

LAD CTO retry case treated with 3D wiring

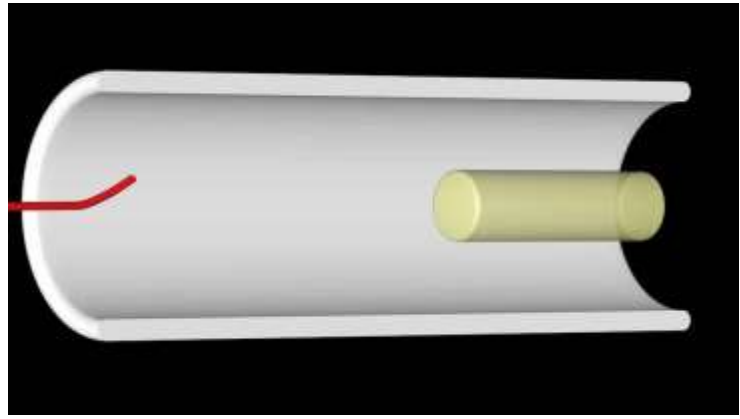
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Atsunori Okamura

2 guidewire (GW) manipulation methods in the CTO lesions

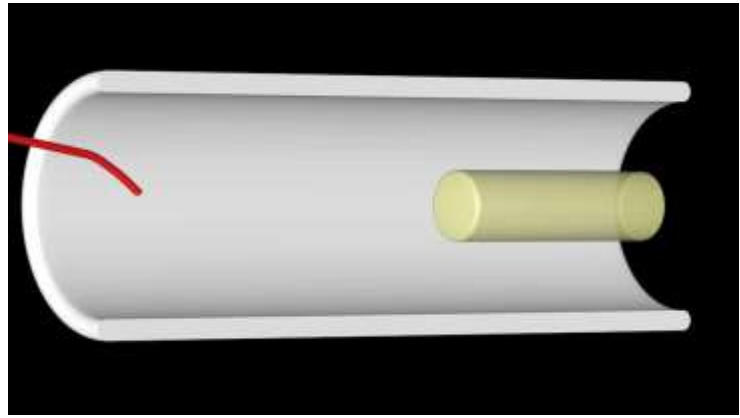
Drilling strategy Safe but incorrect

To find the passage root, rotate the GW in clockwise and counter-clockwise directions with 1-3 rotations under minimal advancing force without the deformation of the tip shape.



Penetration strategy Risky due to perforation but correct

Direct the GW correctly to the target and just push it.



Drilling strategy is better



XT-R XT-A

GAIA 1st

Pilot 50-200

UB3

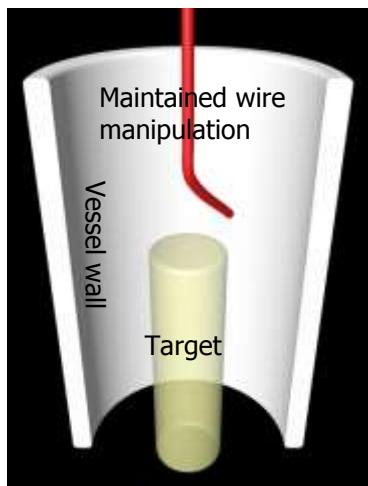
GAIA 2nd-3rd

Conquest 9g, 12g, 8-20g

Penetration strategy is better

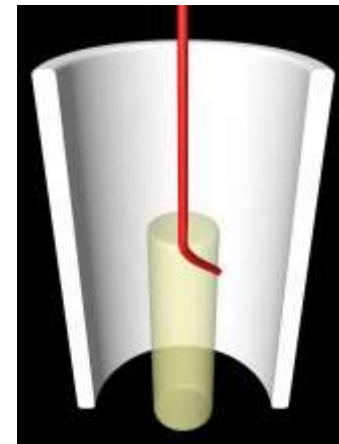
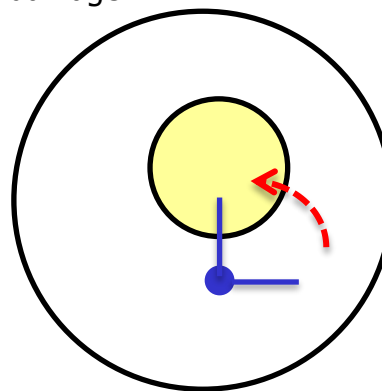
Penetration strategy needs

- landmark (vessel wall, target)
- maintained GW manipulation



3D wiring improves the penetration strategy

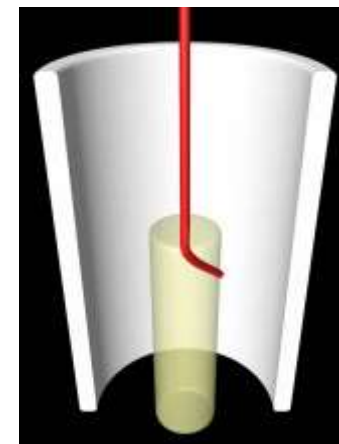
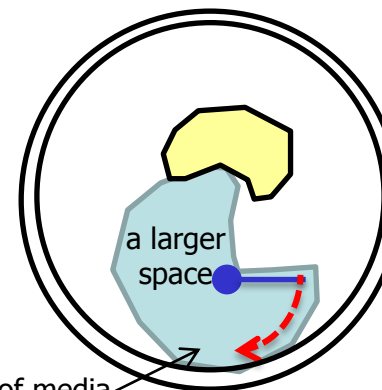
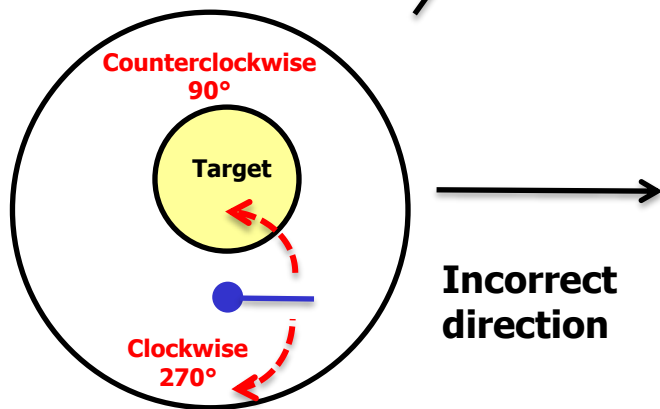
Correct direction



Clockwise 270°

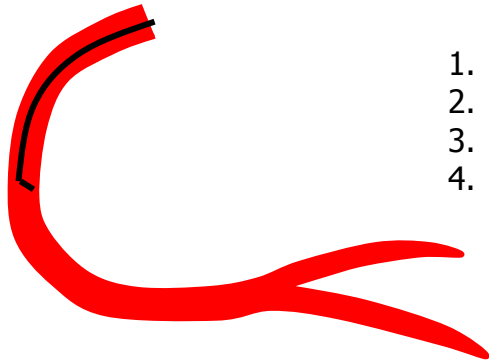
- Not accurate GW control
- Creation of a larger space, compressing the target.

Cross-sectional image



Construction of a 3D image in 2 directions 90° apart under radiographic guidance

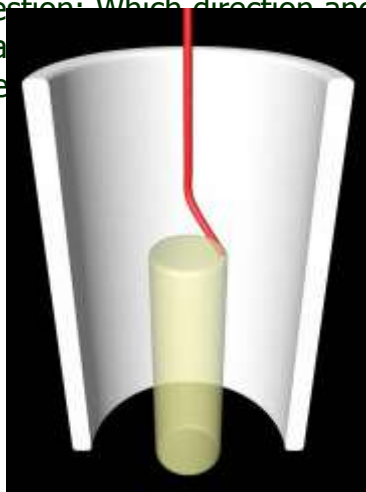
Mid-RCA image



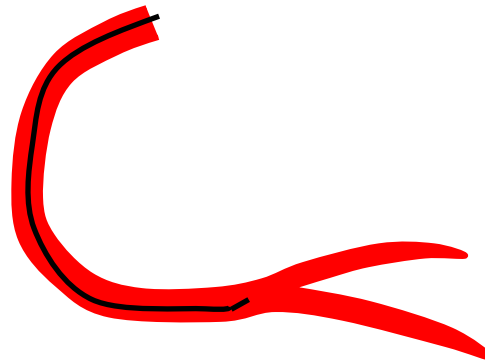
1. Clockwise 45°

Question: Which direction and what wire

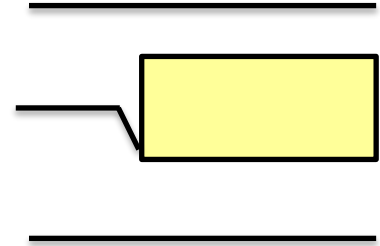
- 1.
- 2.
- 3.
- 4.



Distal-RCA image

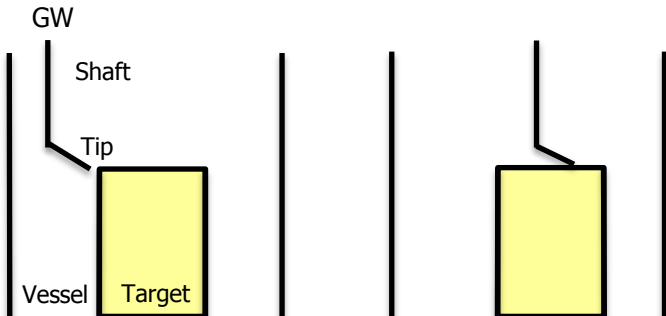
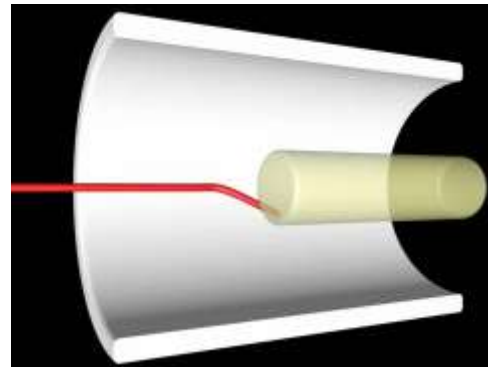
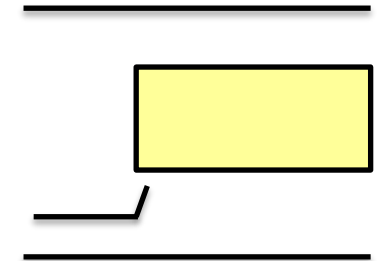


LAO 45° CRA 45°



3. Counter clockwise 45°

LAO 45° CAU 45°



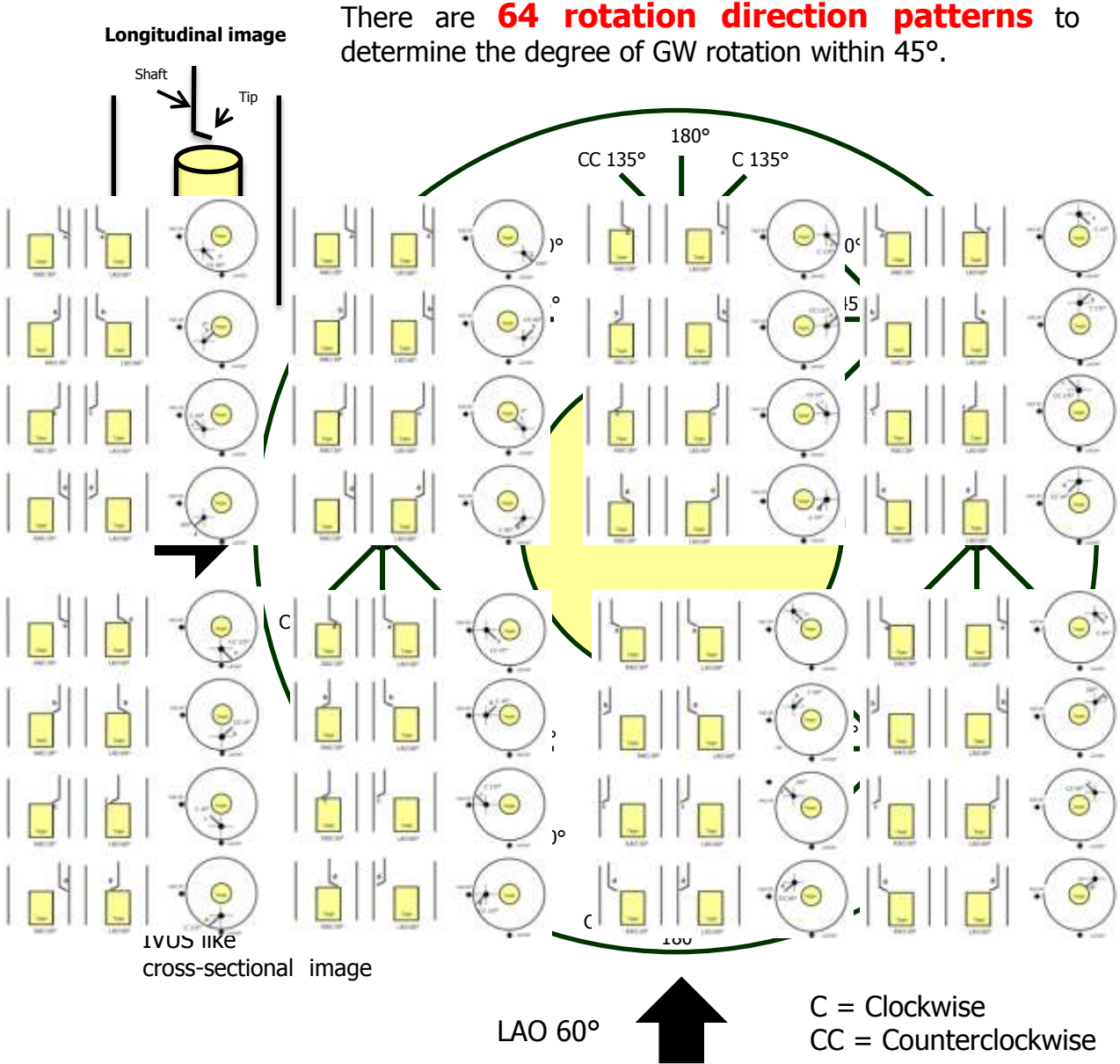
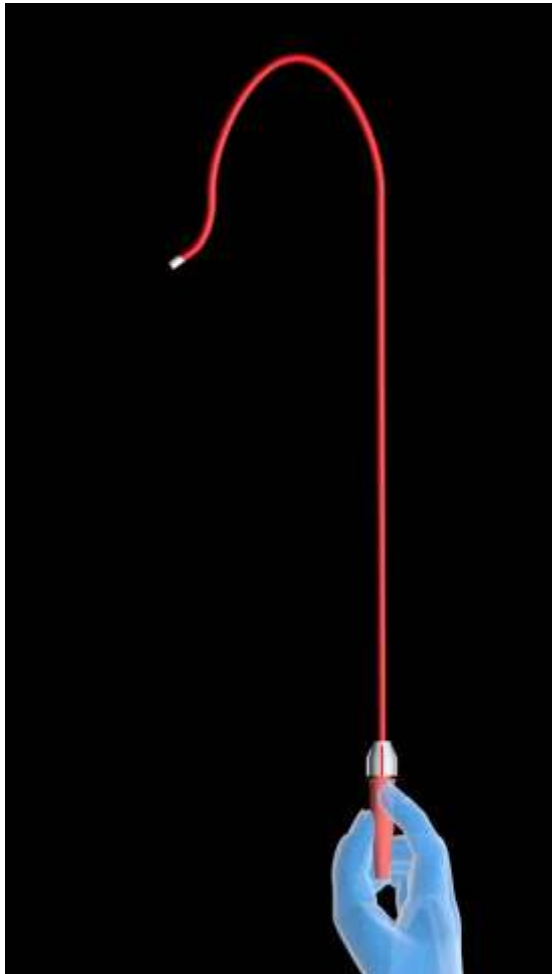
RAO 30°

LAO 60°

2 key points for performing 3D wiring

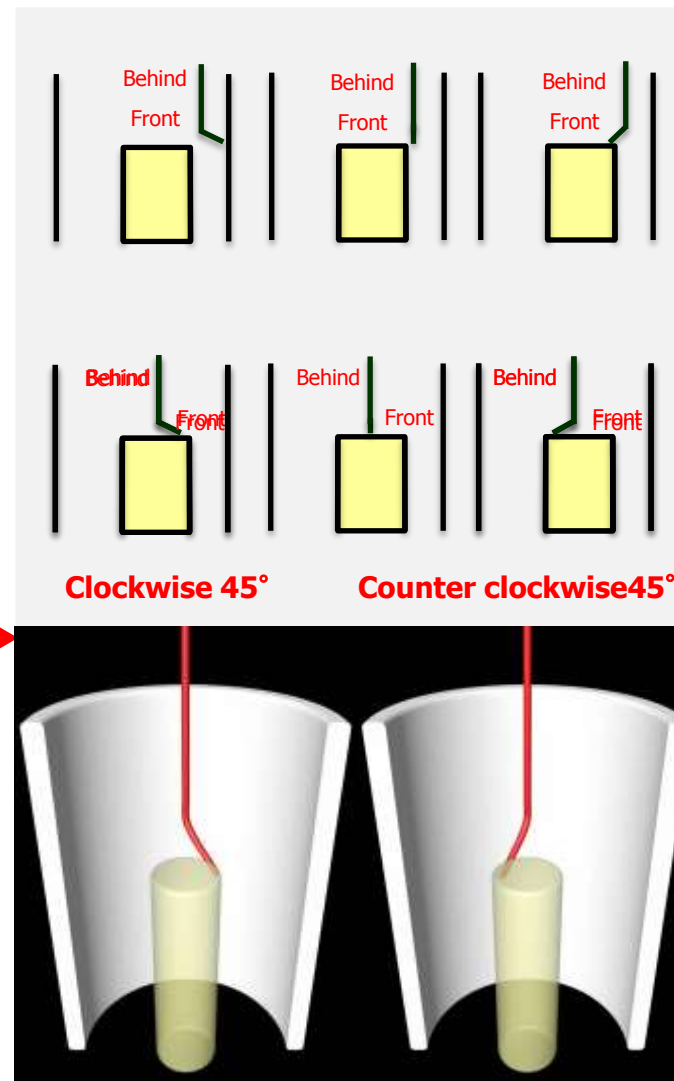
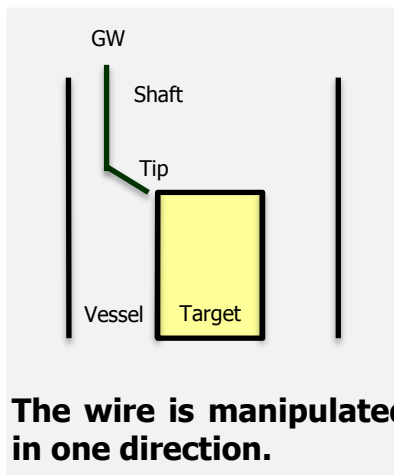
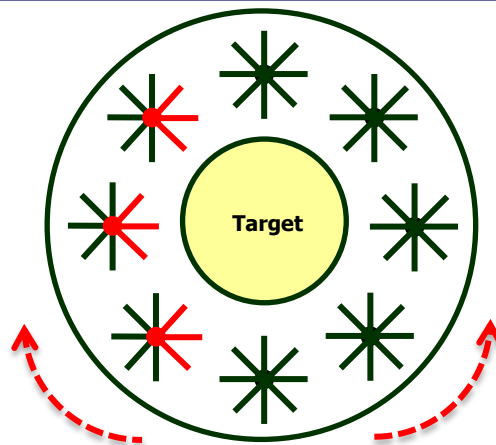
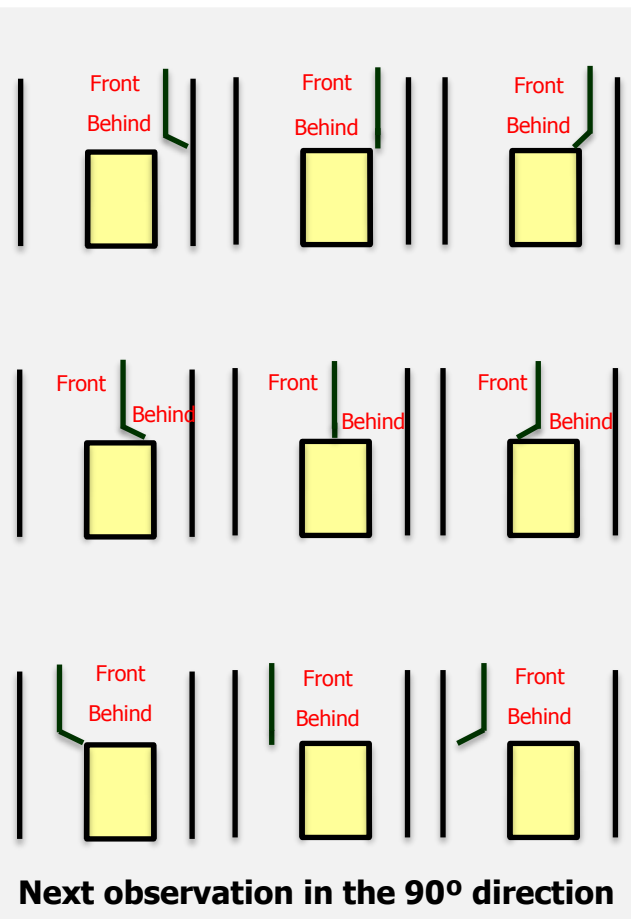
1. Synchronize the direction of GW tip rotation to that of torquer rotation.

2. Quickly construct a 3D image in 2 directions 90° apart under radiographic guidance.



1. Divide the wire into the shaft and tip sections.

2. 3D image rule "After detector rotation, the object (shaft or tip) is always in front (behind) in the same (opposite) direction of detector rotation."



Target pinpoint puncture model

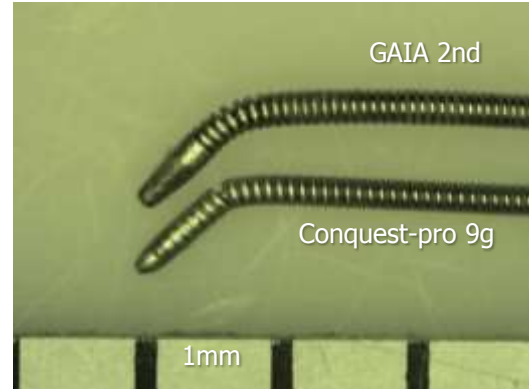
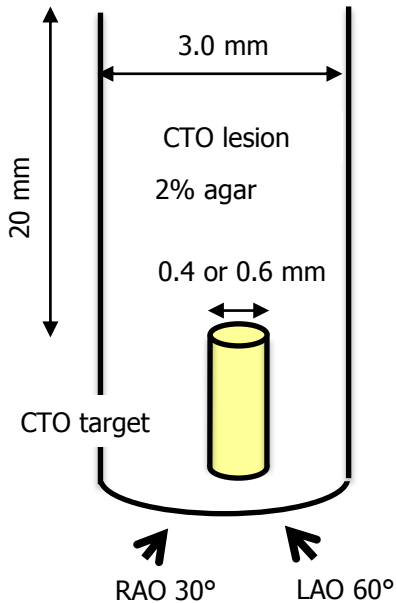
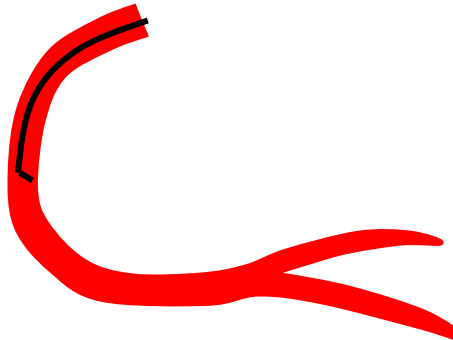
- Φ 0.4mm Finecross tube
- Φ 0.6mm Progreat tube

Target: Progreat (inner lumen 0.6 mm) Devices: GAIA 2nd with a Corsair

RAO 30°

LAO 60°

Mid-RCA image



	Success	Success rate
Progreat (Φ 0.6mm, n=6) by GAIA 2 nd -wire (bending length: 1mm)	6/6	100%
Finecross (Φ 0.4mm, n=6) by GAIA 2 nd -wire (bending length: 1mm)	3/6	50%
Finecross (Φ 0.4mm, n=6) by Conquest12g-wire (bending length<1mm)	6/6	100%

Case: 70's y.o. male

Diagnosis: OMI-A, EA

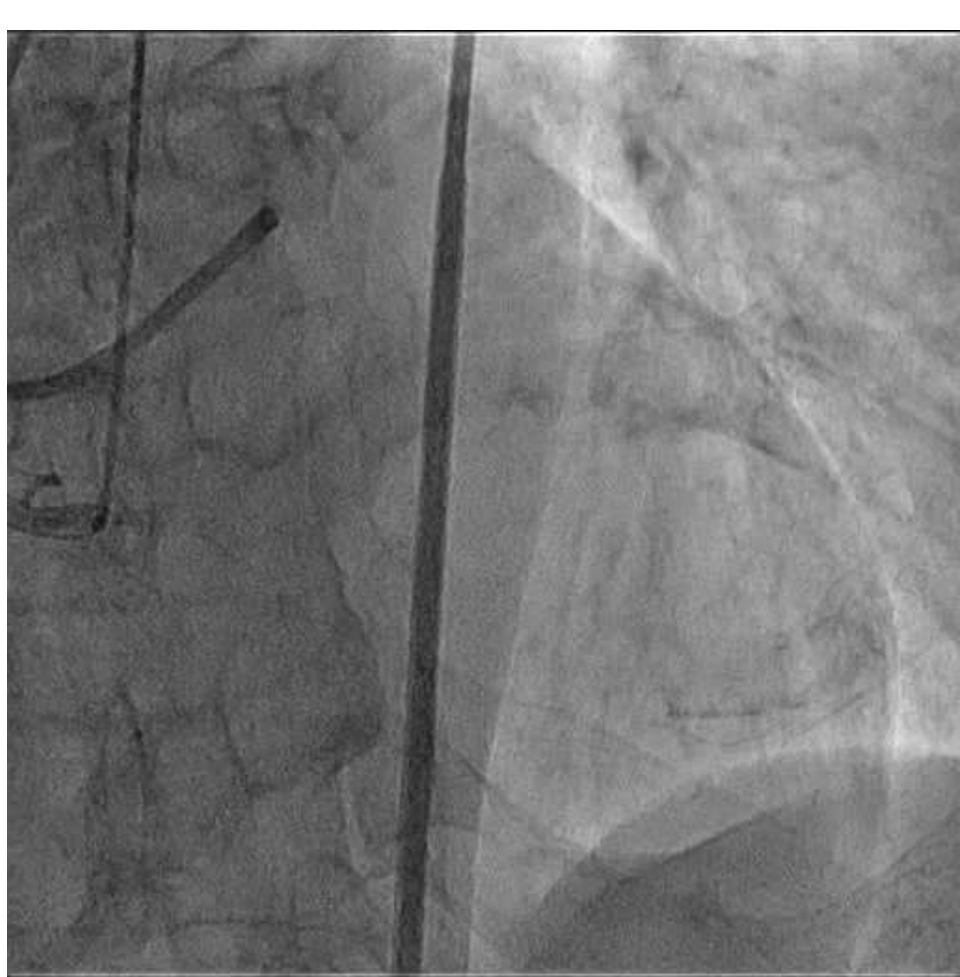
Target lesion: CTO in the mid-LAD

Coronary risk factor: HL, HBP, smoking

EF: 62%, eGFR 60ml/min/1.73m²

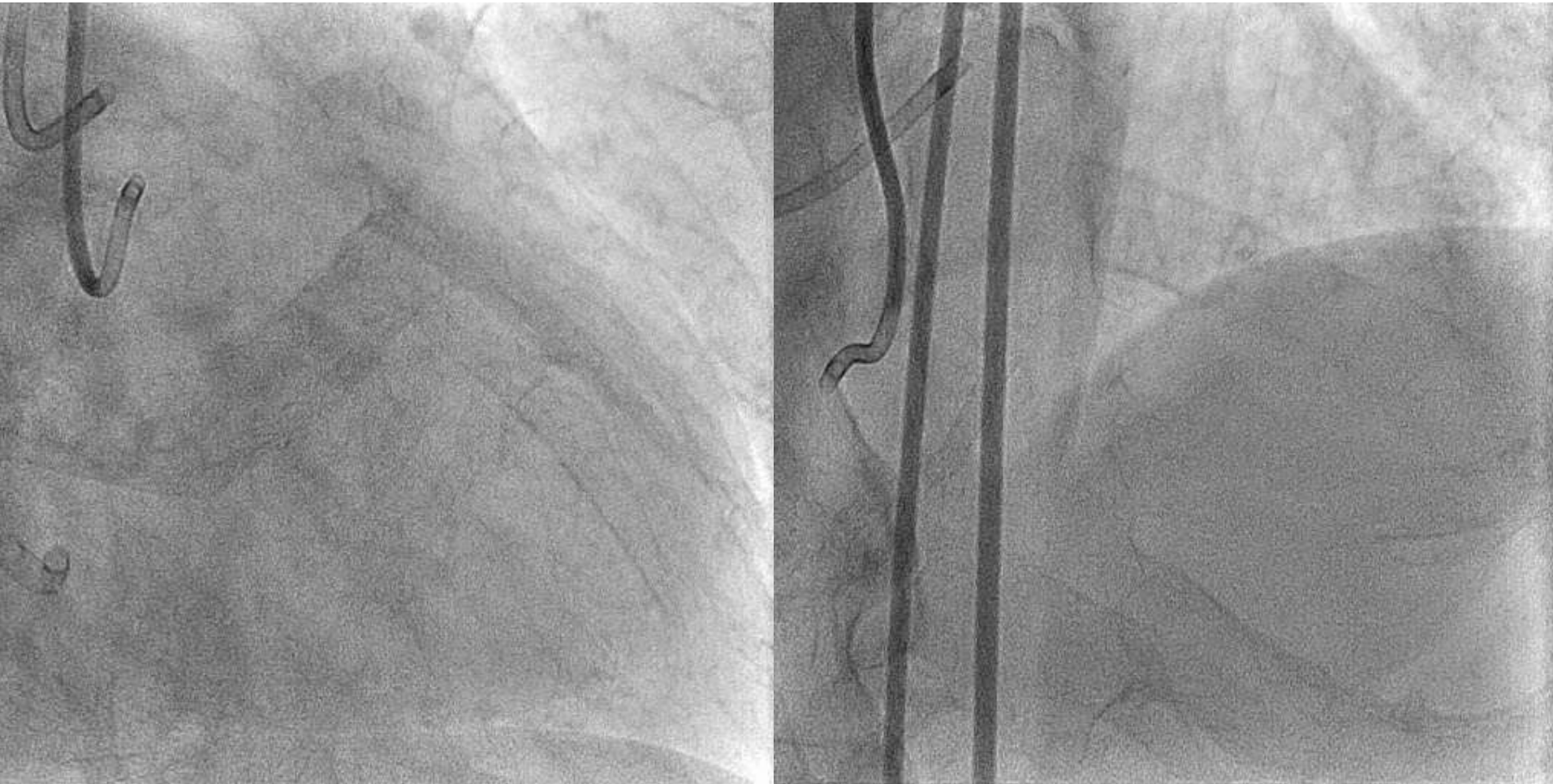
1st- PCI for LAD CTO on Jun 28, 2016

The guidewires could not cross the lesion even with the parallel wire technique and IVUS guidance.



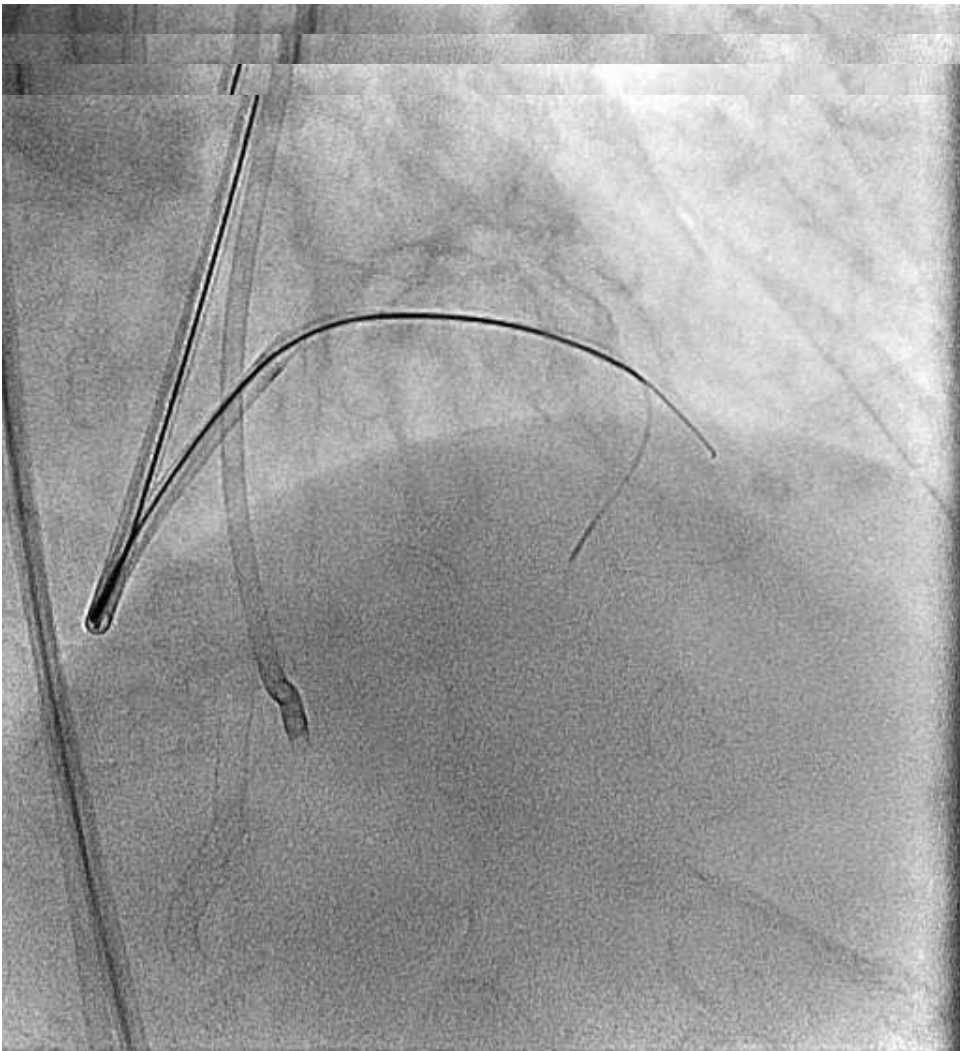
2nd- PCI for LAD CTO on Sep 30, 2016

Under a Corsair, a Conquest-pro 9g advanced with a penetration method.

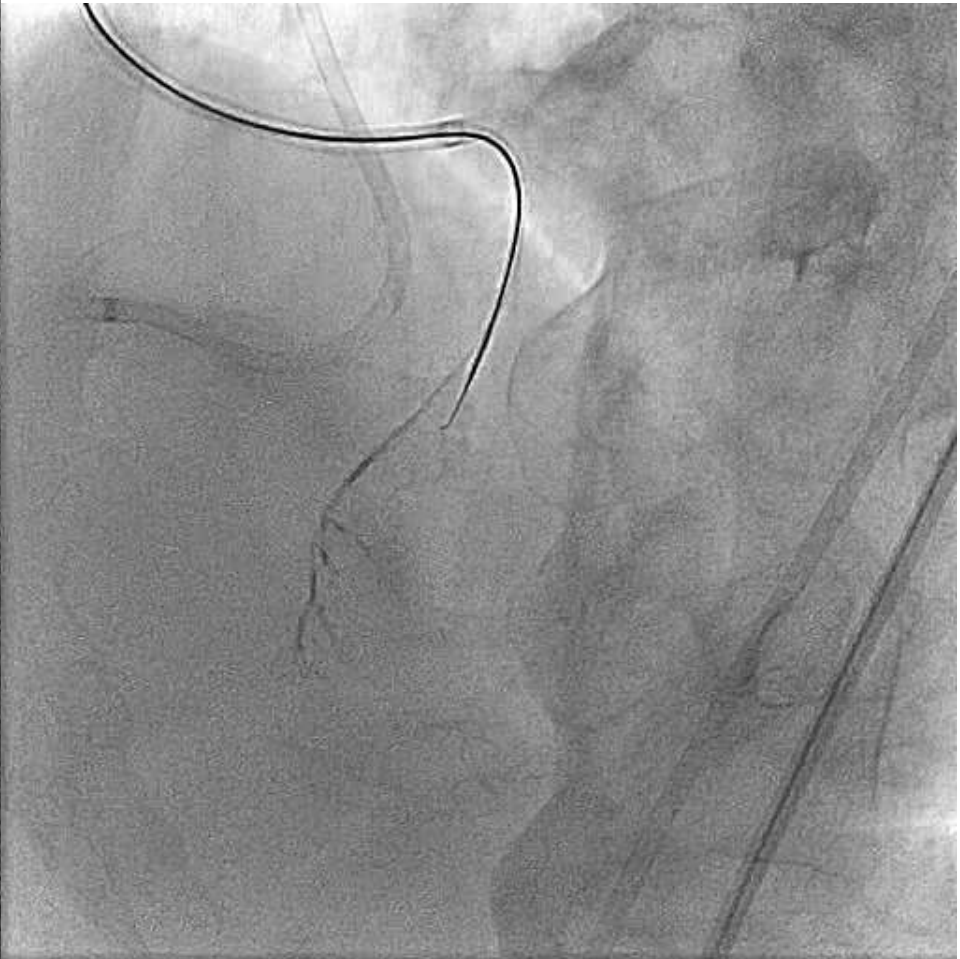


Under a Corsair, a Conquest-pro 9g advanced with a penetration method.

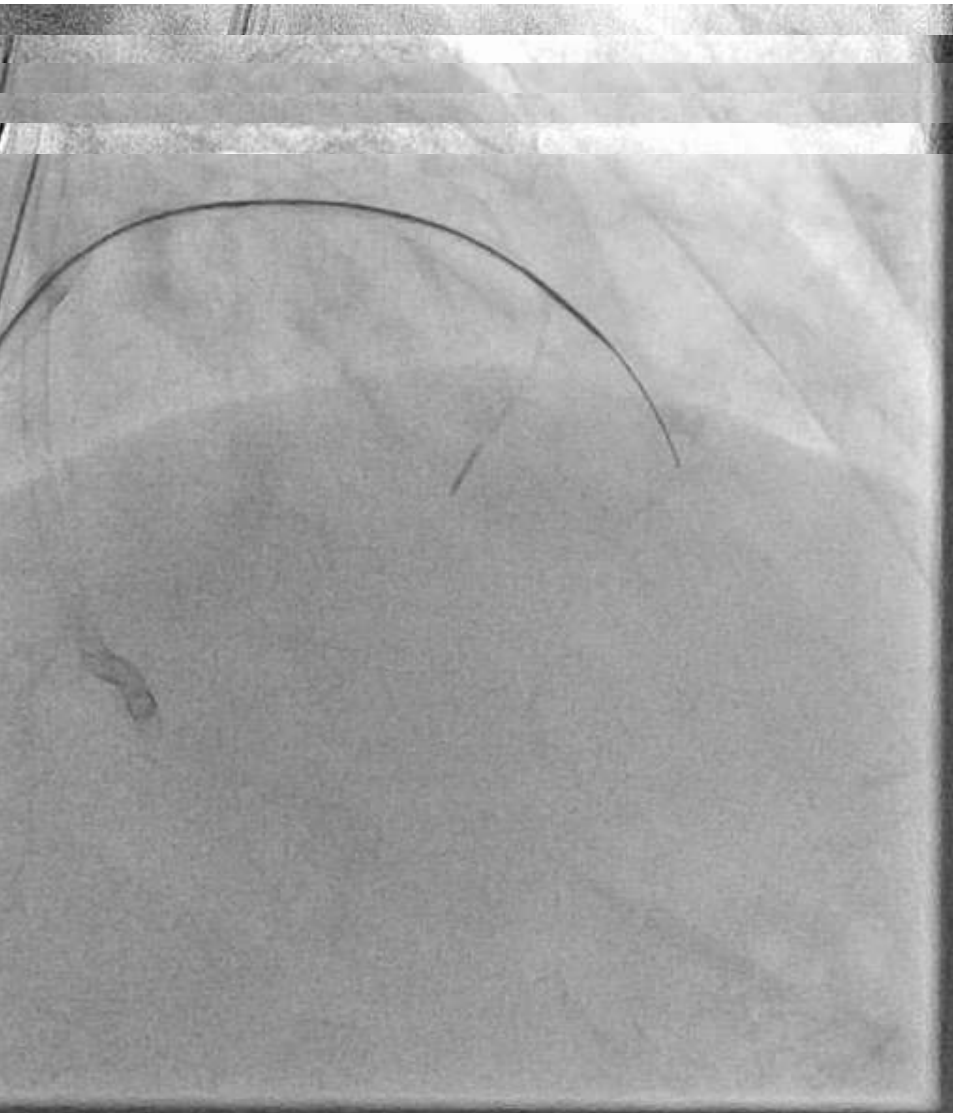
CRA 30° RAO 45°



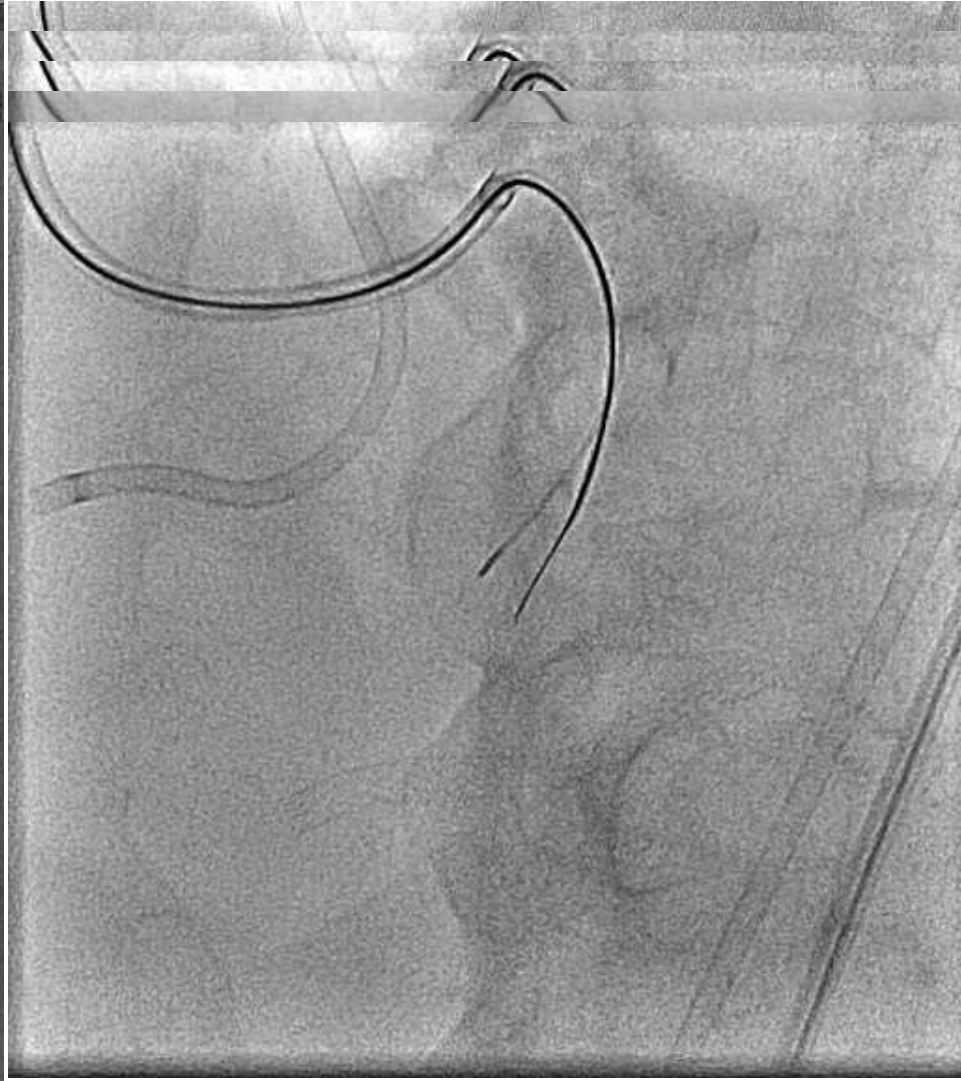
CRA 30° LAO 45°



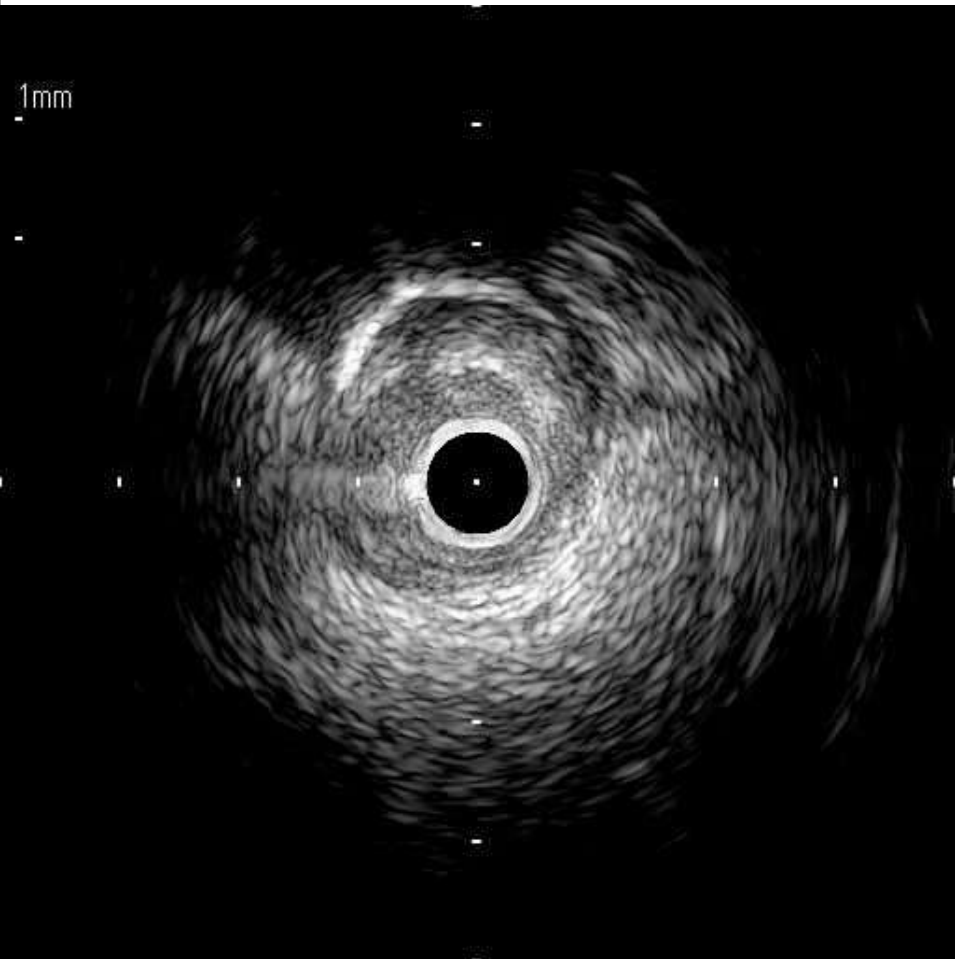
CRA 30° RAO 45°

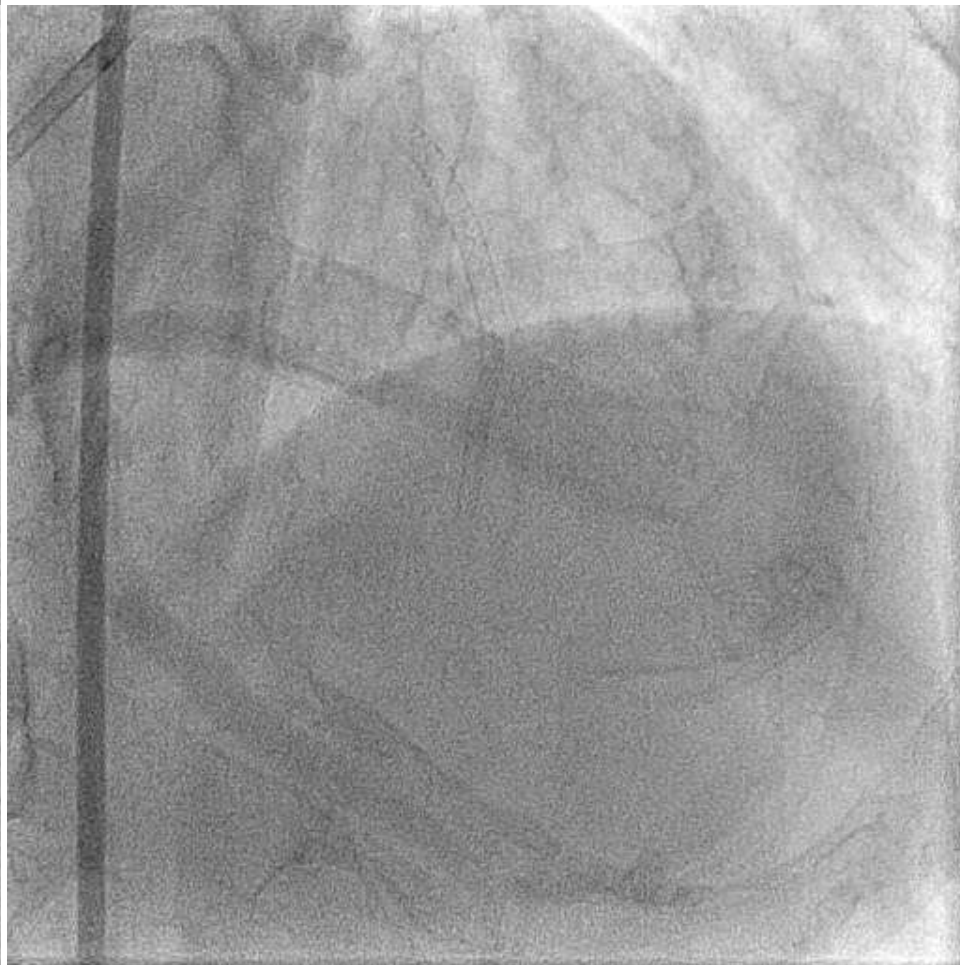
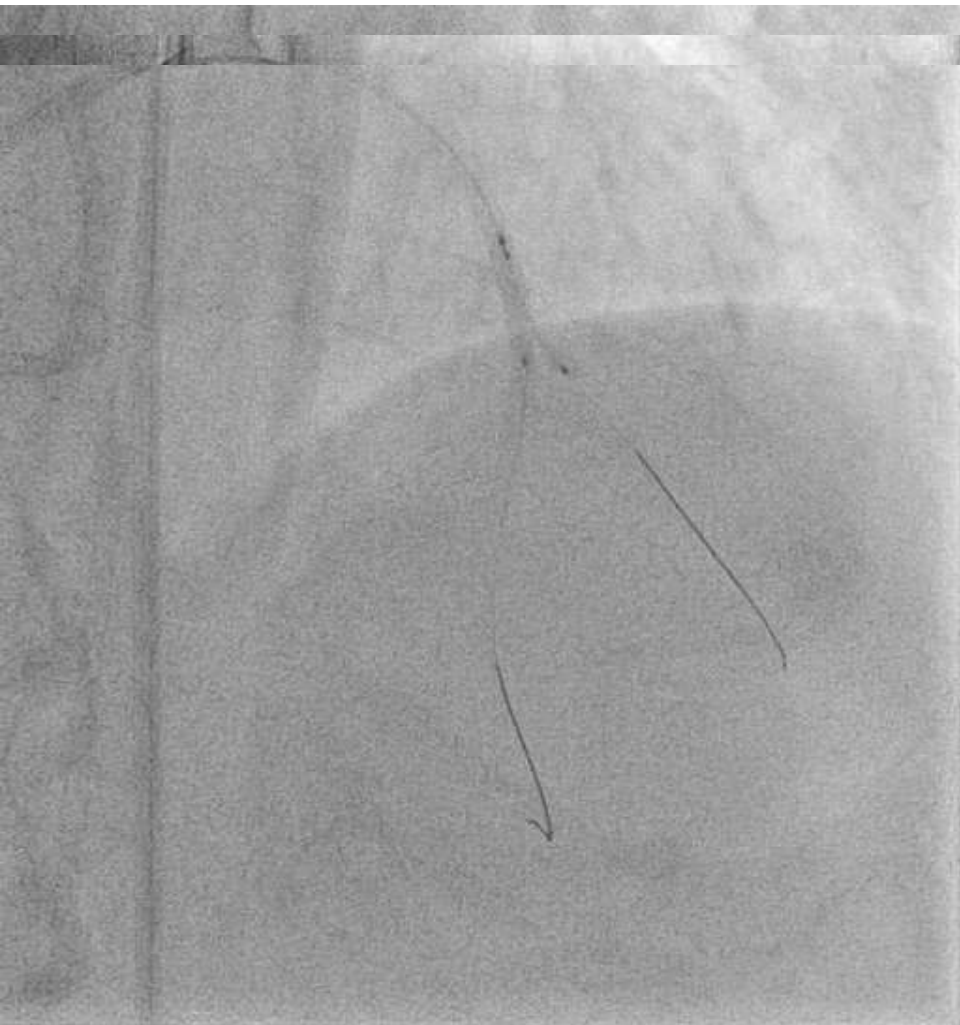


CRA 30° LAO 45°



Navifocus WR IVUS





Take home message

- Accurate control of GAIA and Conquest enables us to trace the imaginary ideal route in the CTO body and penetrate the CTO exit with pinpoint puncture.
- There are several gaps between the experimental model and the clinical practice. If there are landmarks and the wire can be controlled, consider 3D wiring. if not, consider 2D wiring.
- In CTO PCI, it is necessary to use both 2D and 3D wiring as the situation requires.