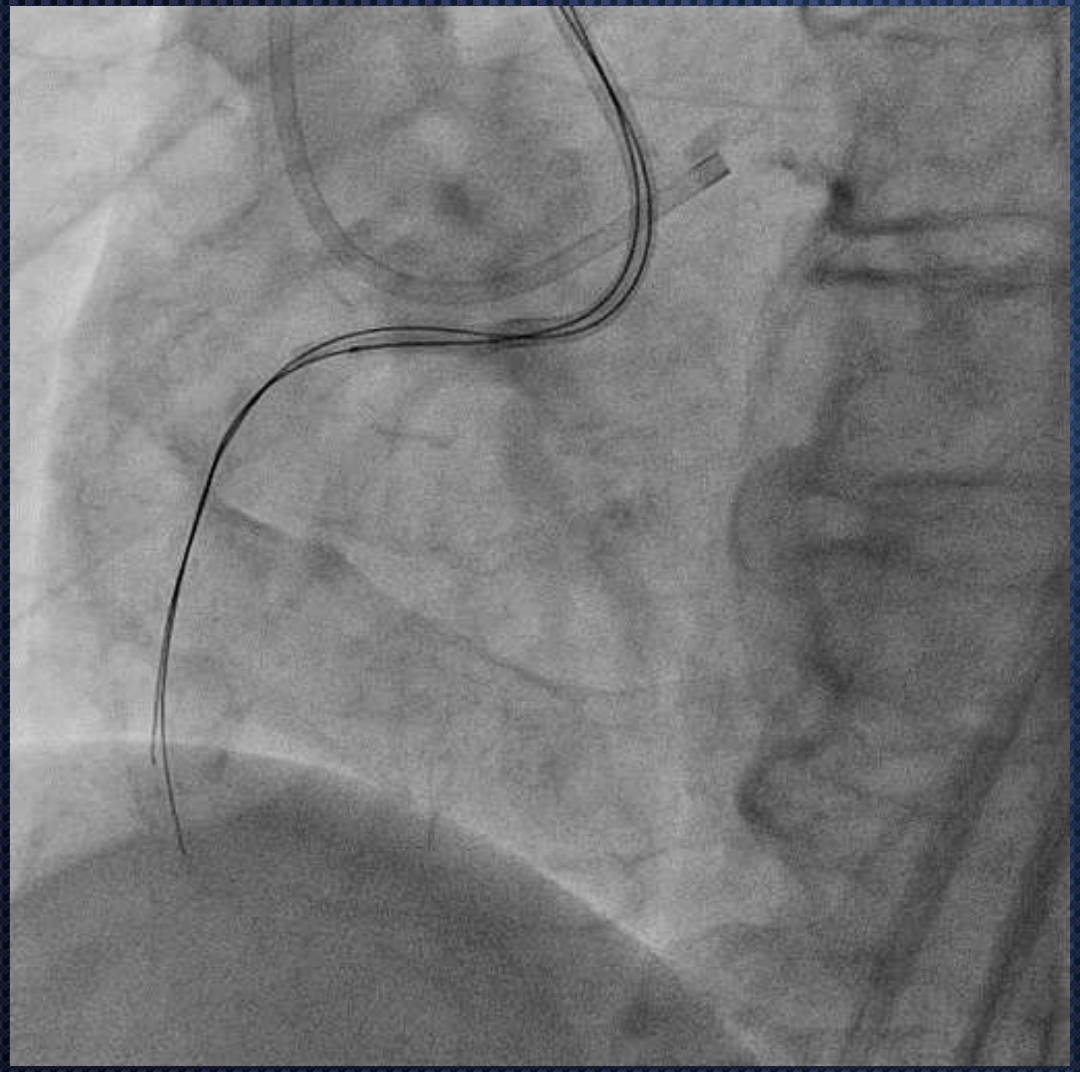
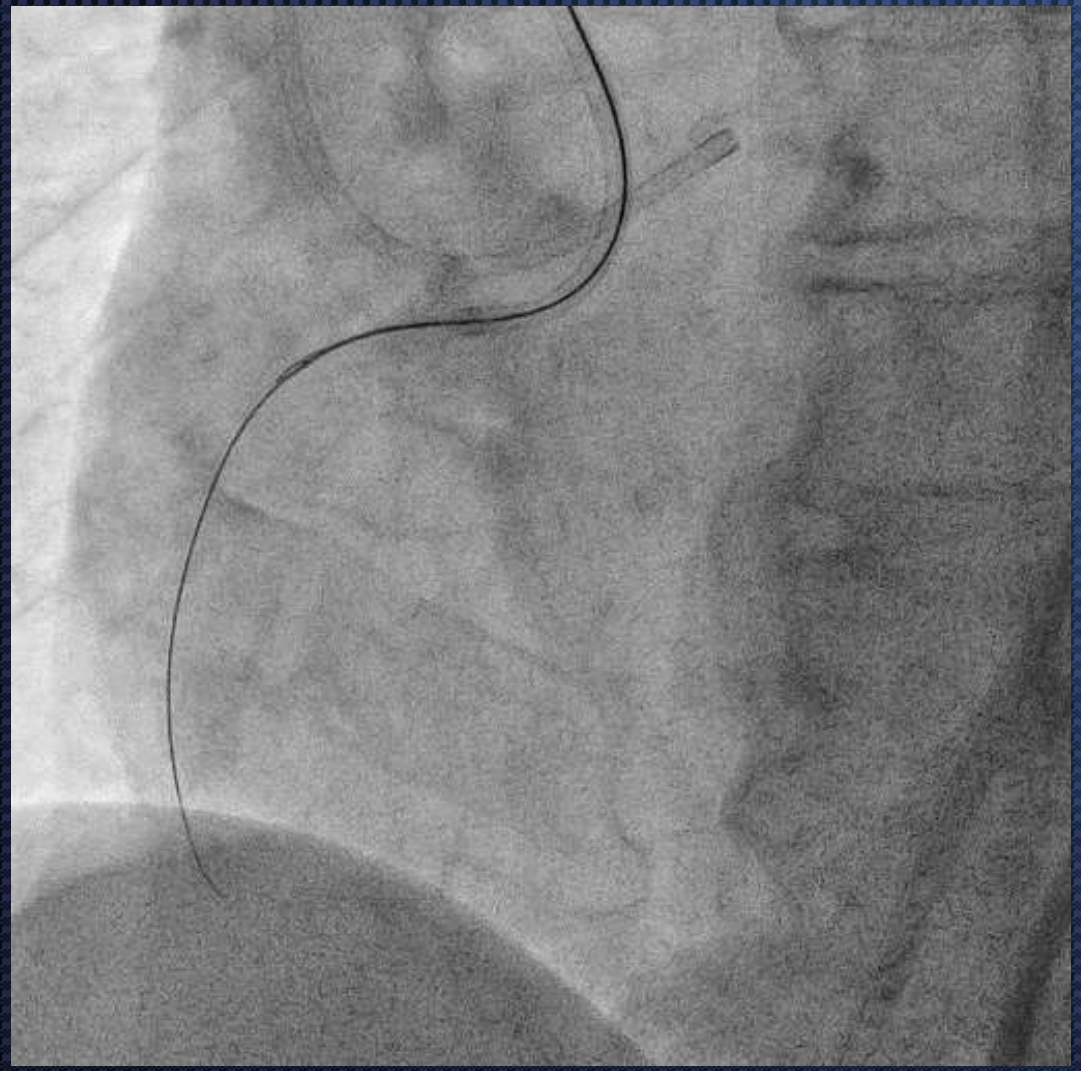


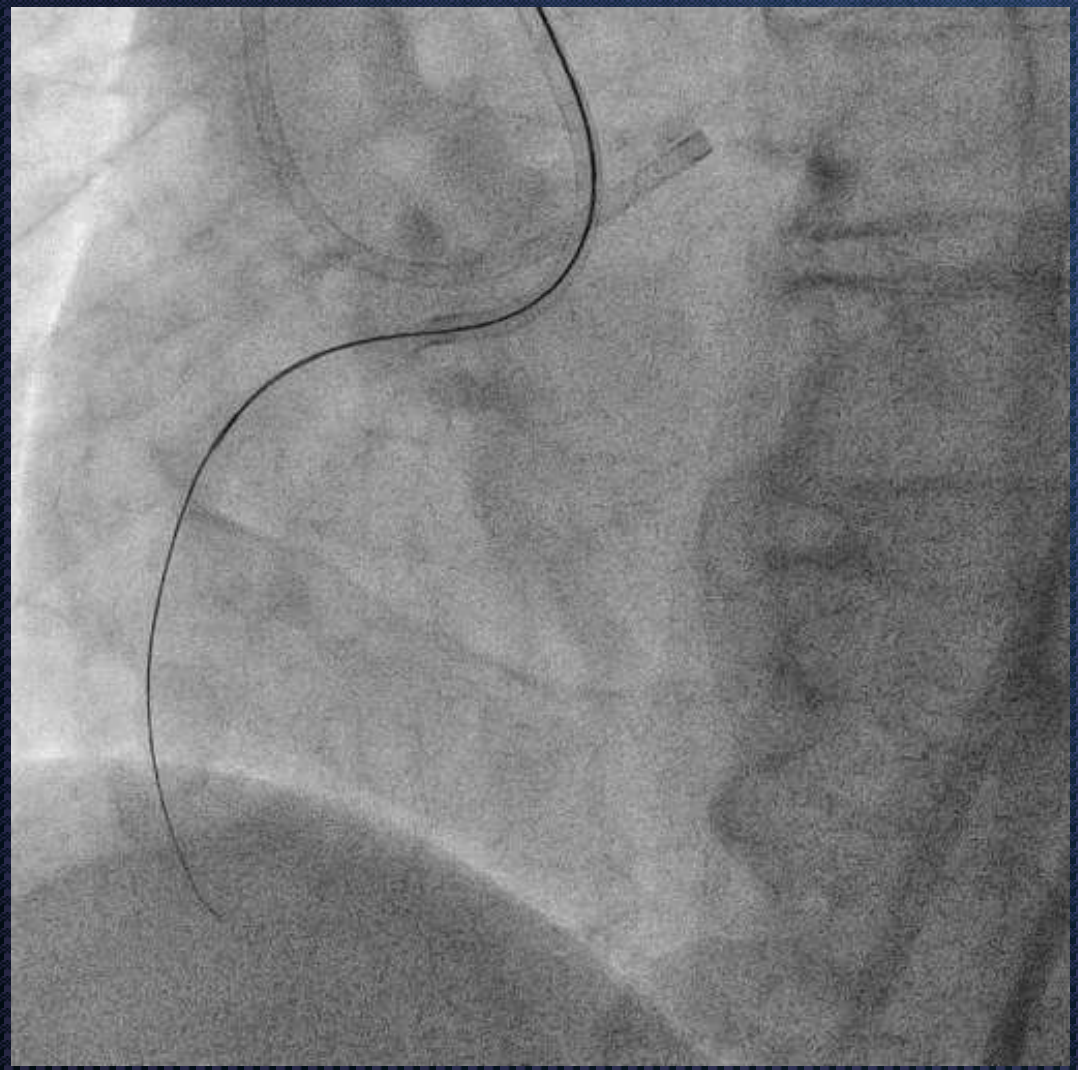
- ✓ Any balloon could not pass with two wire and mother-child techniques.

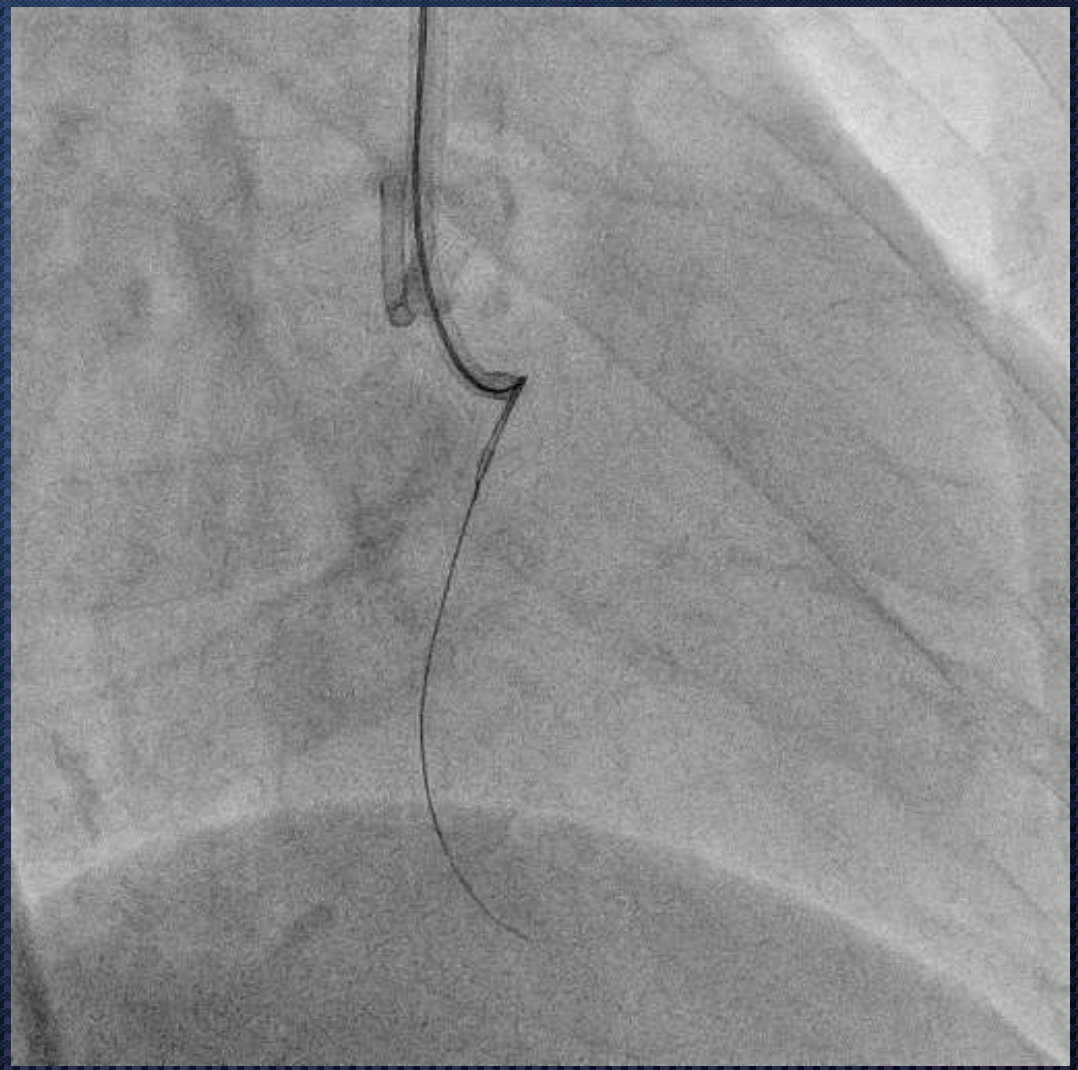
Case 5: RCA CTO (Two wire, mother-child techniques)



- ✓ Drilling wire (Miracle12g) to crush calcification

Case 5: RCA CTO (Two wire, mother-child techniques)





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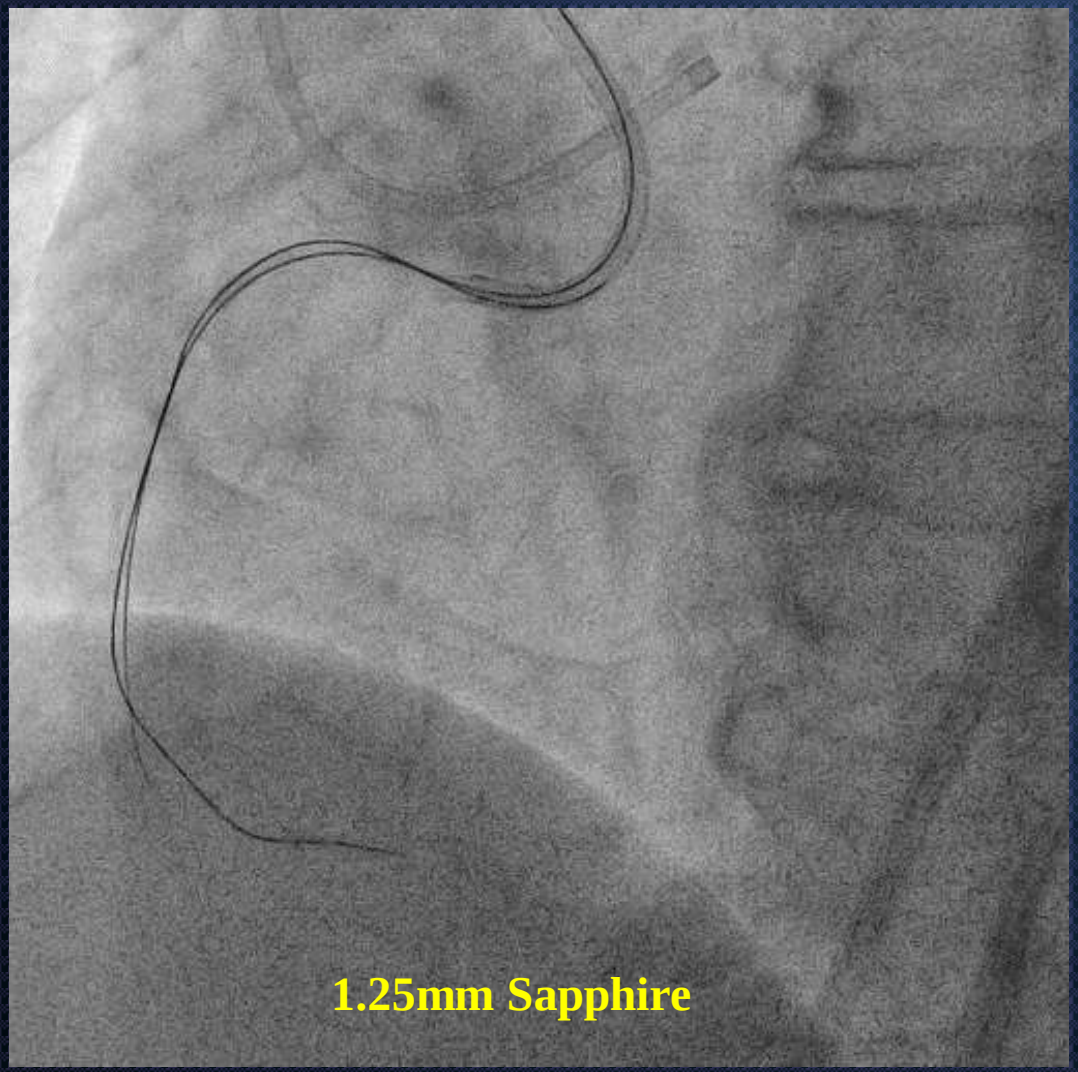
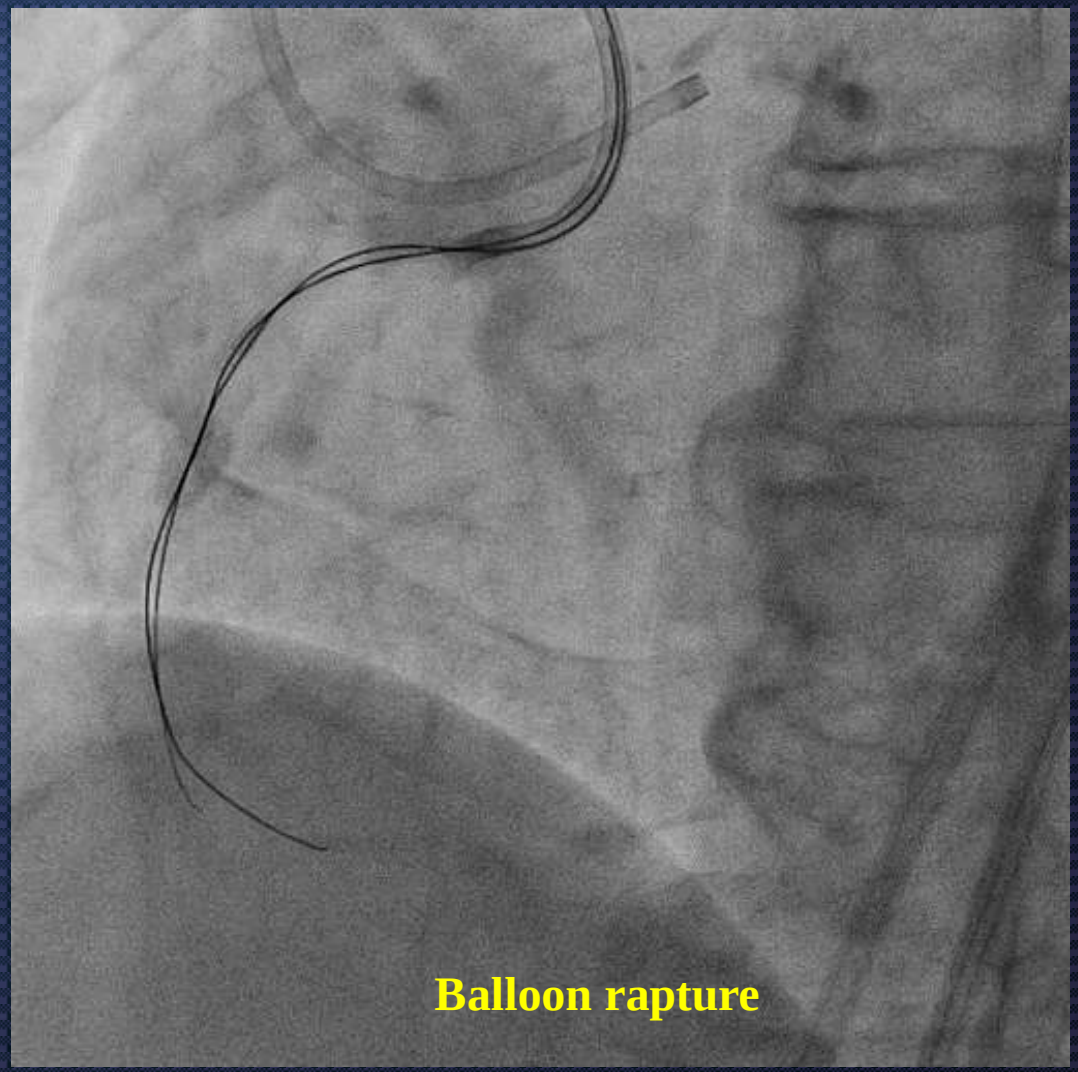
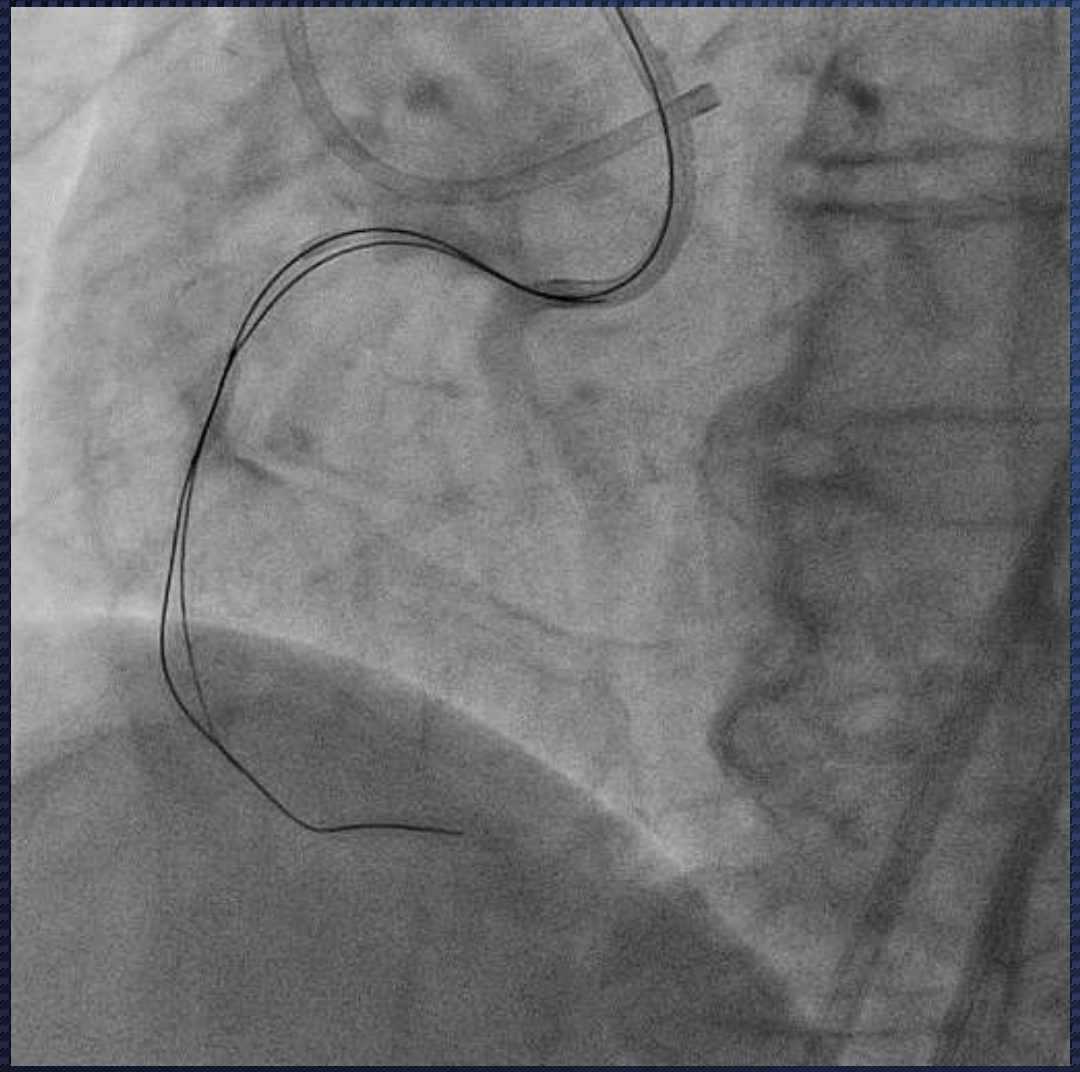


1.25mm Sapphire



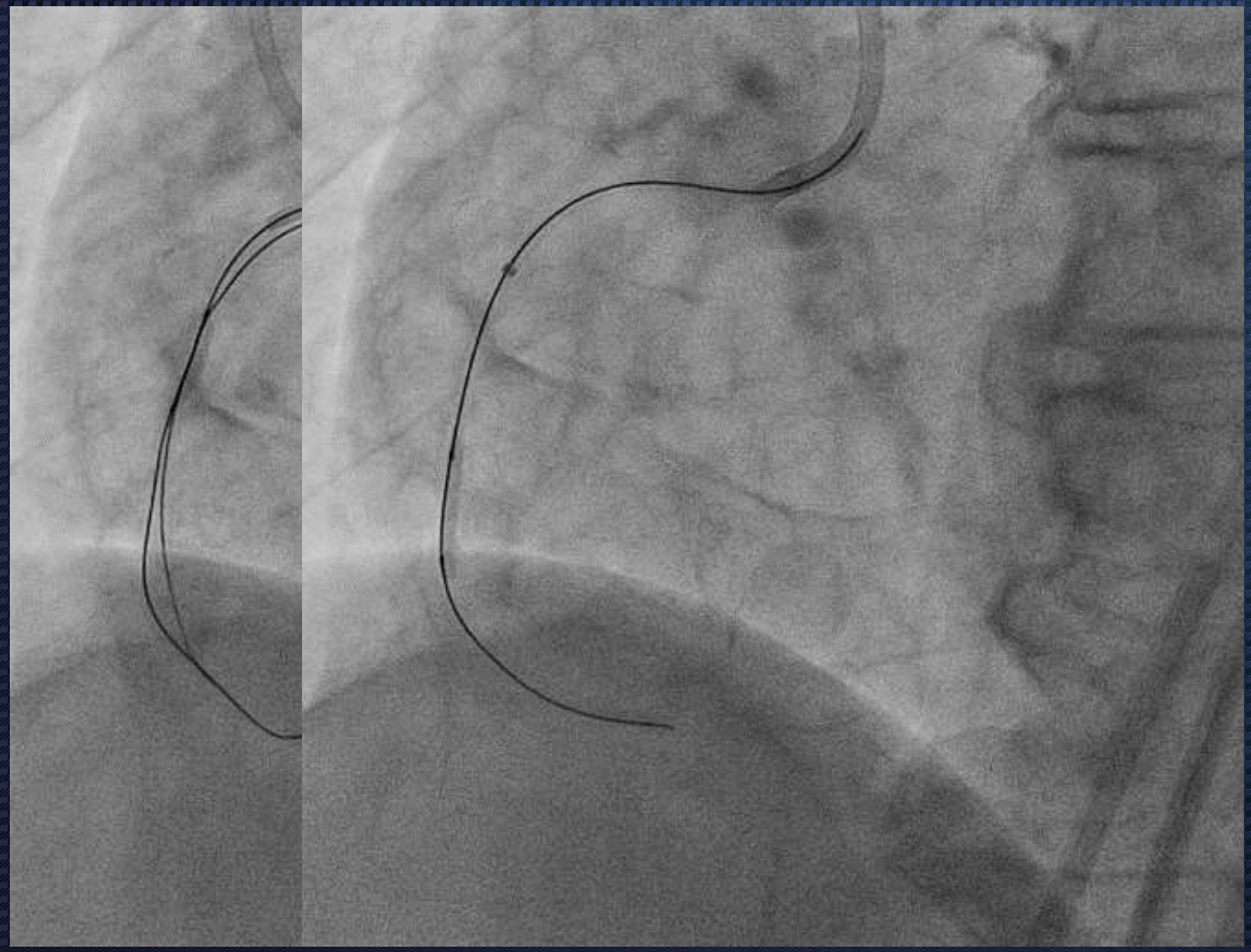
Balloon rapture

Case 5: RCA CTO (Two wire, mother-child techniques)



2.0mm NC balloon

Case 5: RCA CTO (Two wire, mother-child techniques)



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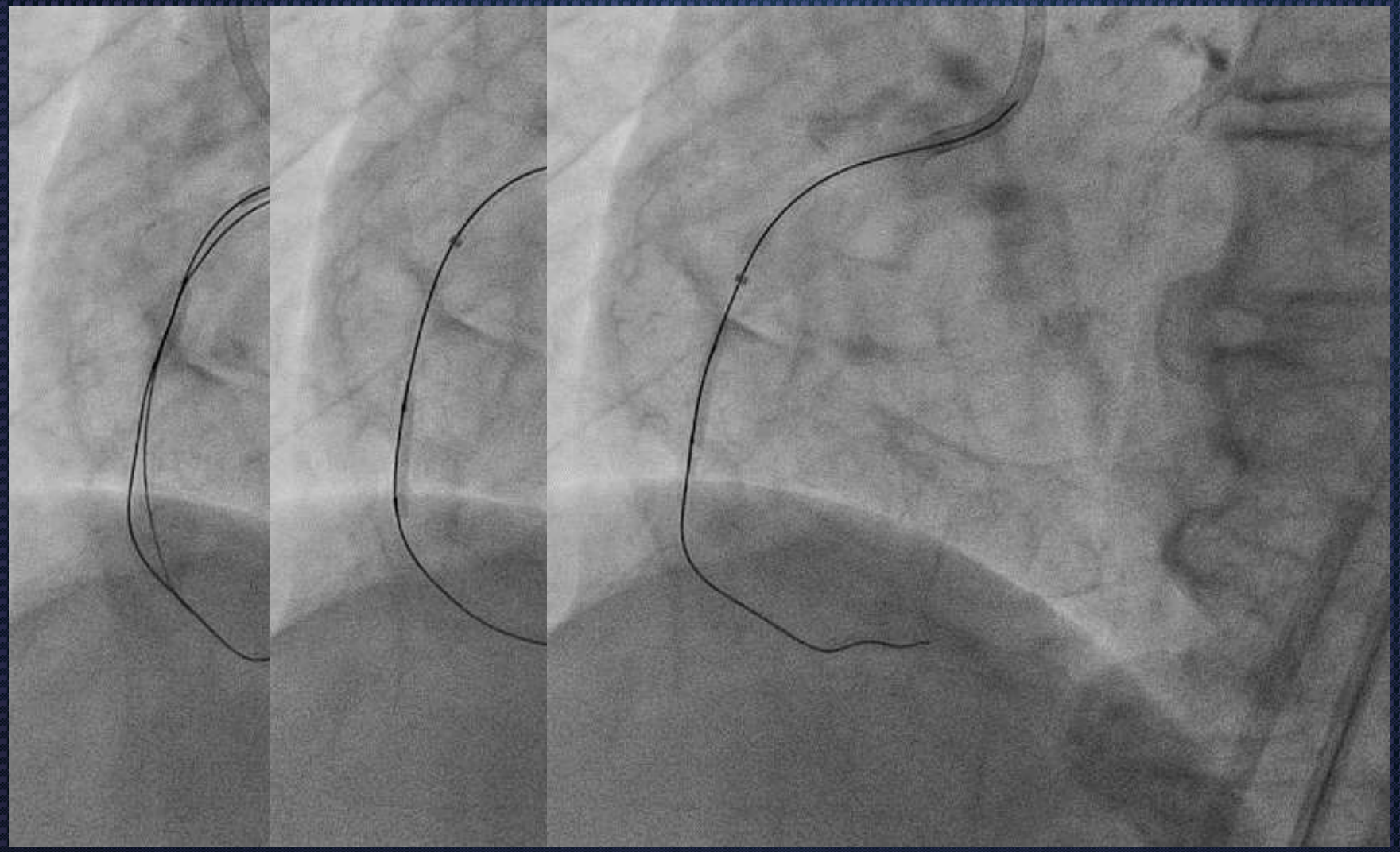

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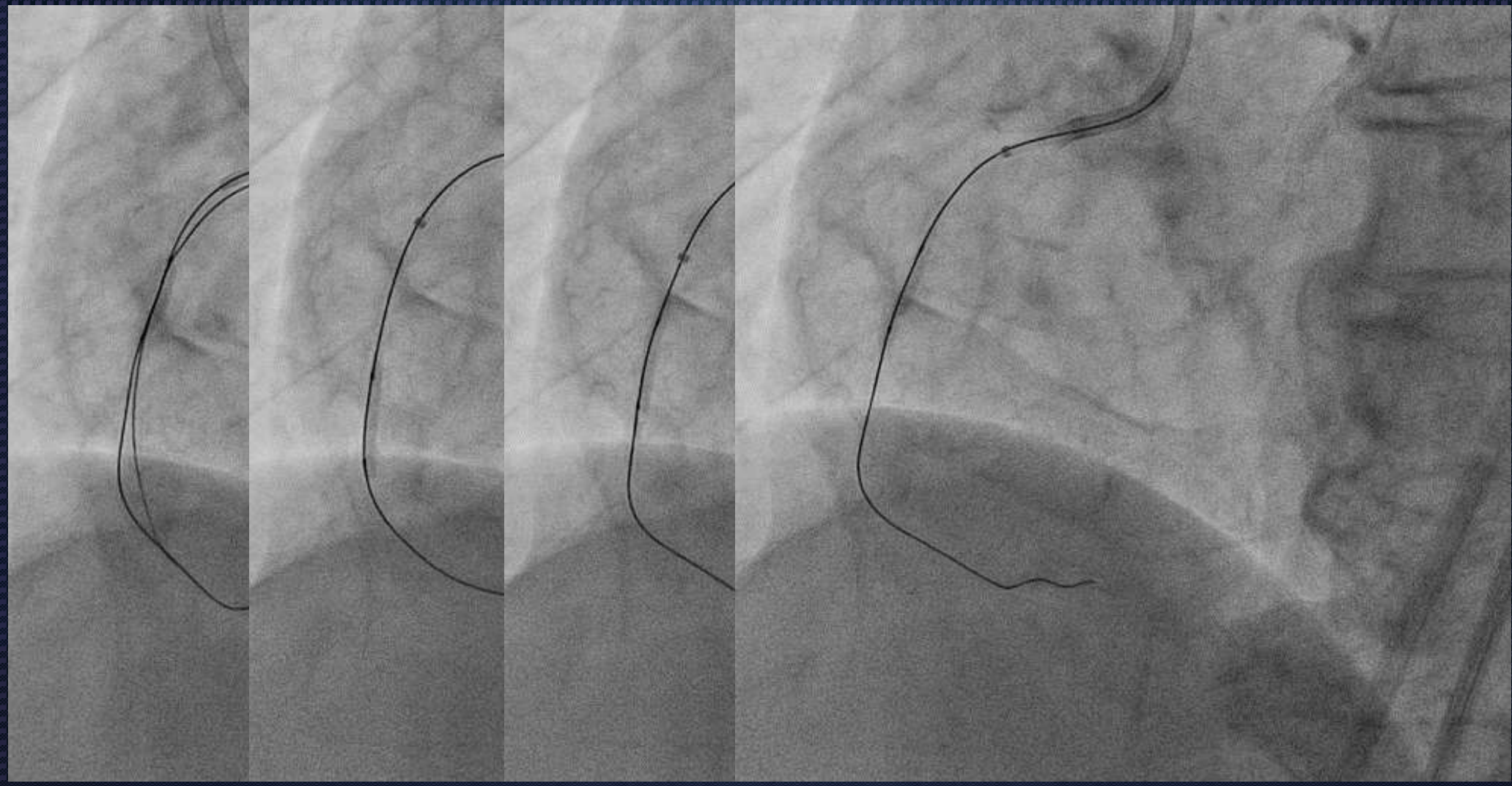

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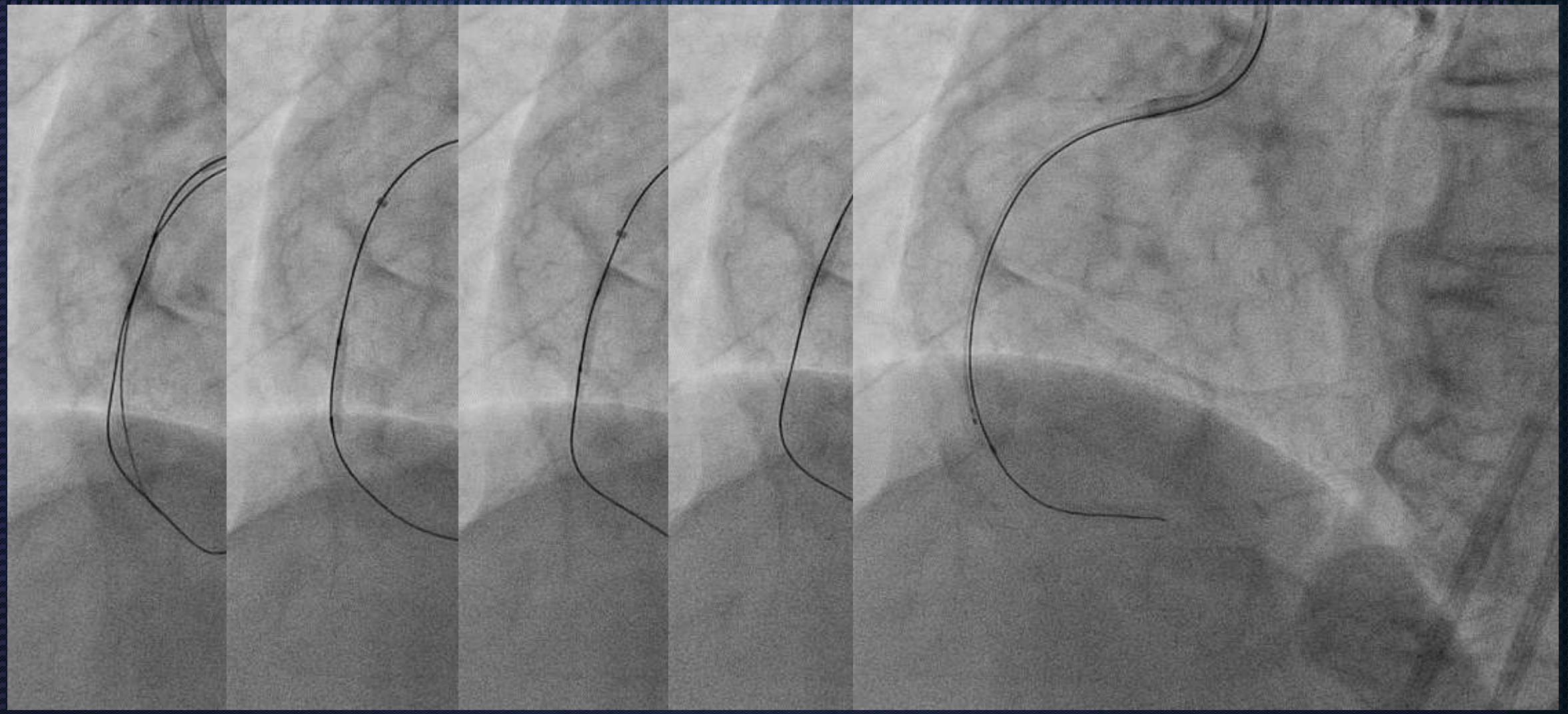

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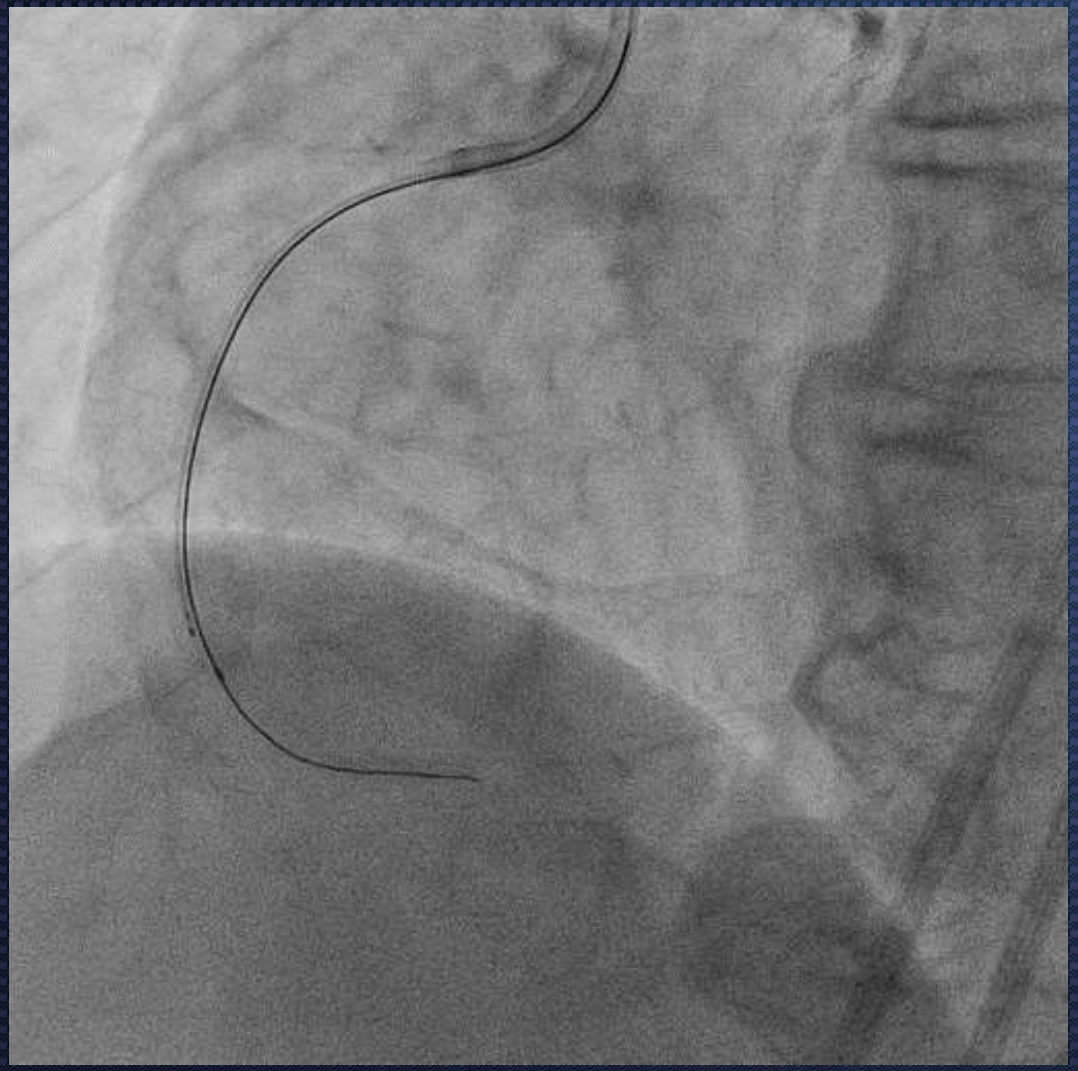

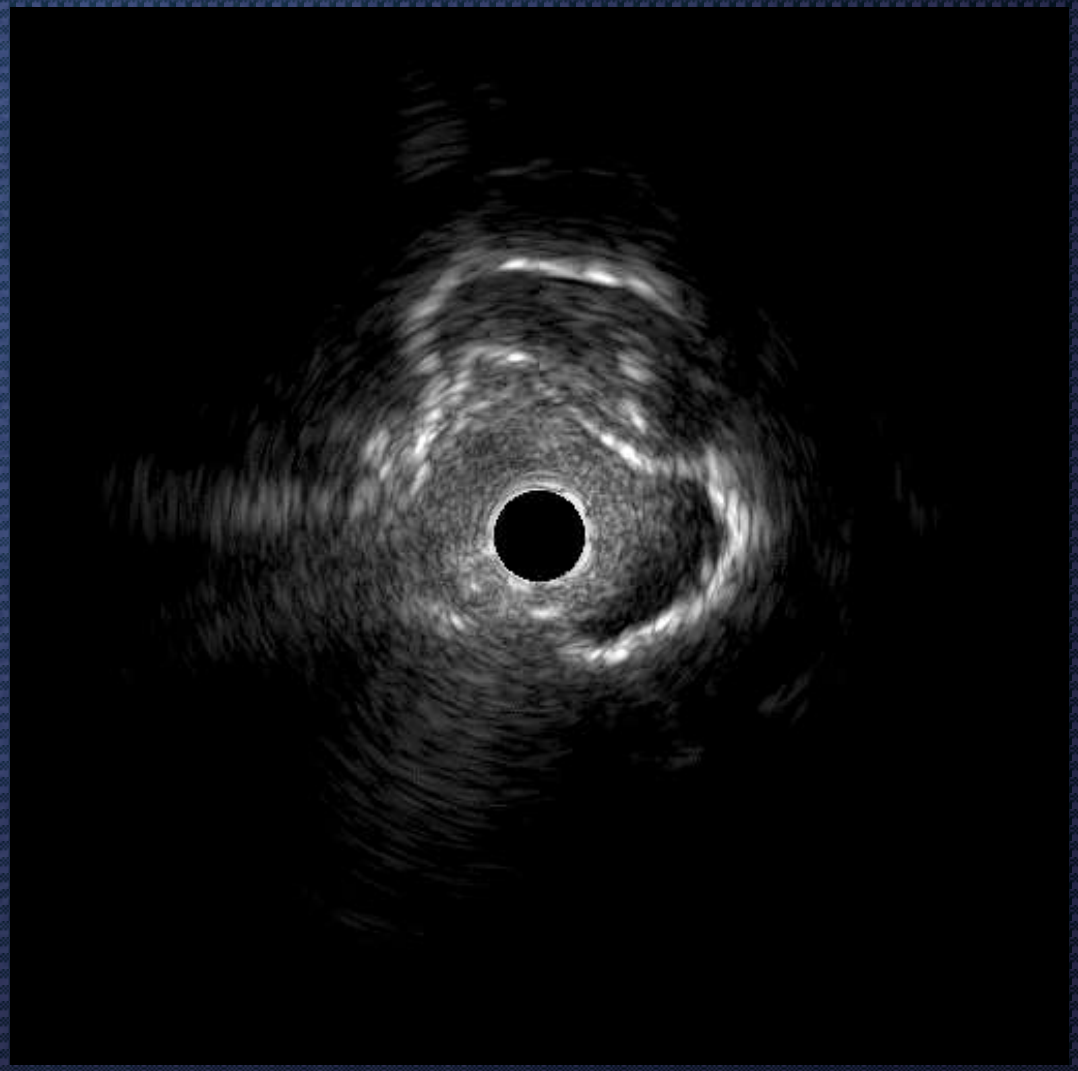

IVUS

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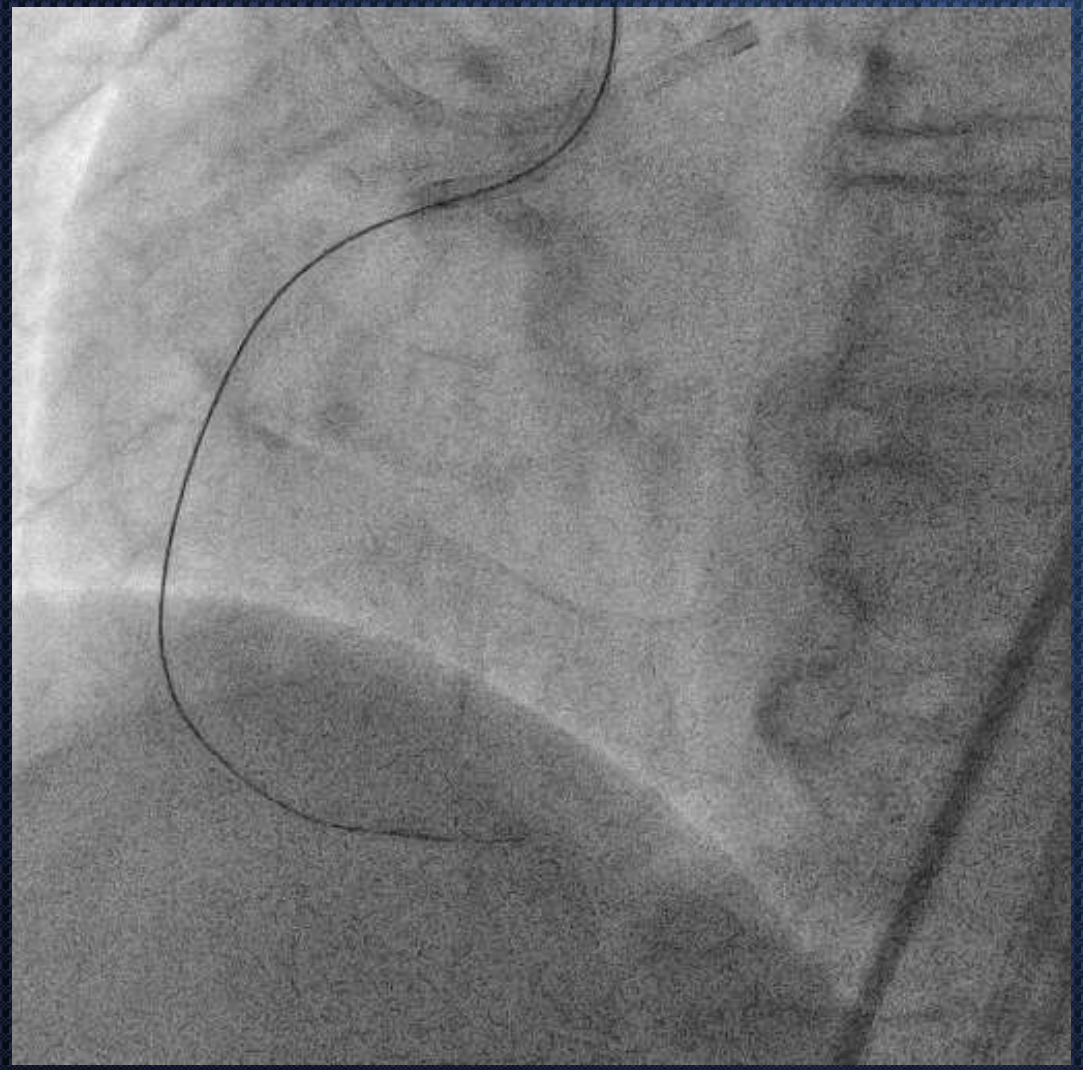

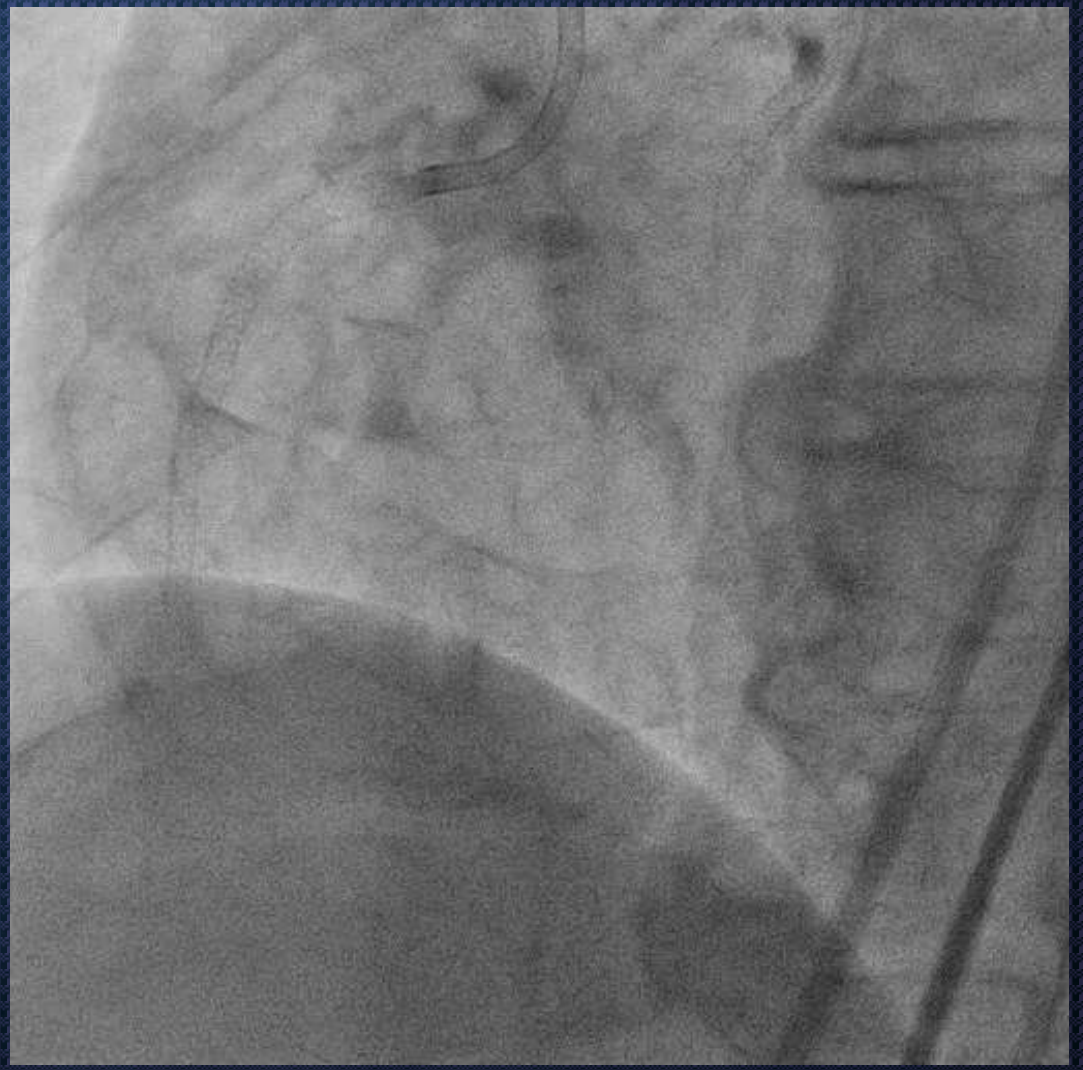

Approach to calcified CTO

- Over-rotation of GW in calcified CTOs may be associated with core or rope coil fracture.
- Combination of various techniques is required to cross microcatheter, balloon, or stent
- Rotablator is the best device for lesion modification if wire exchange is successful
- Calcification crush by hard wire is one of the options for lesion modification.