

New Aspect of CTO PCI Strategy

IVUS guided ADR and RDR

Satoru Otsuji



Higashi Takarazuka Satoh Hospital

Japan

Background

ADR using Stingray system is a good option when retrograde approach is not successful.

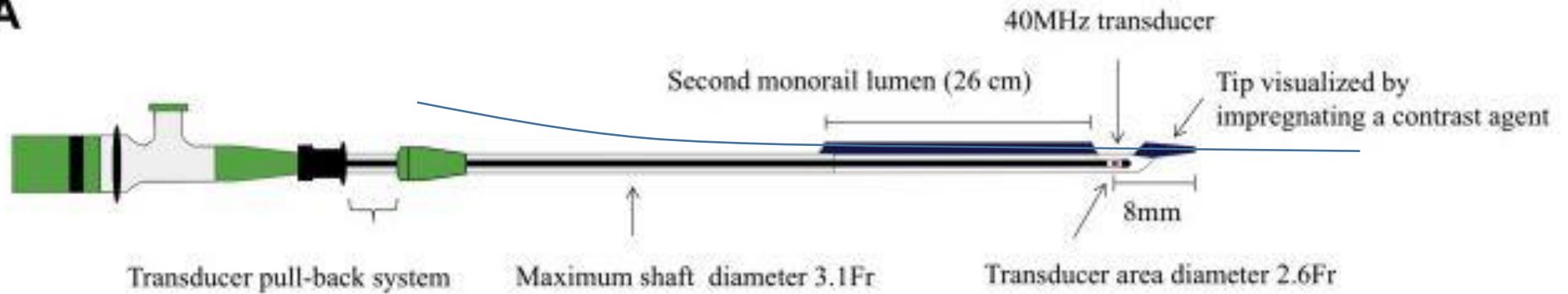
However, it is difficult to determine the optimal puncture point in angiography, as the subintima space is expanding.

Recently, conquest pro 12 ST with a extremely strong penetration force has been developed, and it has been found that penetration can be more effectively if the appropriate site is selected.

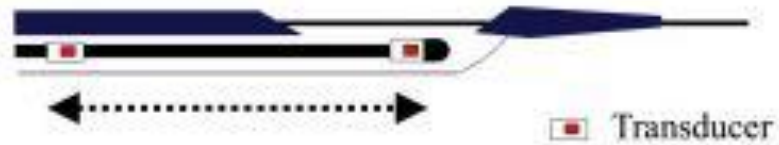
IVUS can differentiate the true lumen and the subintimal space .

Terumo Anteowl IVUS

A



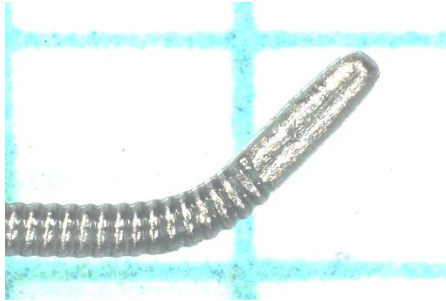
B



- Movement of the transducer back and forth using the pull-back system
- 15-cm pull-back length

Various tip shape and penetration force

Ball tip
(ASAHI Conquest Pro)



Blunt tip
(ASAHI Miracle Neo 3)





Micro-cone tip
(ASAHI Gaia Next 2)

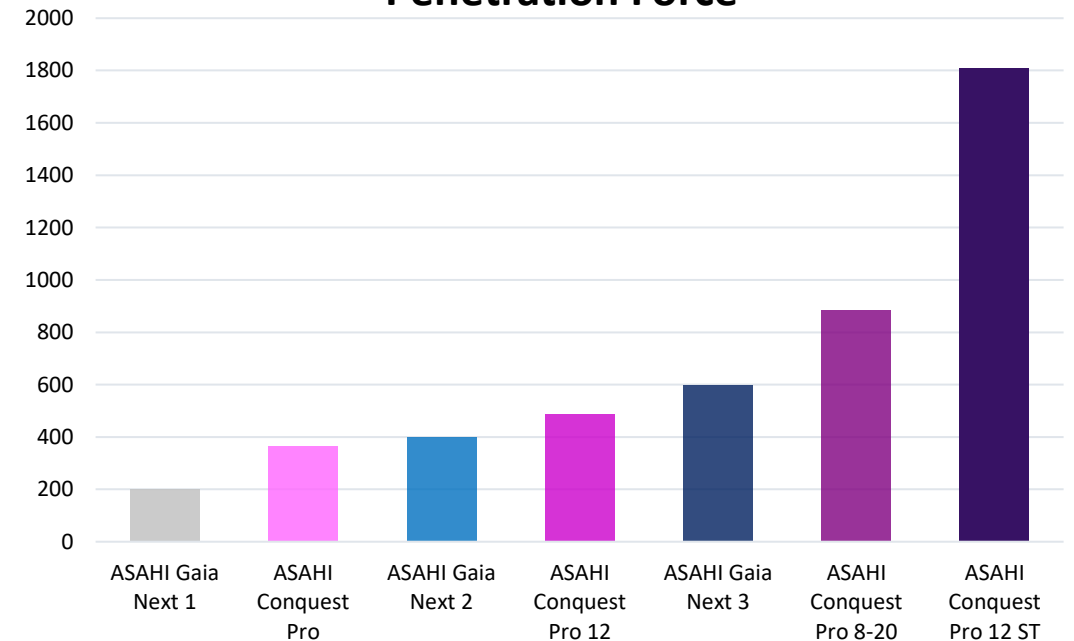


Sharpened tip
(ASAHI Conquest Pro 12 ST)



product	length	angle	image
ASAHI Conquest Pro 12 ST	1.3mm	45°	
ASAHI Conquest Pro 12 (Pre-Shape)	1.0mm	45°	

Penetration Force



Case

50's male

Silent myocardial ischemia

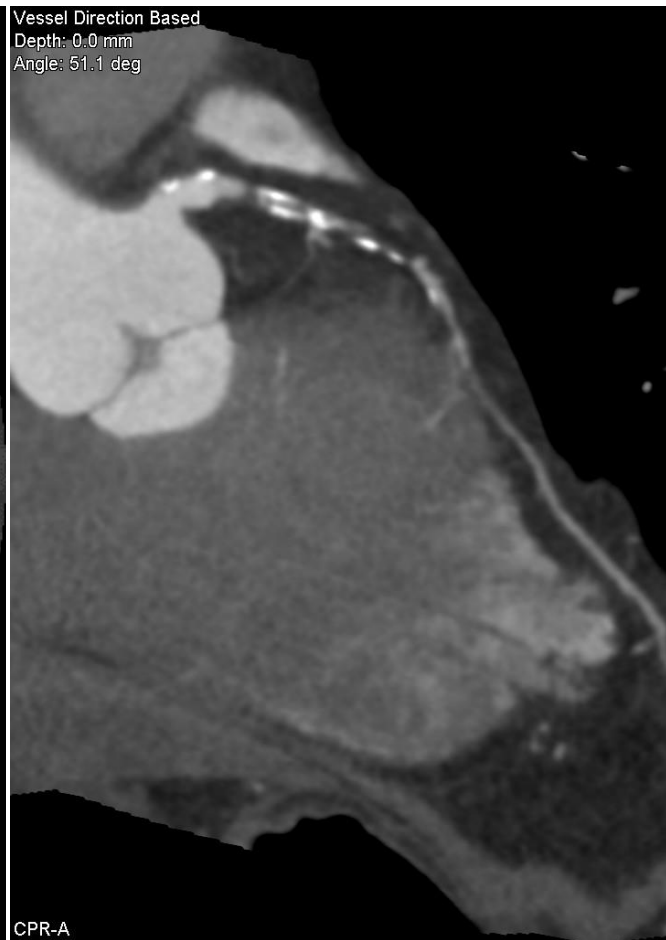
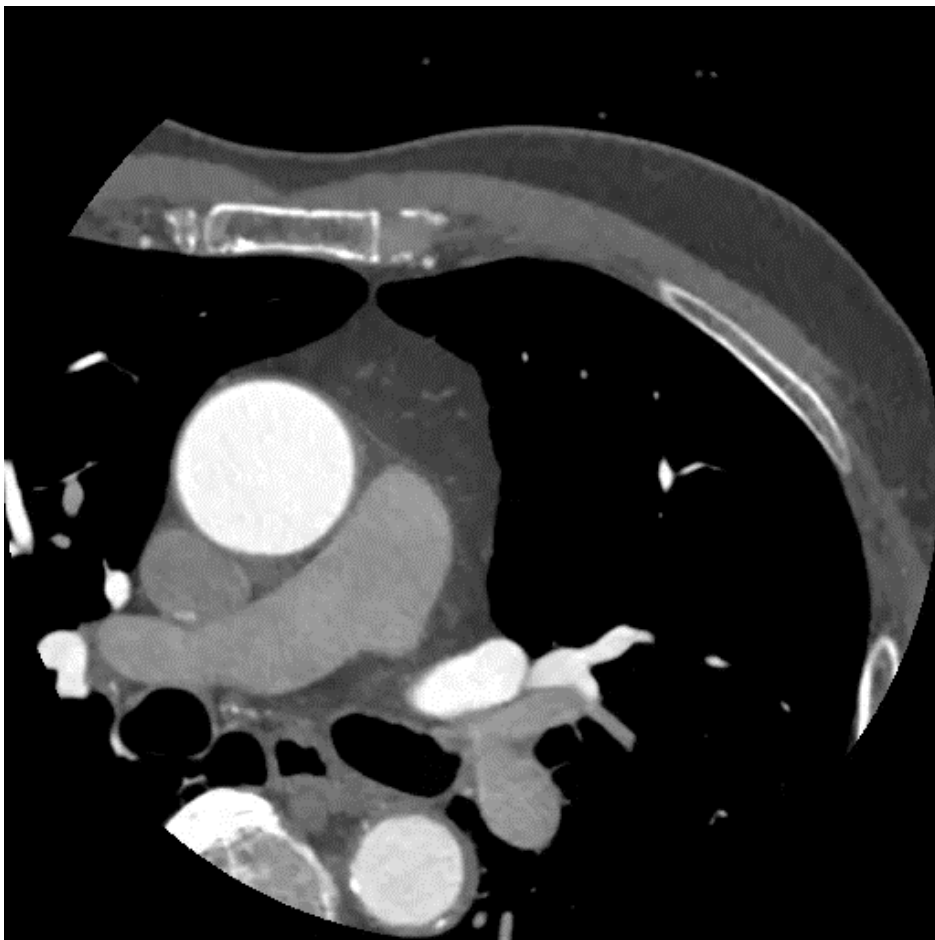
CAG: LAD #6 100%, RCA #1, #2 75%, #4PD 100%, LCX #11, #12, #13 75%

Previous PCI : LAD #6 CTO unsuccessful

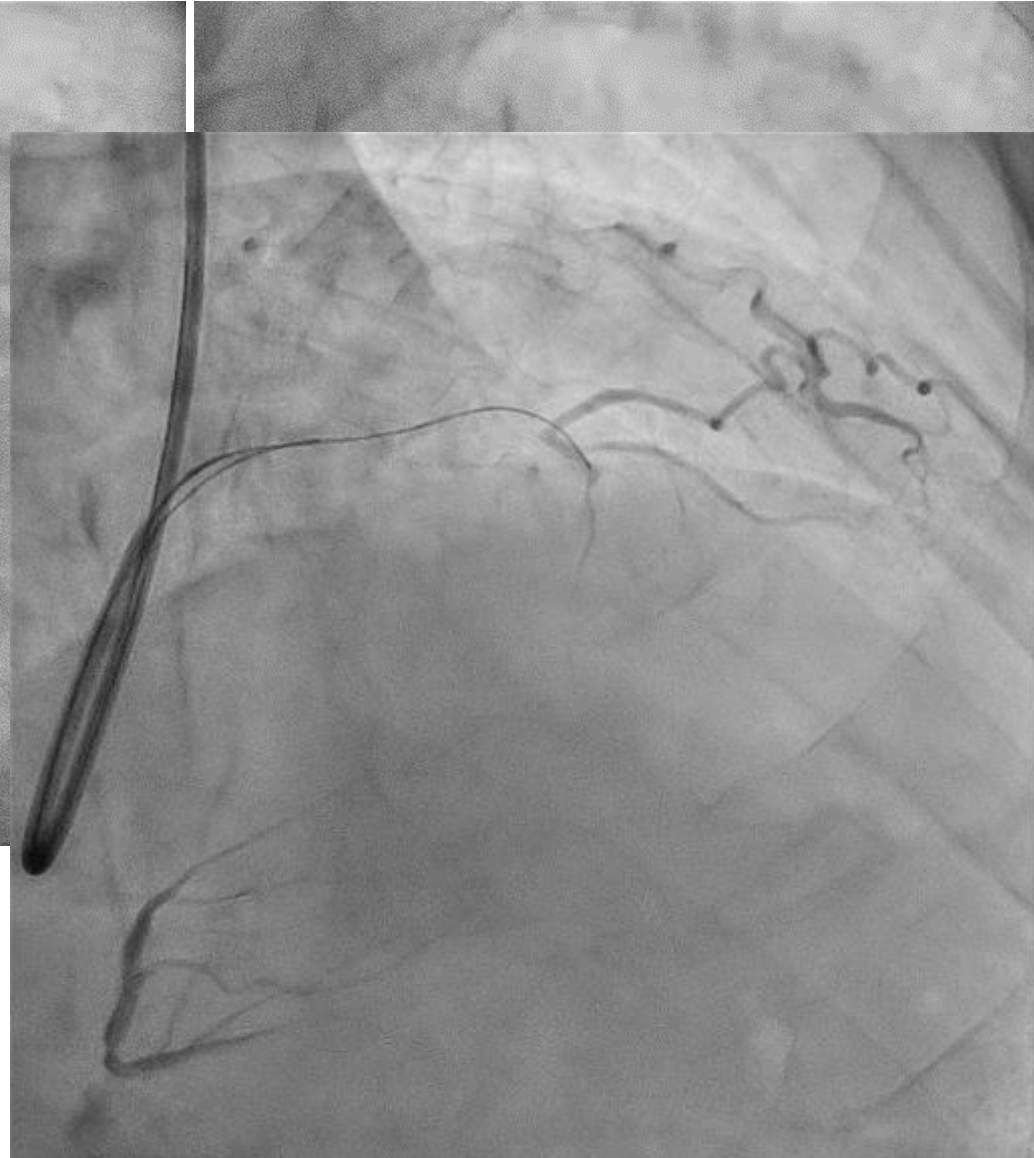
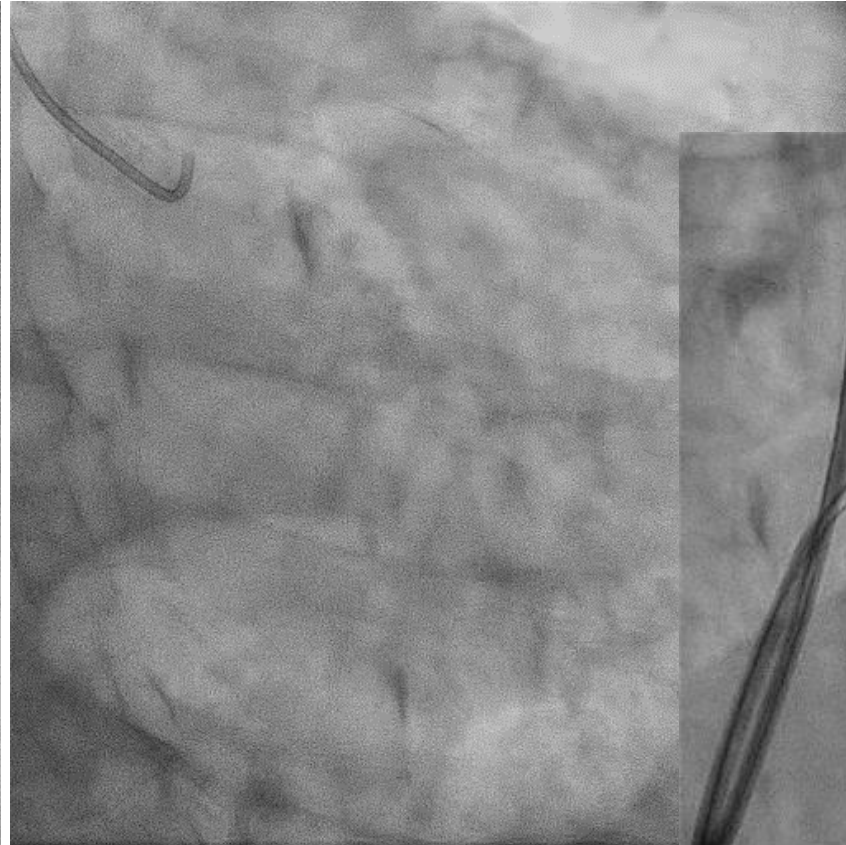
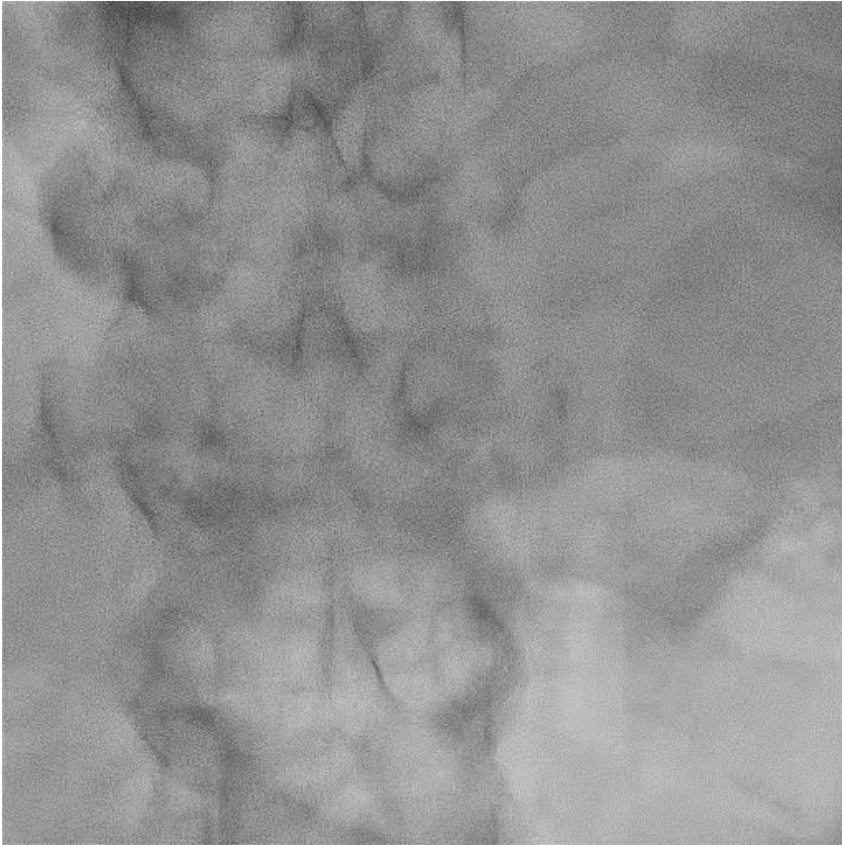
Target: LAD CTO retry

Coronary risk factor: Hypertension, DLp

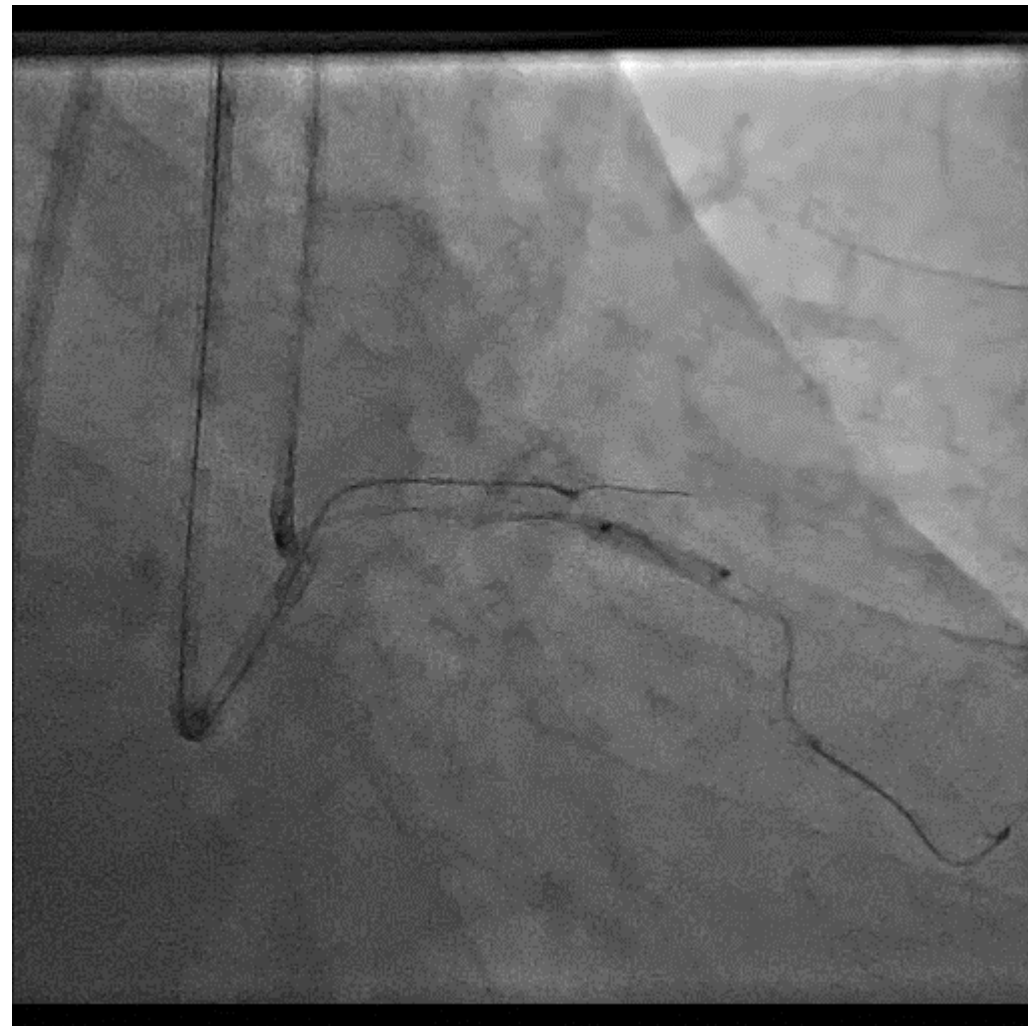
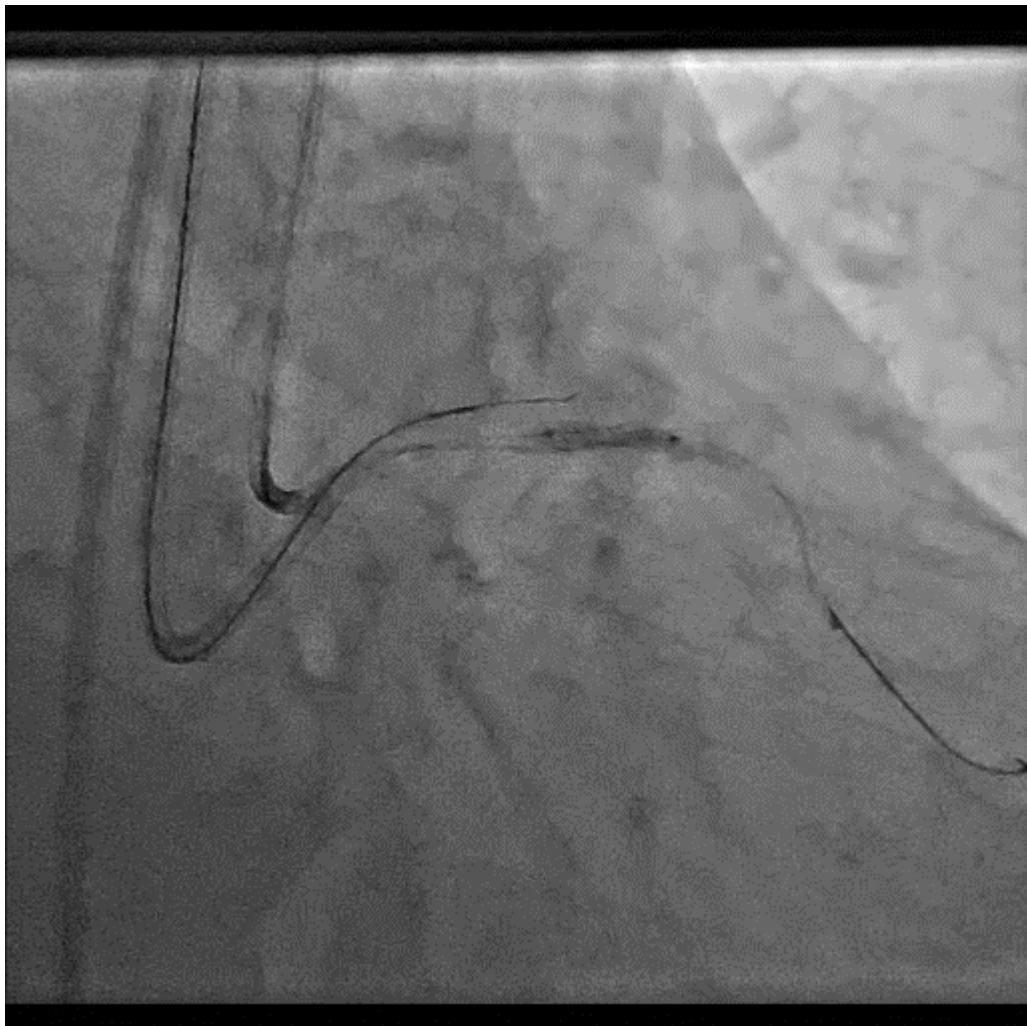
Coronary CT



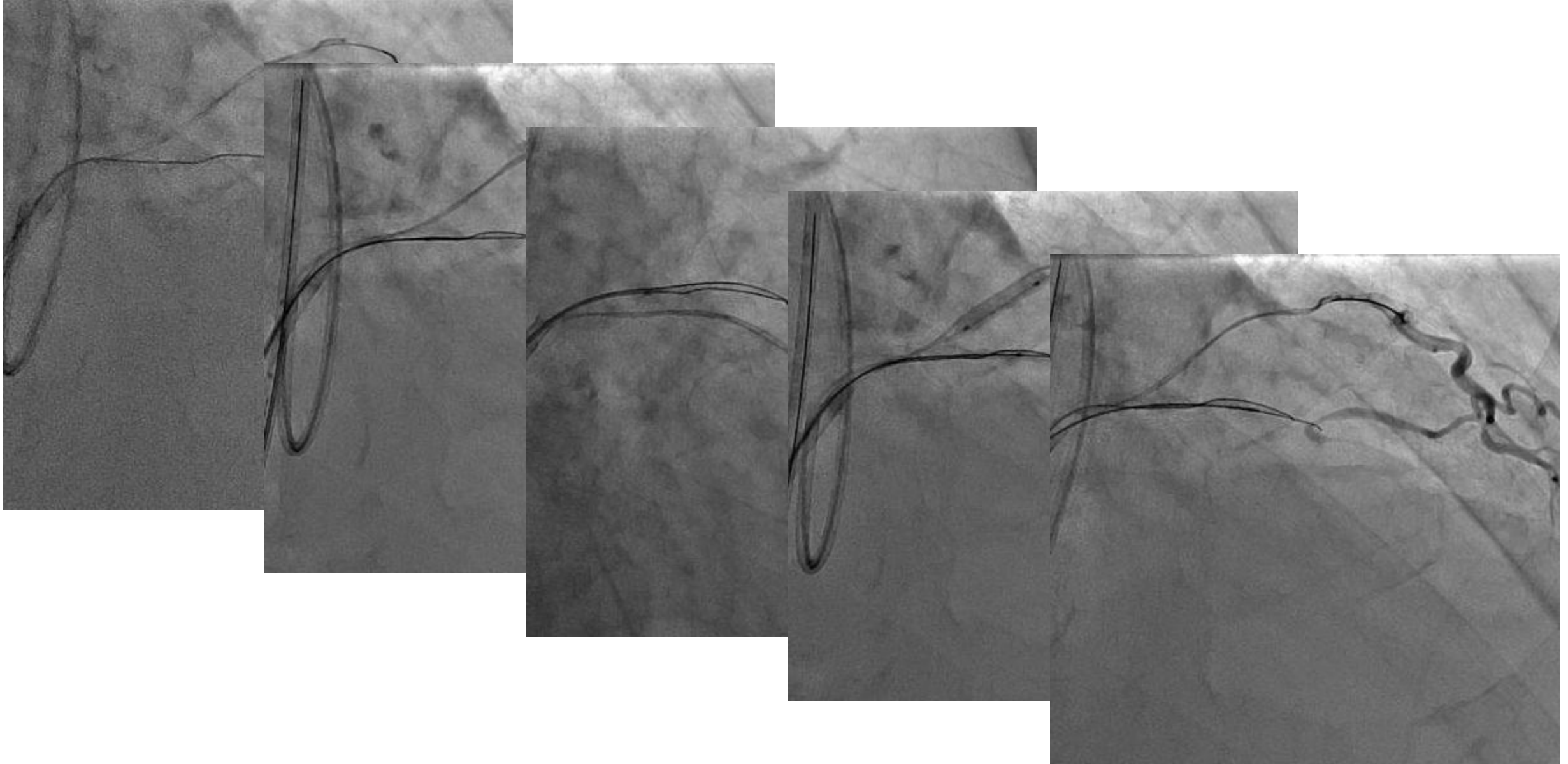
Coronary angiograms



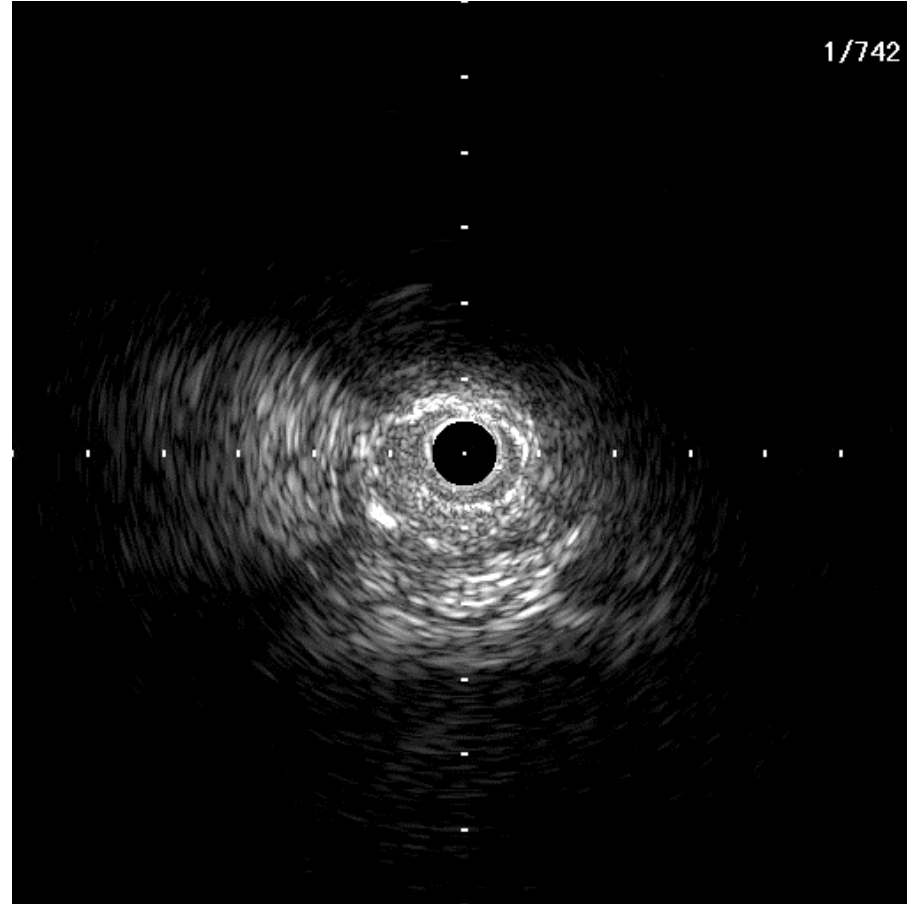
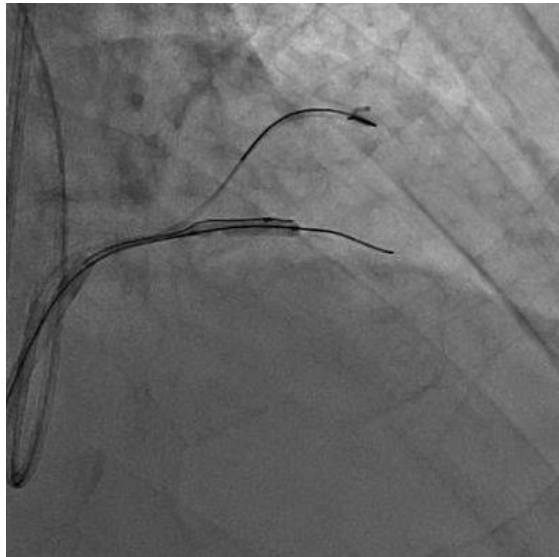
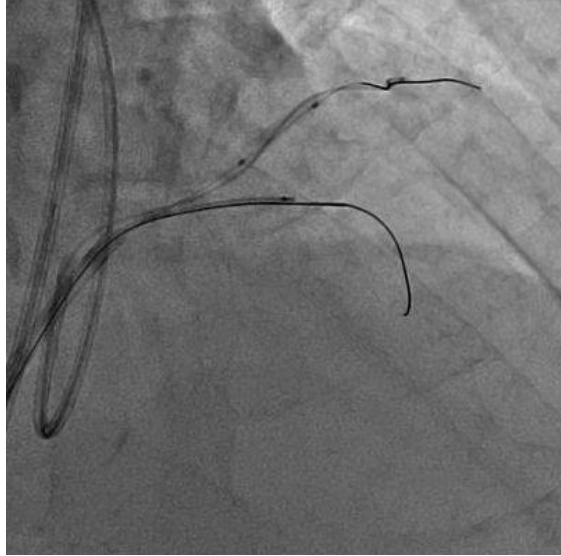
LAD wiring



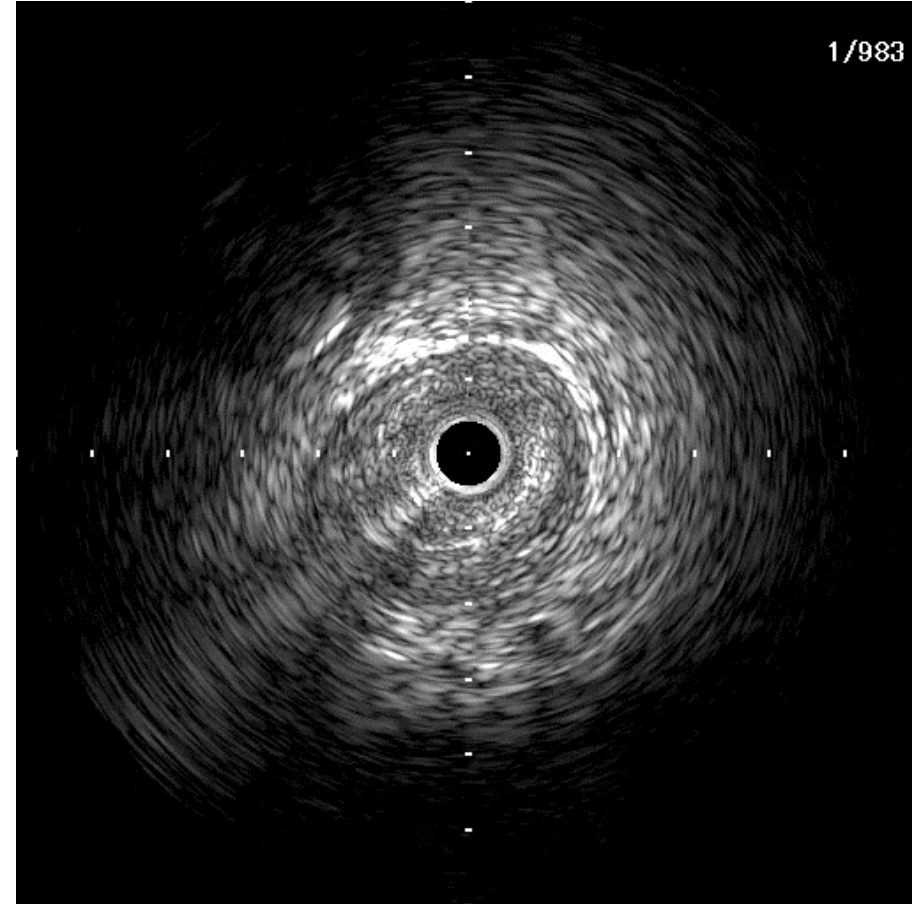
LAD wiring



LAD IVUS

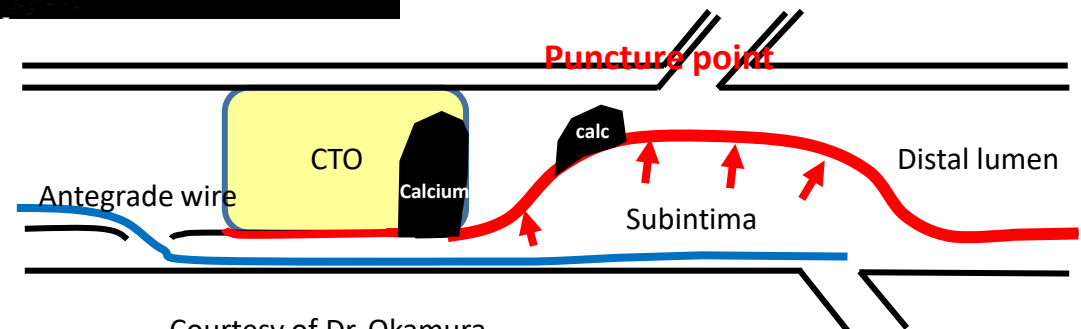
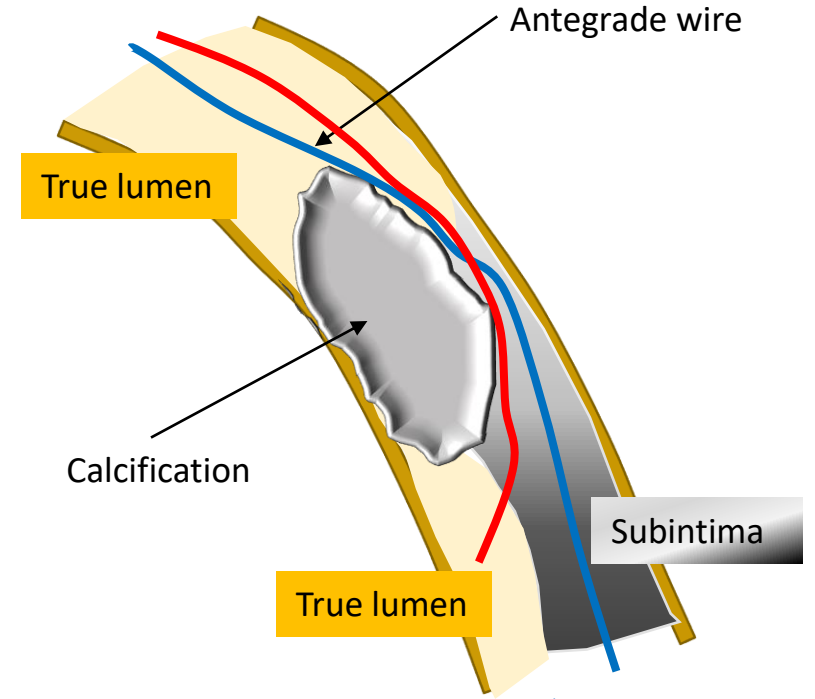
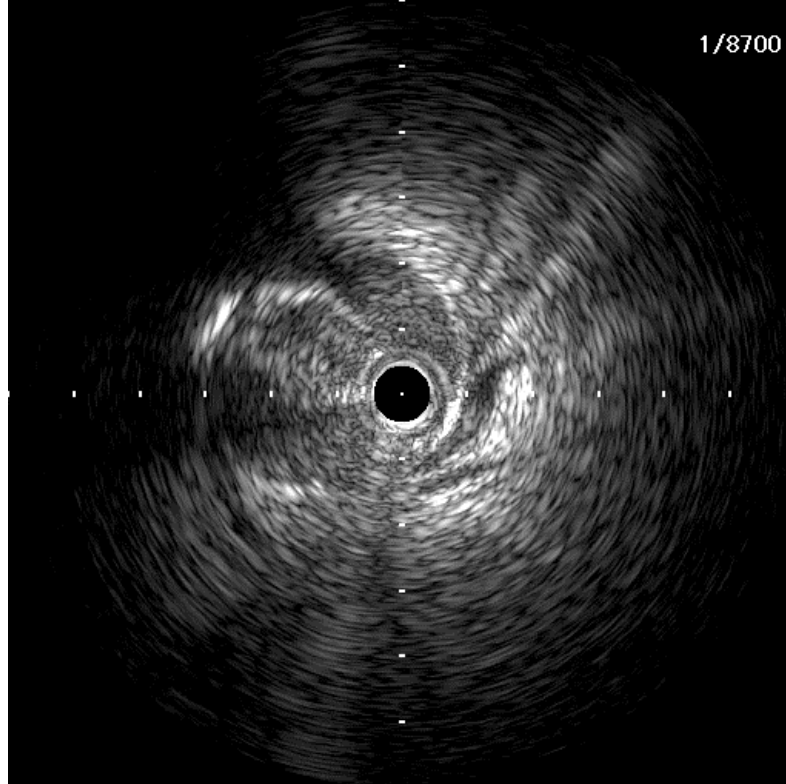
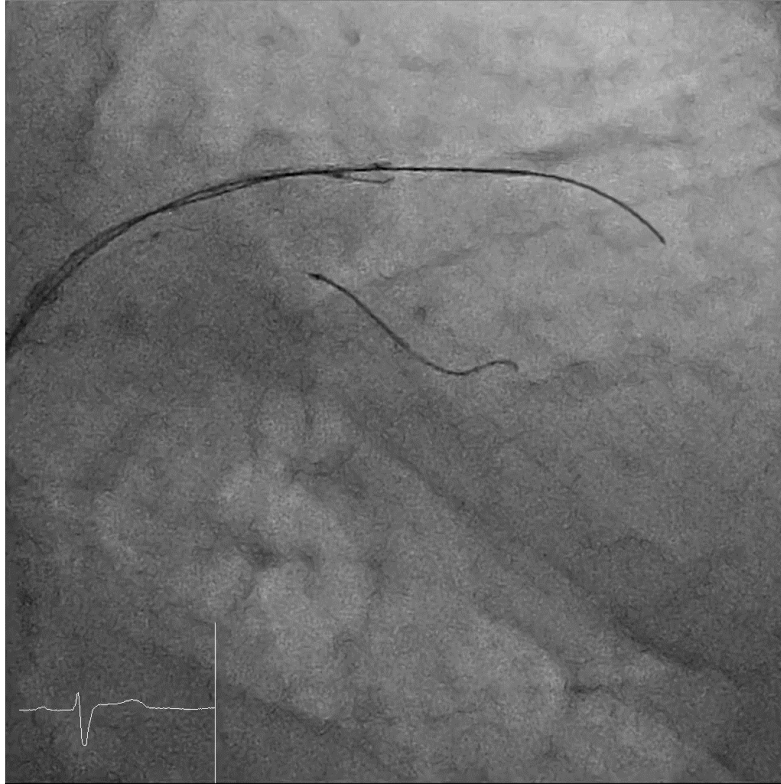


Proximal



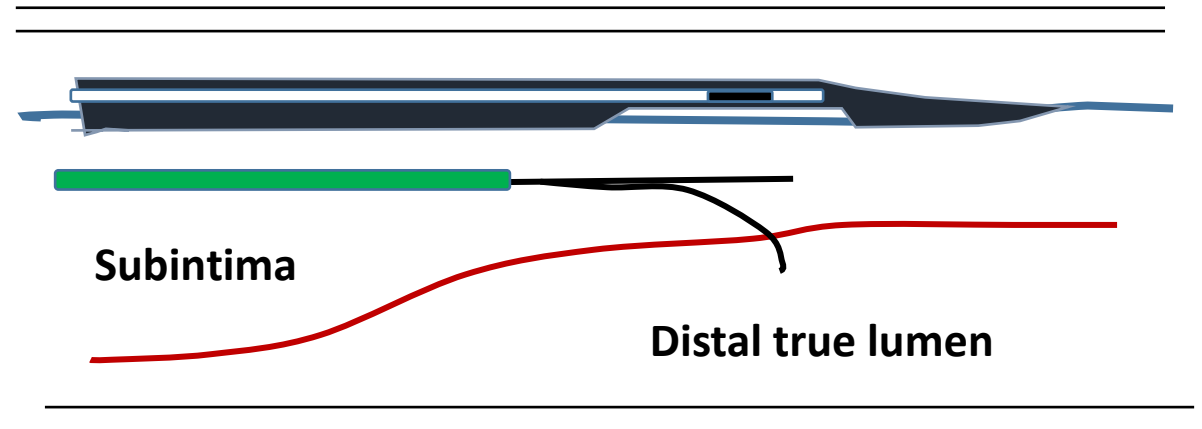
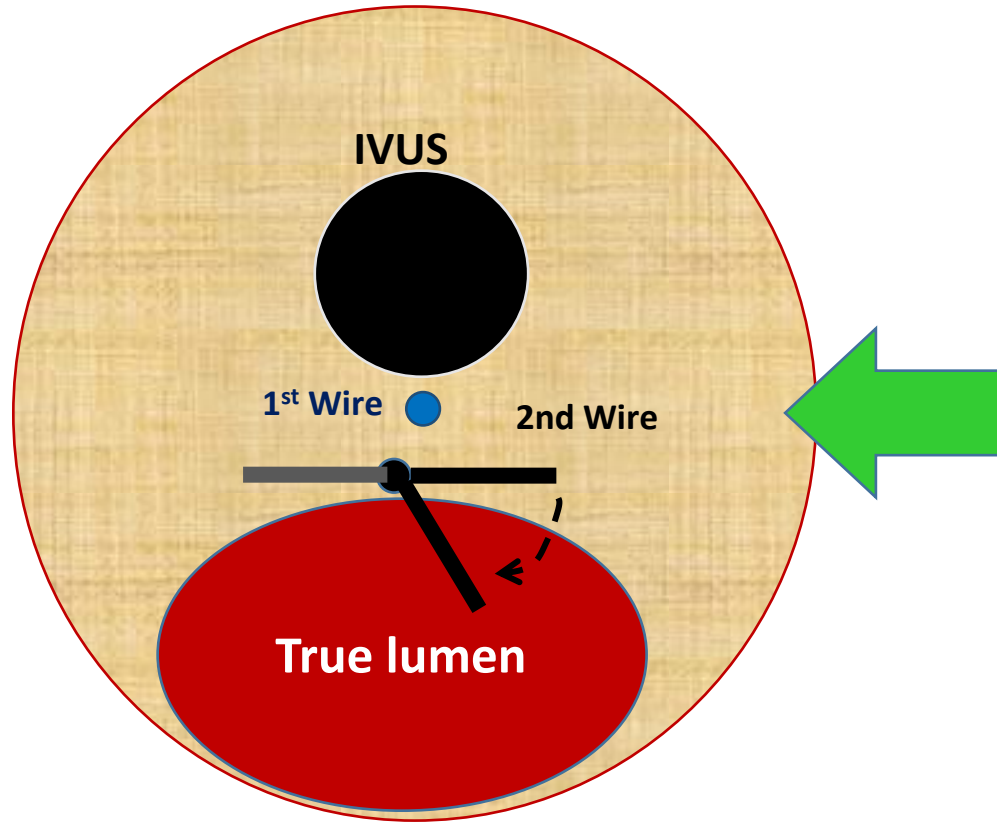
Distal

IVUS guided ADR

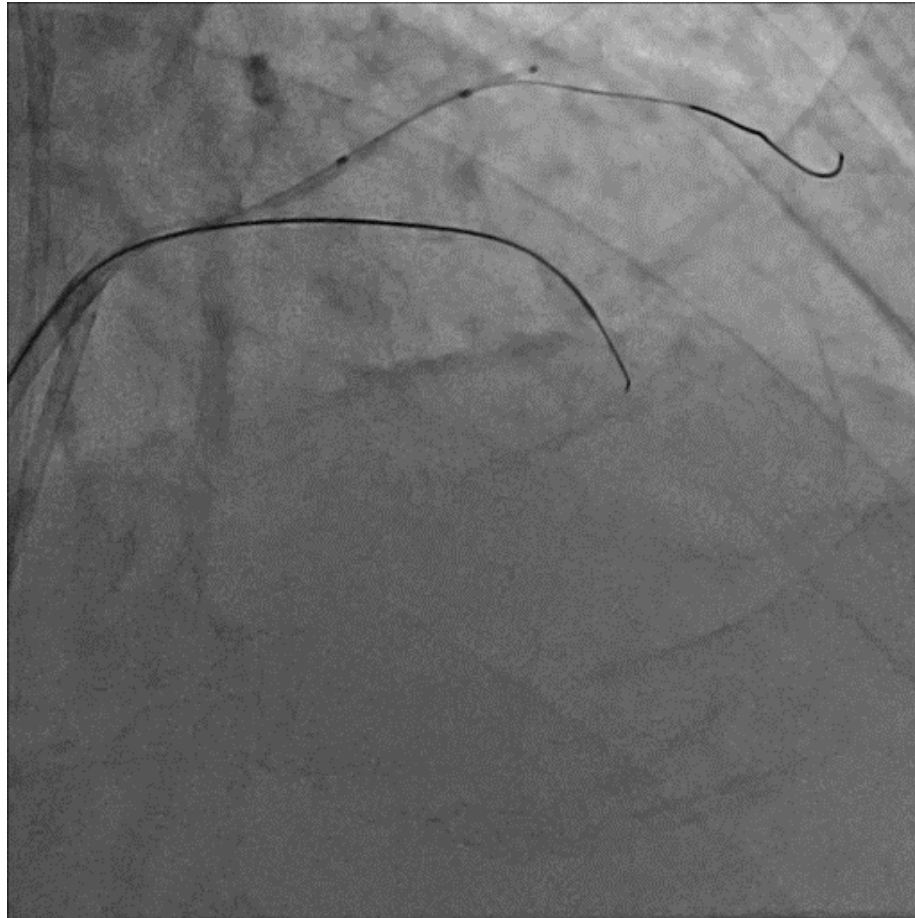
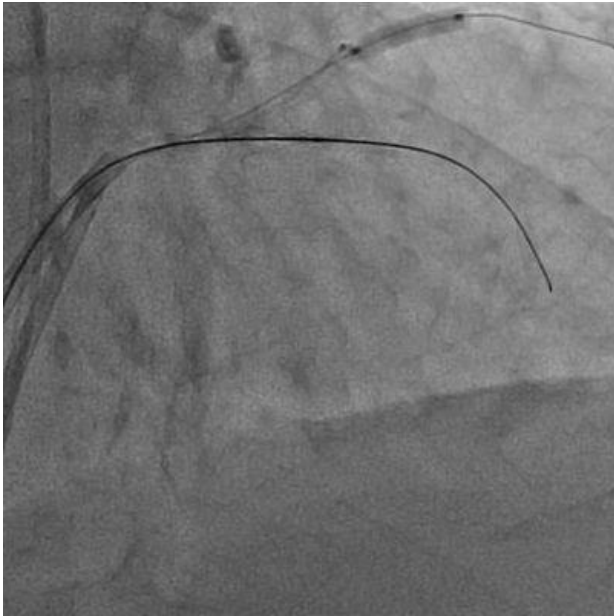


Courtesy of Dr. Okamura

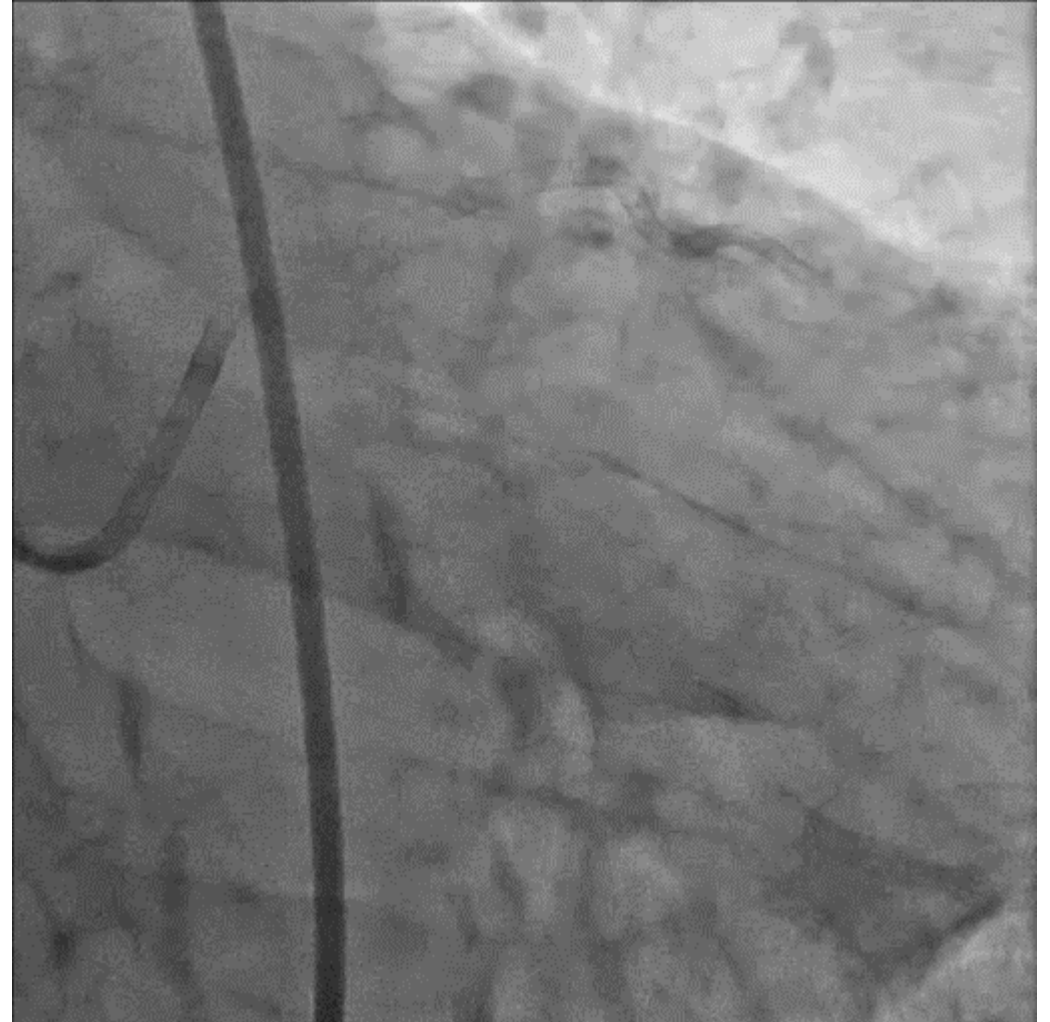
Overlap IVUS image on angiography



Wire de-escalation



Final angiograms



Case

70's male

Congestive heart failure, paroxysmal AF

History: 2018: MR (MVR, TAP)

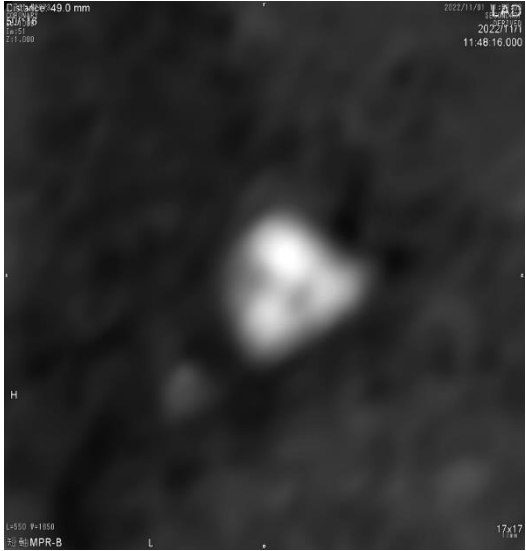
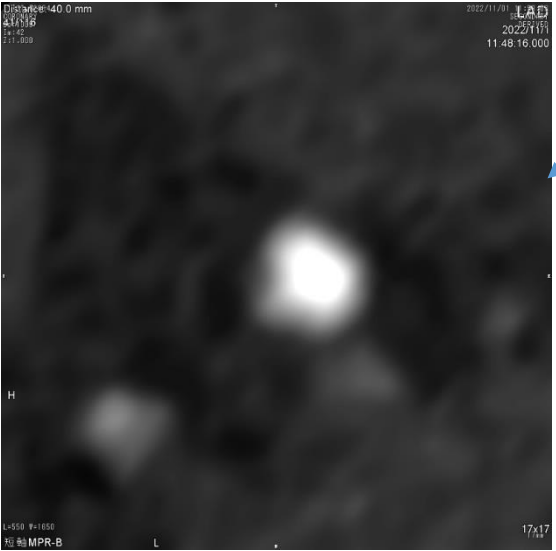
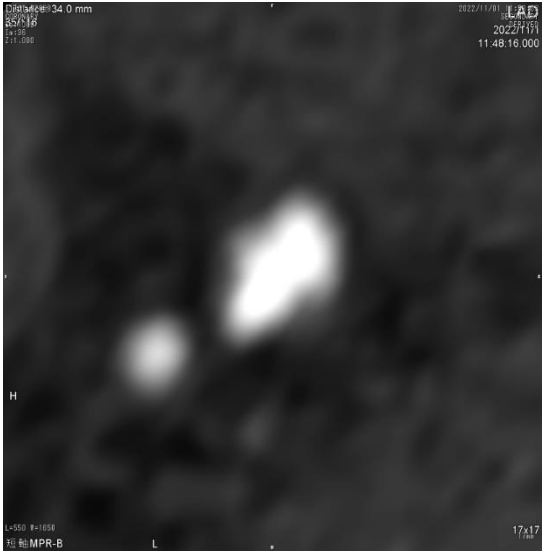
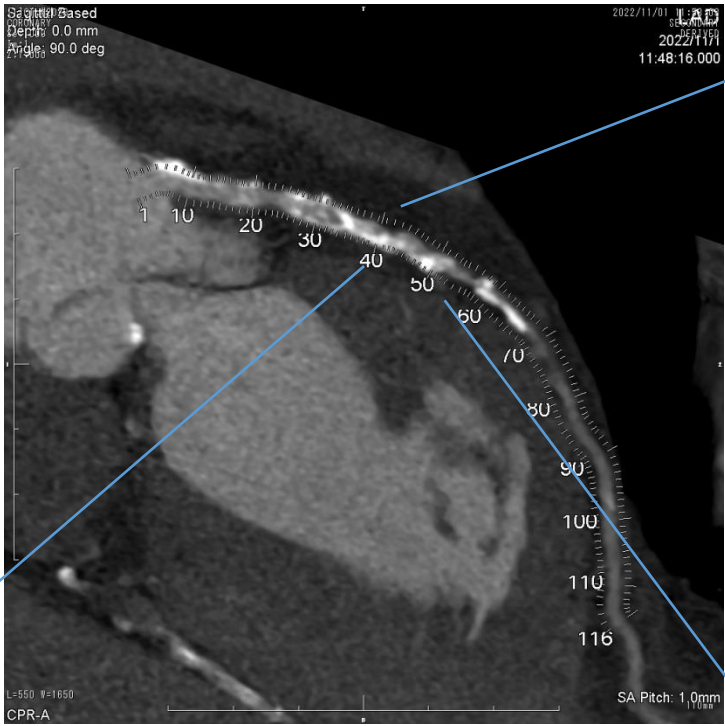
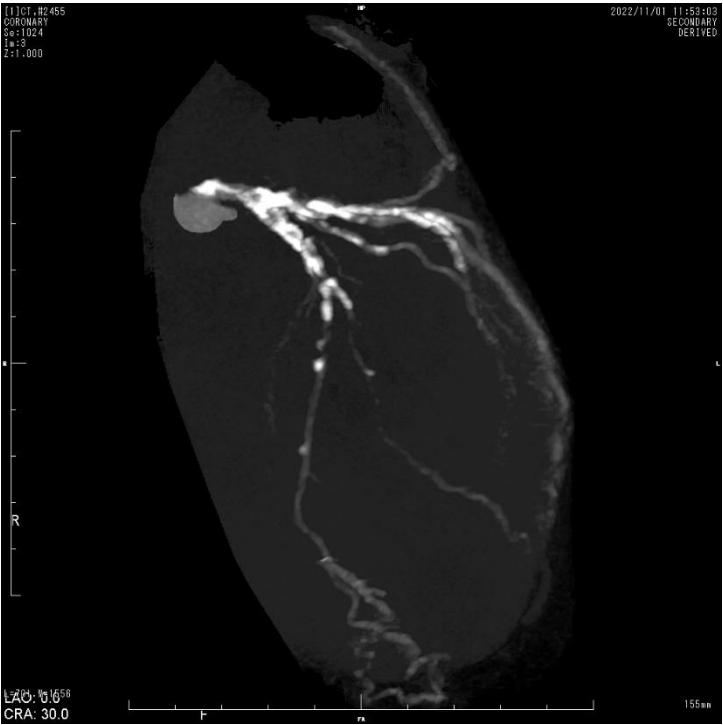
2022: Paroxysmal AF

2022: Coronary CT ⇒ LAD occlusion

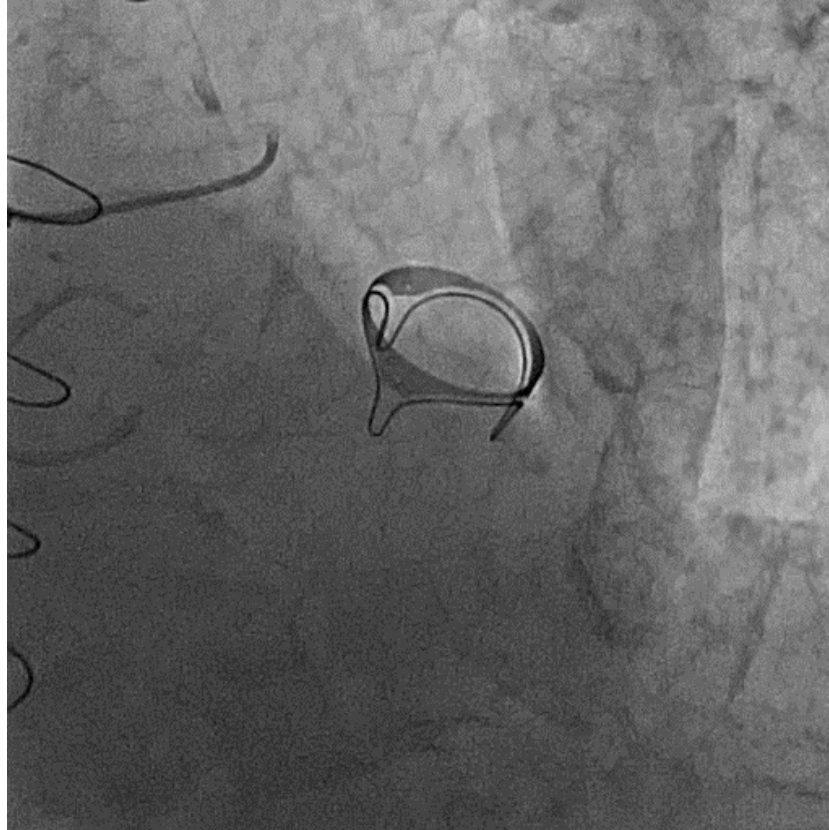
UCG: General hypokinesis, Normal wall thickness (EF 52% → 33% for 6 months)

Risk factor: CRF

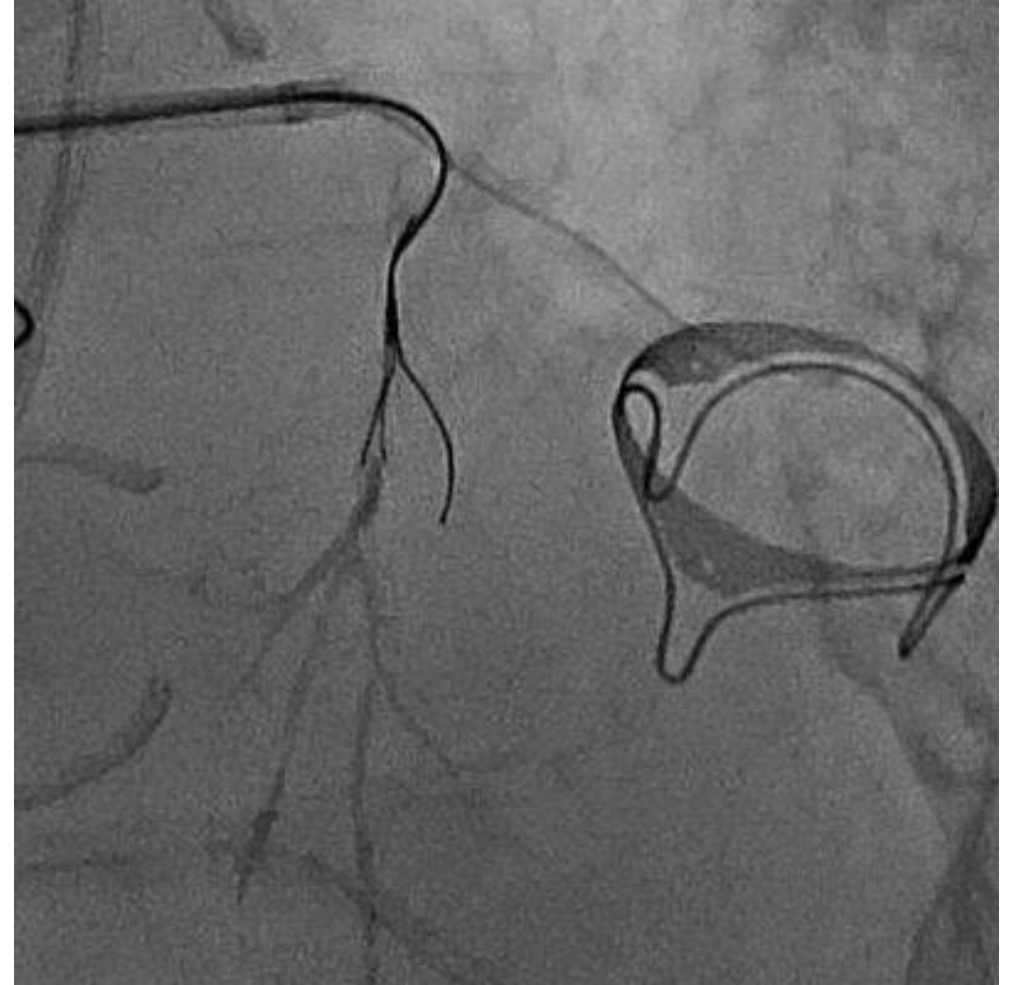
Coronary CT



Coronary angiograms

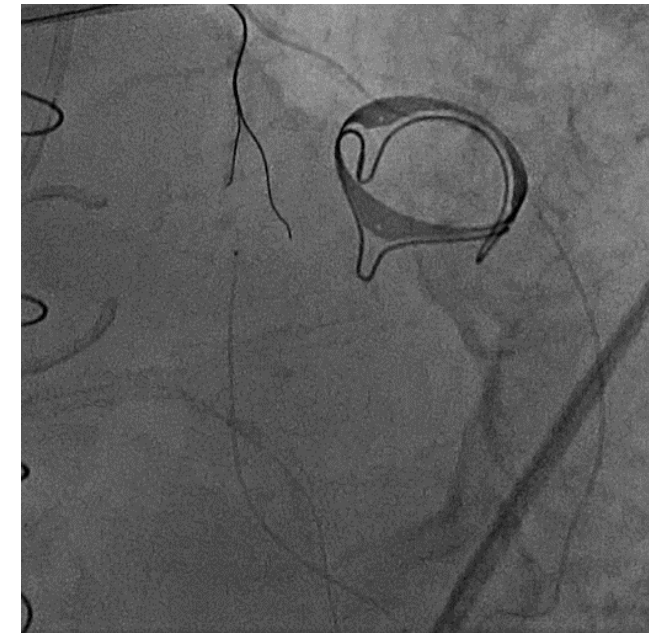
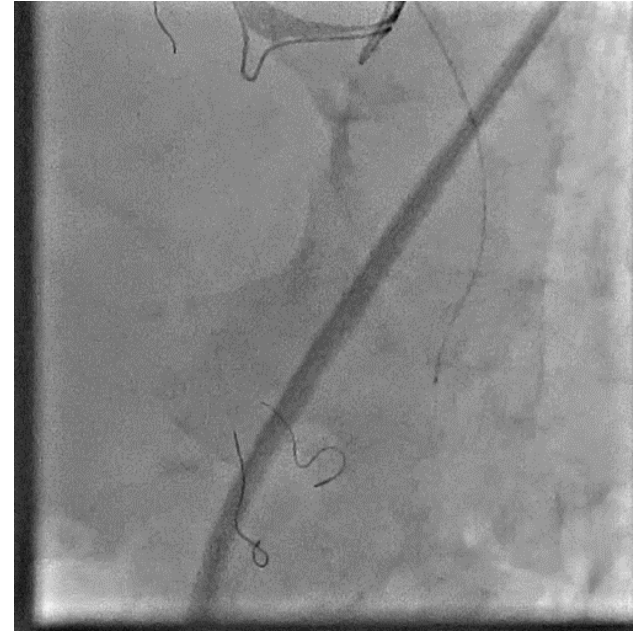
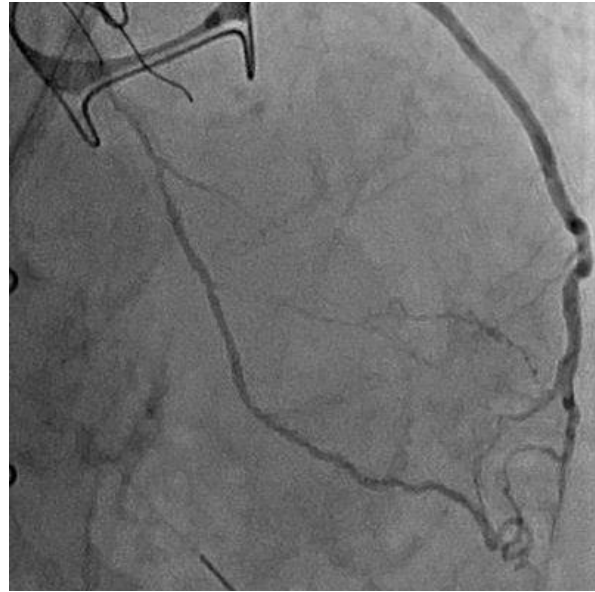
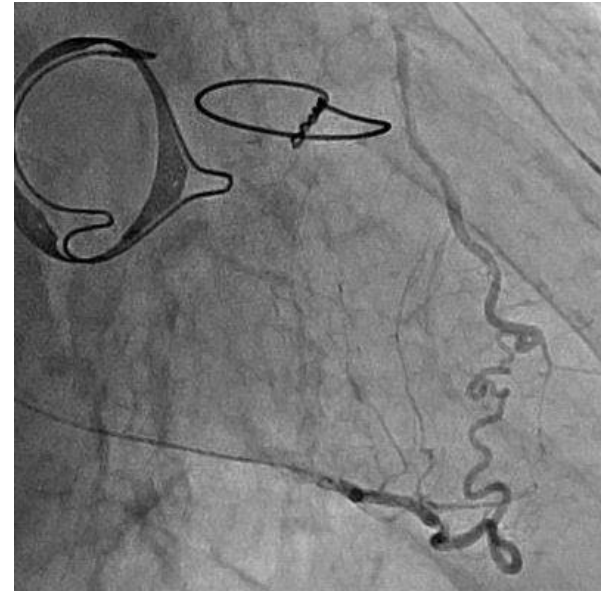


Antegrade approach



Failed parallel wiring (GAIA next 2 and Conquest pro 12)

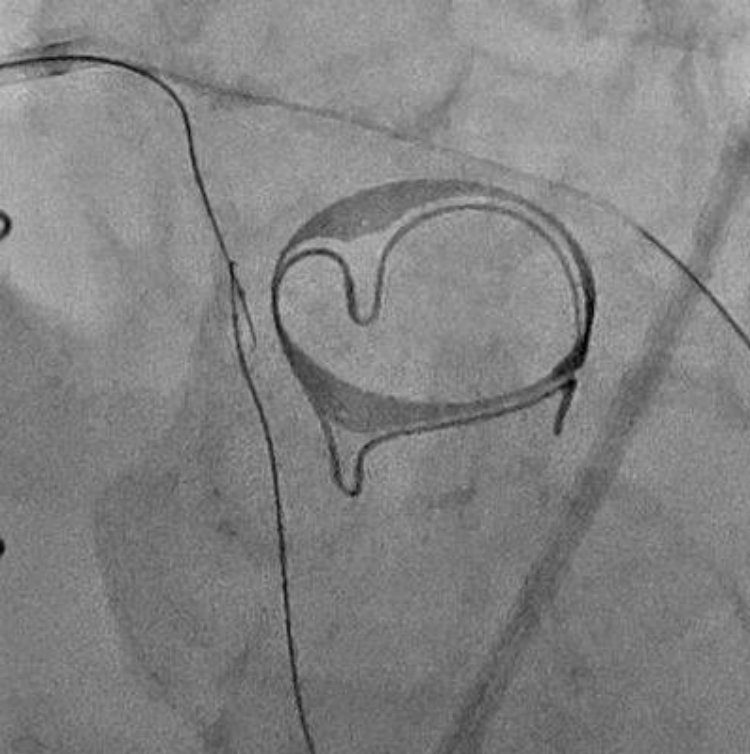
Retrograde approach



Septal channel : fail Apex channel : Severe tortuosity

LCX→Diagonal : Less tortuosity, diameter

Reverse CART

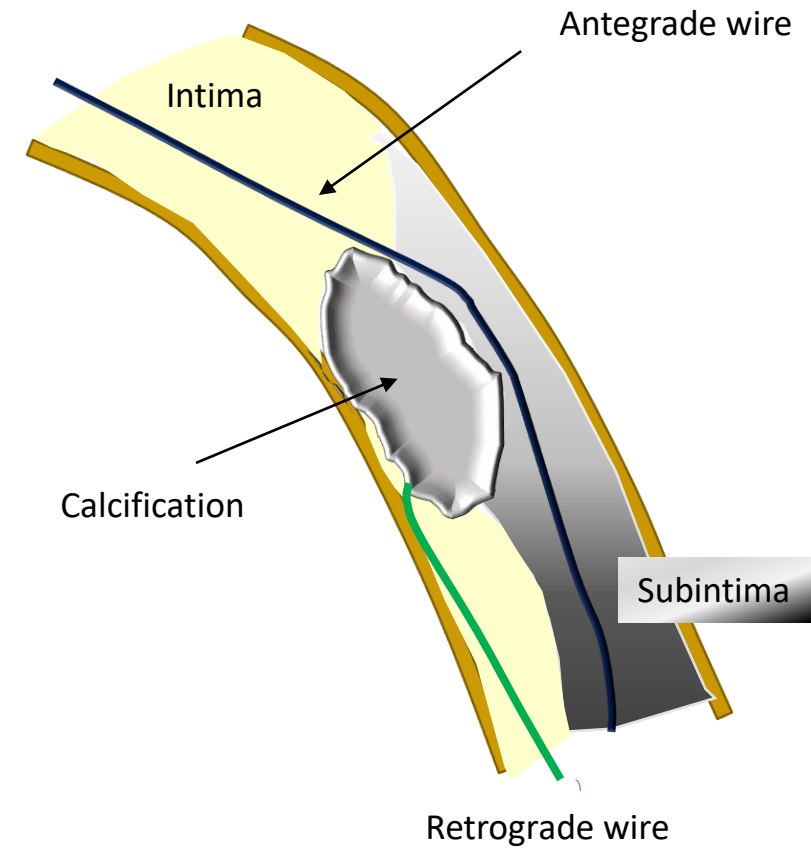
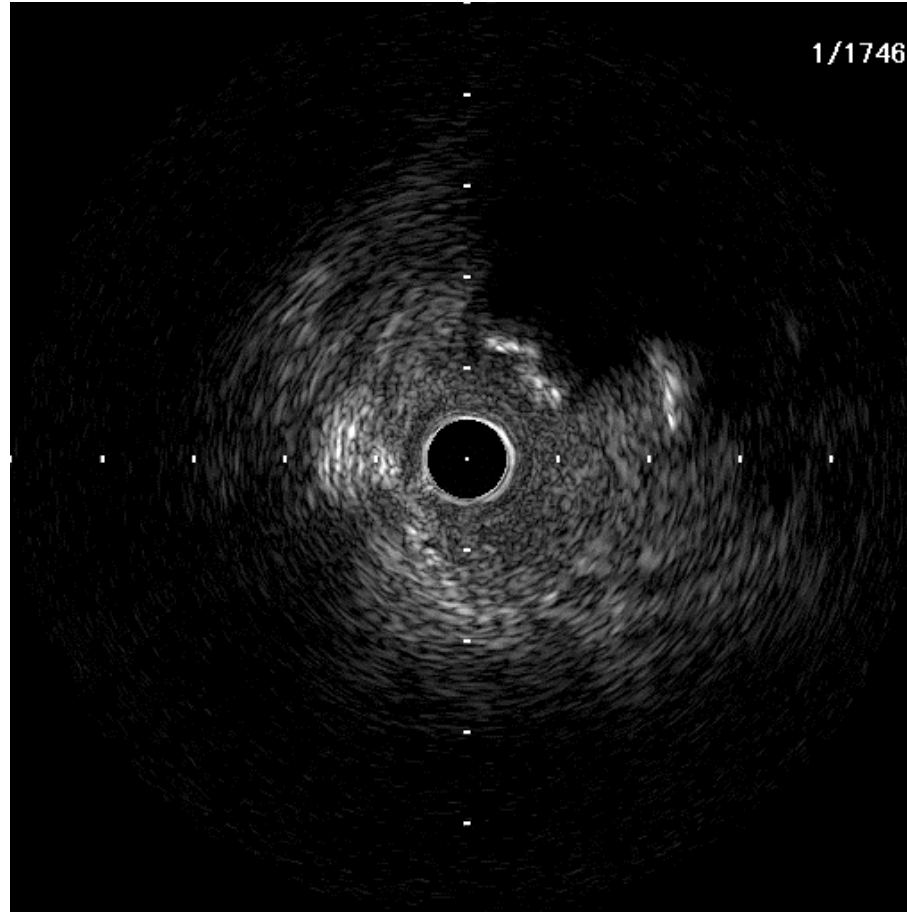


Antegrade balloon

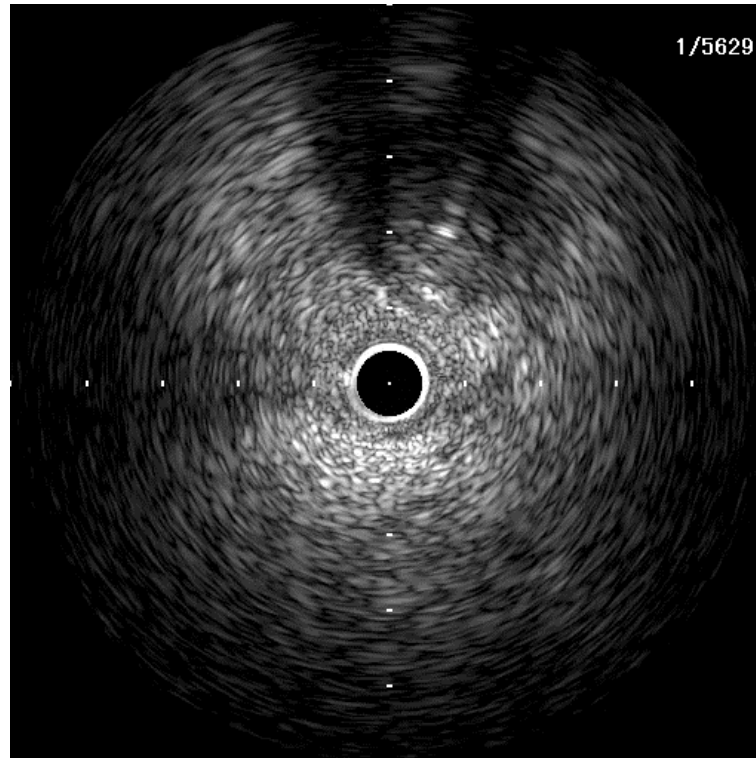
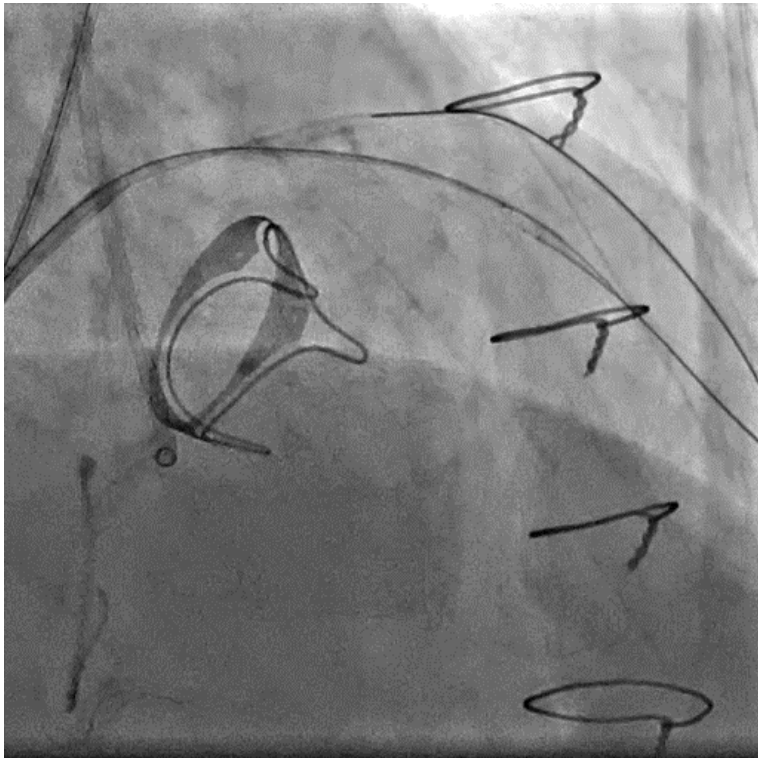
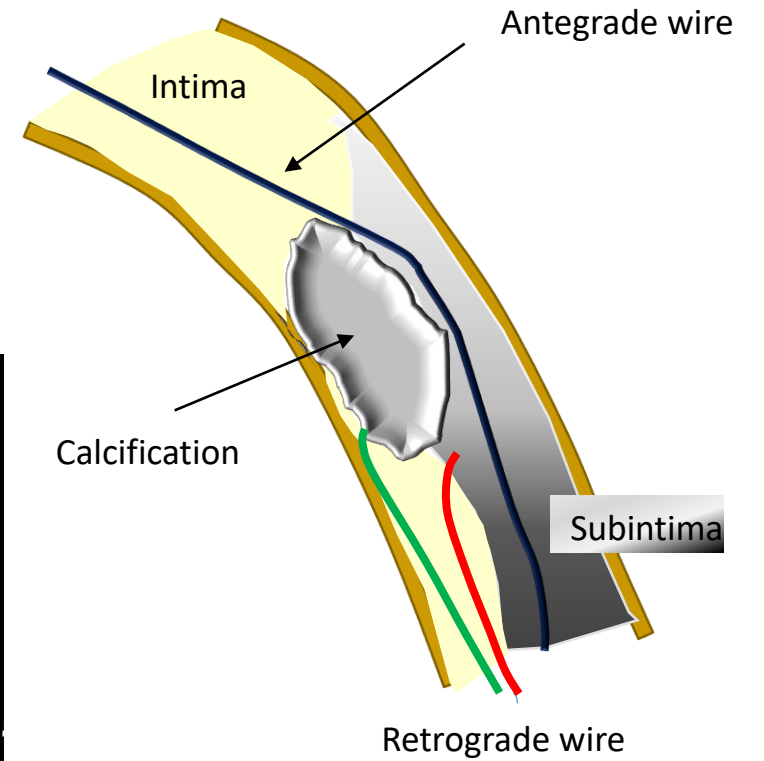
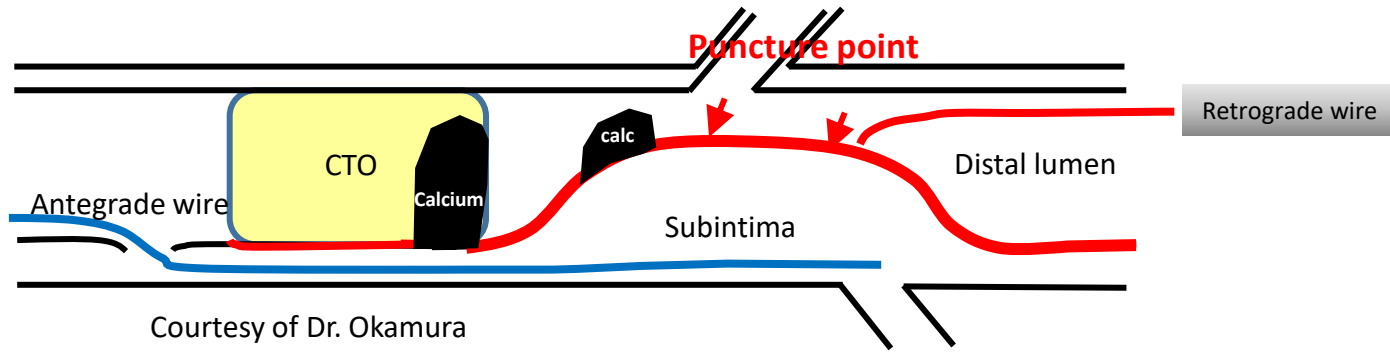
1.0 mm 1.5 mm
2.0 mm 2.5 mm

Retrograde wire

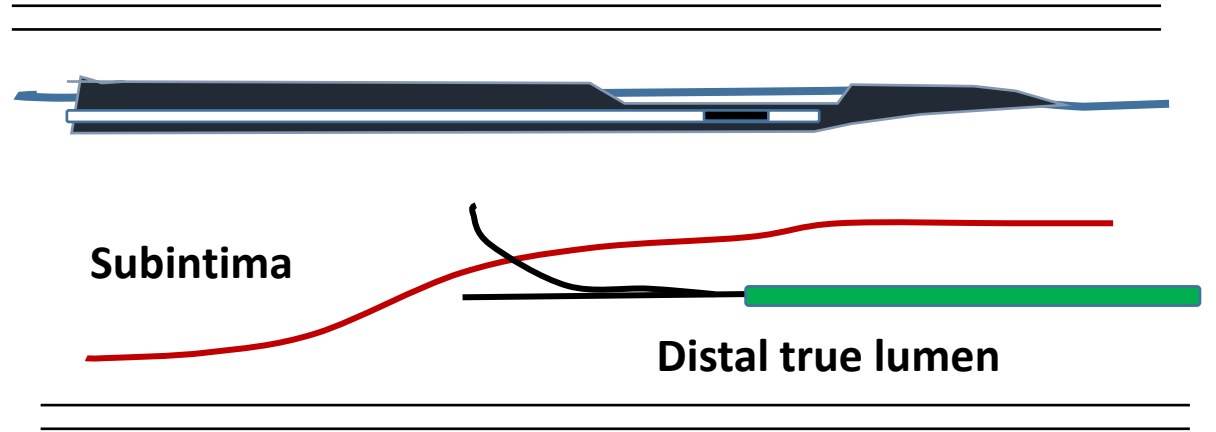
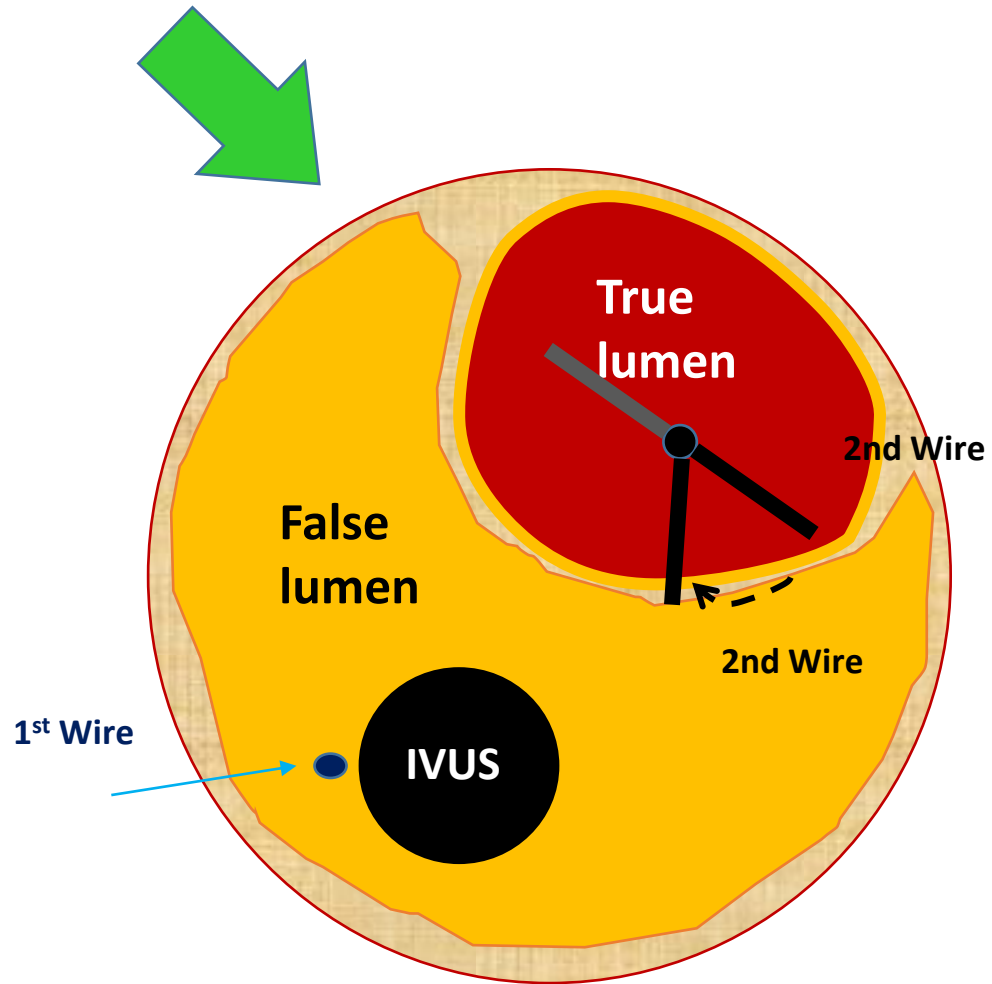
Miracle neo 3 GAIA next 3
GAIA next 4 Conquest pro 12 Gladius



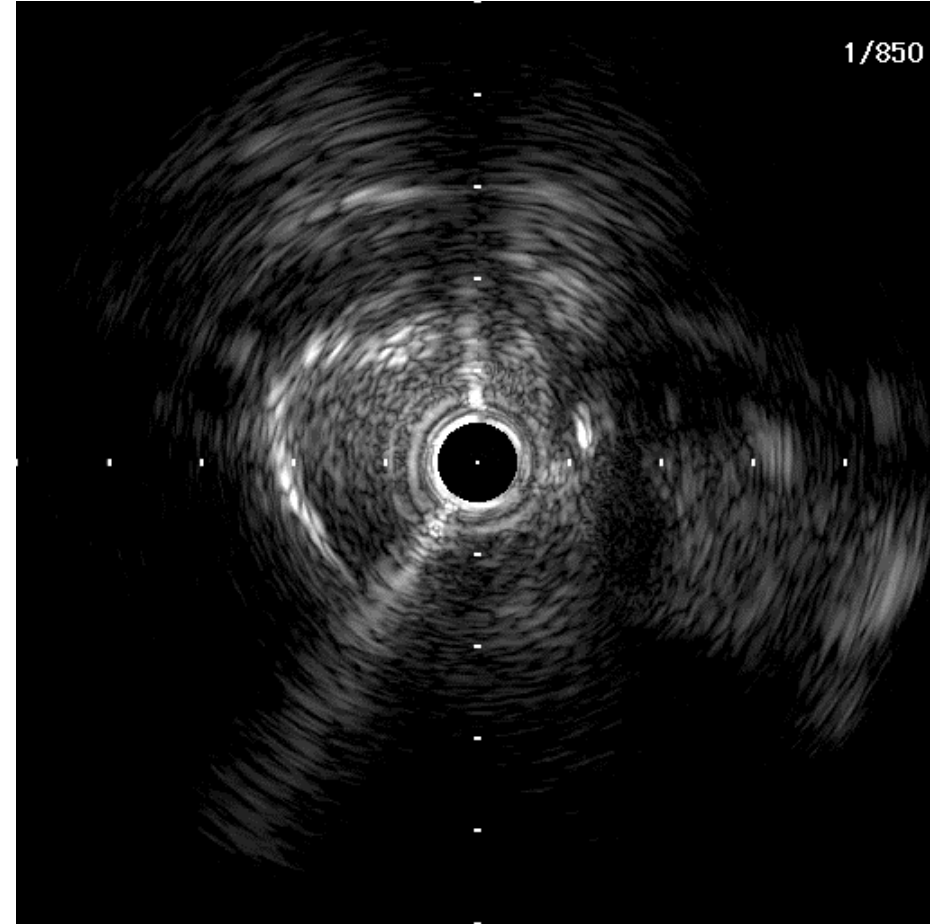
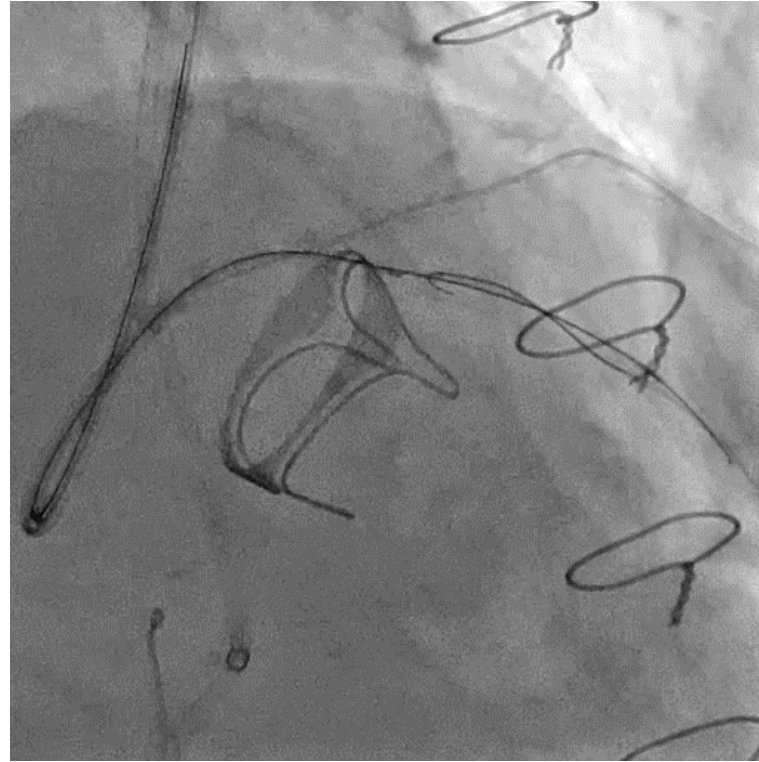
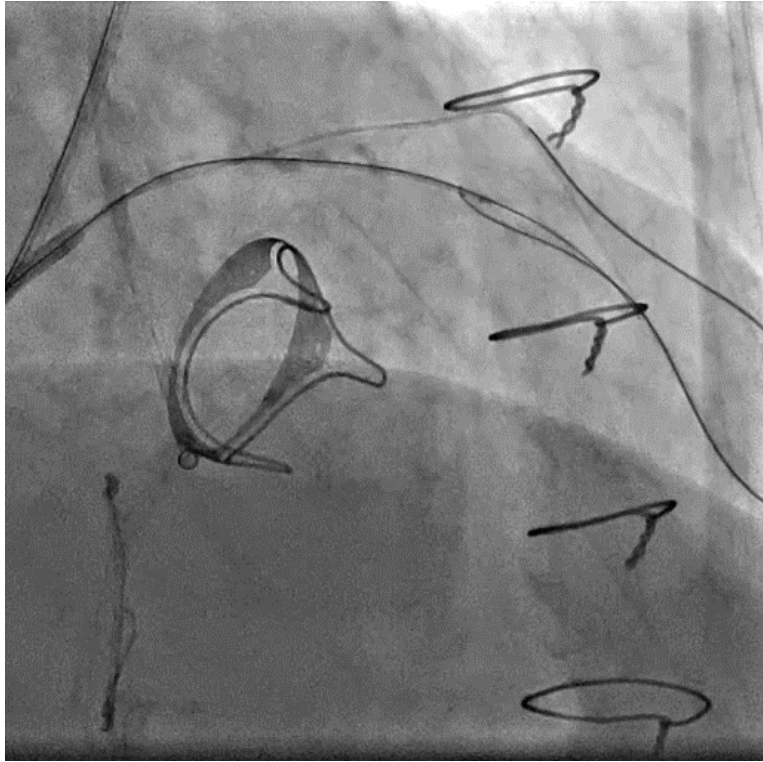
IVUS guided RDR



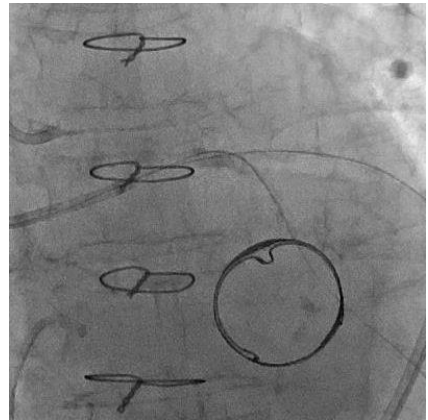
Overlap IVUS image on angiography



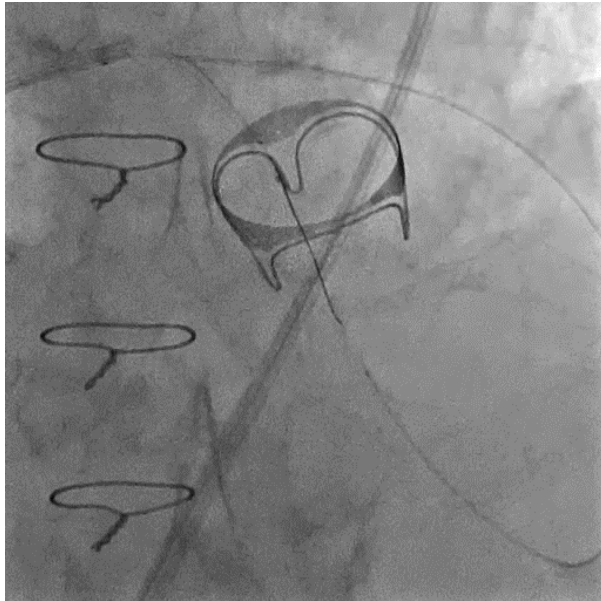
IVUS guided proximal wiring



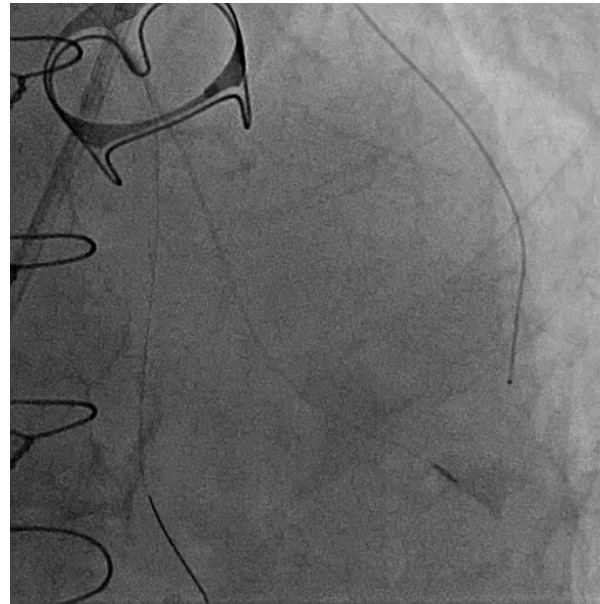
Final angiograms



Externalization



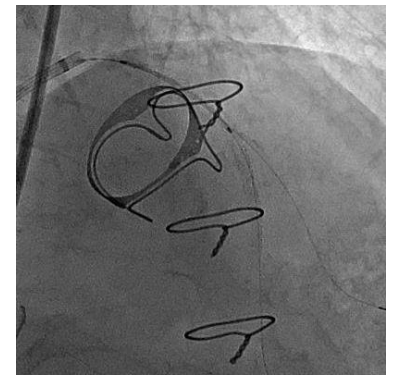
LAD wiring



Check channel damage



stent



Messages

Cases of IVUS guided ADR and RDR are shown.

By using IVUS, it is possible to select the optimal puncture point.

A conquest pro 12 ST, which has a very strong penetrating force enables accurate puncture under IVUS visual observation.

It is important to superimpose the IVUS image on angiography, and to align the second wire on the plane first.

After that, tip detection method is used to rotate the wire toward the target.