

ST-segment Elevated Myocardial Infarction due to Spontaneous Coronary Dissection

Kurashiki Central Hospital
Department of Cardiovascular Medicine

Takeshi Tada, MD, Kazushige Kadota MD, Takenori Kanazawa, MD,
Seiji Habara, MD, Hiroyuki Tanaka, MD, Yasushi Fuku, MD,
Tsuyoshi Goto, MD, Kazuaki Mitudo, MD

Case 79 y.o. Male

Chief Complaint)

Chest pain

Present Illness)

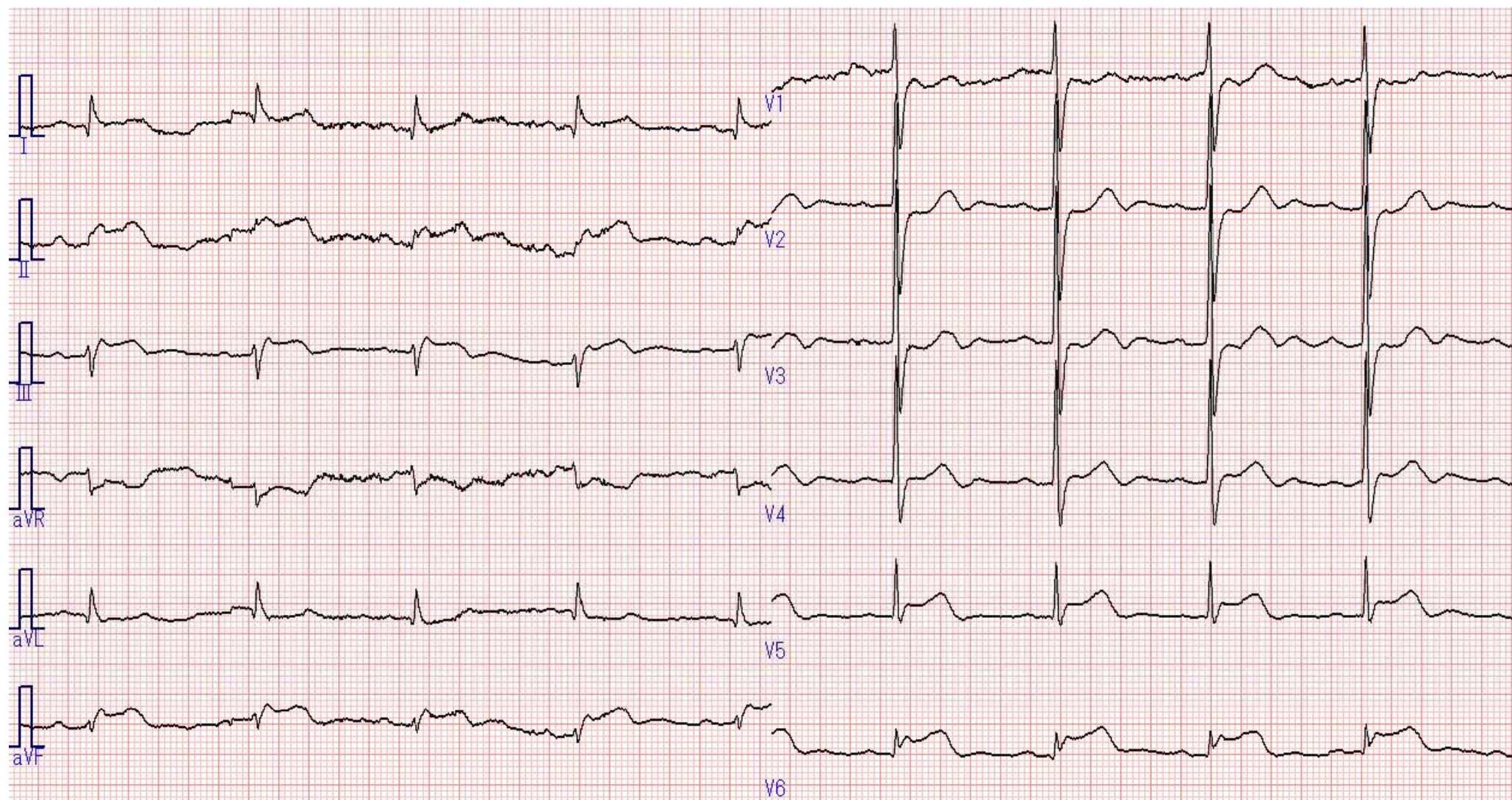
He came to our emergency room due to sudden onset of chest pain 4 hours prior to admission.

Electrocardiogram showed ST-segment elevation in the II, III, aVF, V5-6 leads, so we suspected acute myocardial infarction and performed coronary angiography.

Coronary Risk Factor)

Hypertension, Dyslipidemia

Electrocardiogram



Chest radiograph



Blood Analyses

Variables	Value	Variables	Value
C-reactive protein (mg/dL)	0.05	Blood urea nitrogen (mg/dL)	7
Total protein (g/dL)	6.1	Sodium (mEq/L)	139
Albumin (g/dL)	3.4	Potassium (mEq/L)	4.0
Cholesterol (mg/dL)	208	creatine phosphokinase (IU/L)	346
Total bilirubin (mg/dL)	0.9	creatine phosphokinase-MB (IU/L)	15.6
Aspartate aminotransferase (IU/L)	58	Red-cell count (per uL)	4.65
Alanine aminotransferase (IU/L)	17	Hemoglobin (g/dL)	14.1
Lactate dehydrogenase (IU/L)	290	Platelet count (per uL)	18.0
Gamma-GTP (IU/L)	60	White-cell count (per uL)	9.0
brain natriuretic peptide (pg/mL)	238.7		



Transthoracic Echocardiography

Inf~Post~Lat base~mid severe hypokinesis

MR mild TR trivial

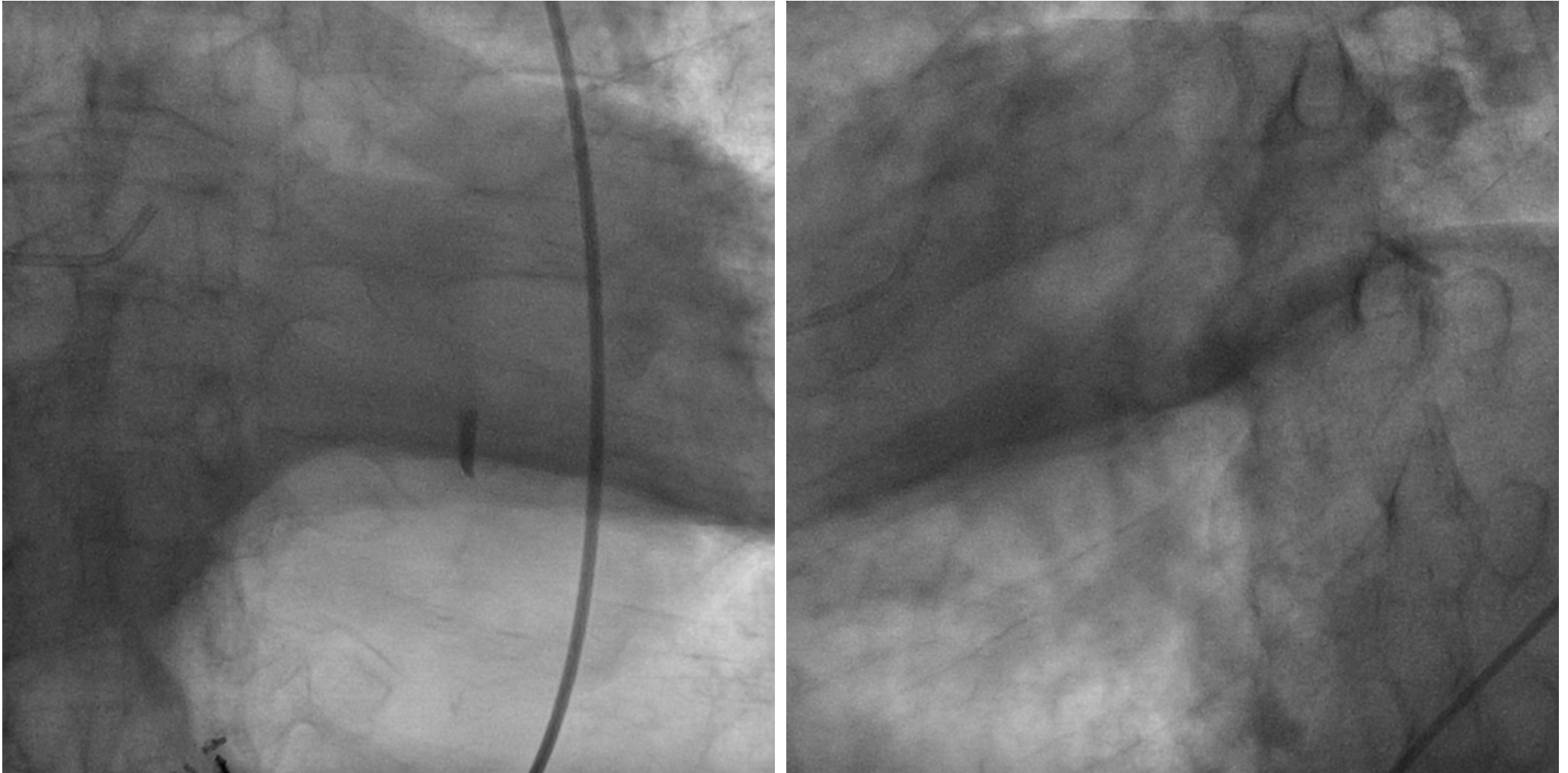
Ao flow 1.3m/sec

IVC 16mm

PE (-)

Coronary angiography

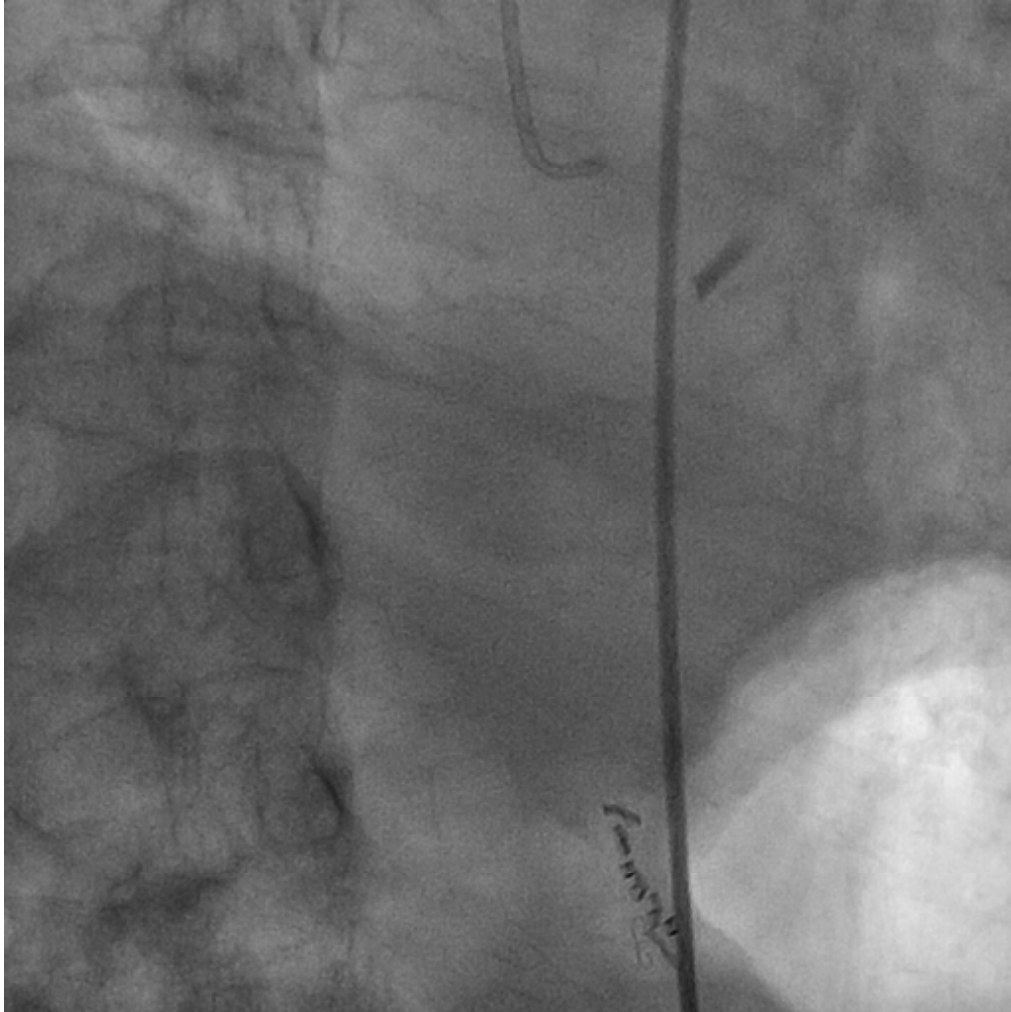
LCA



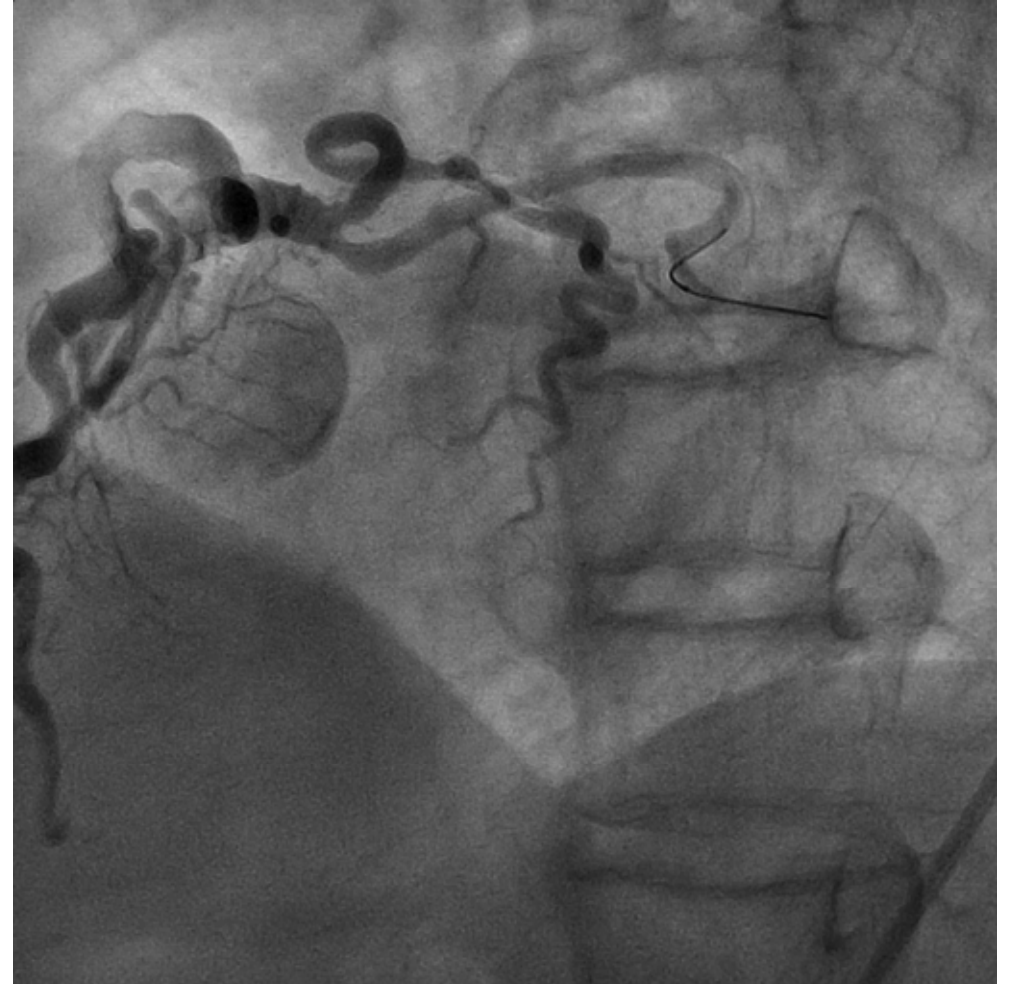
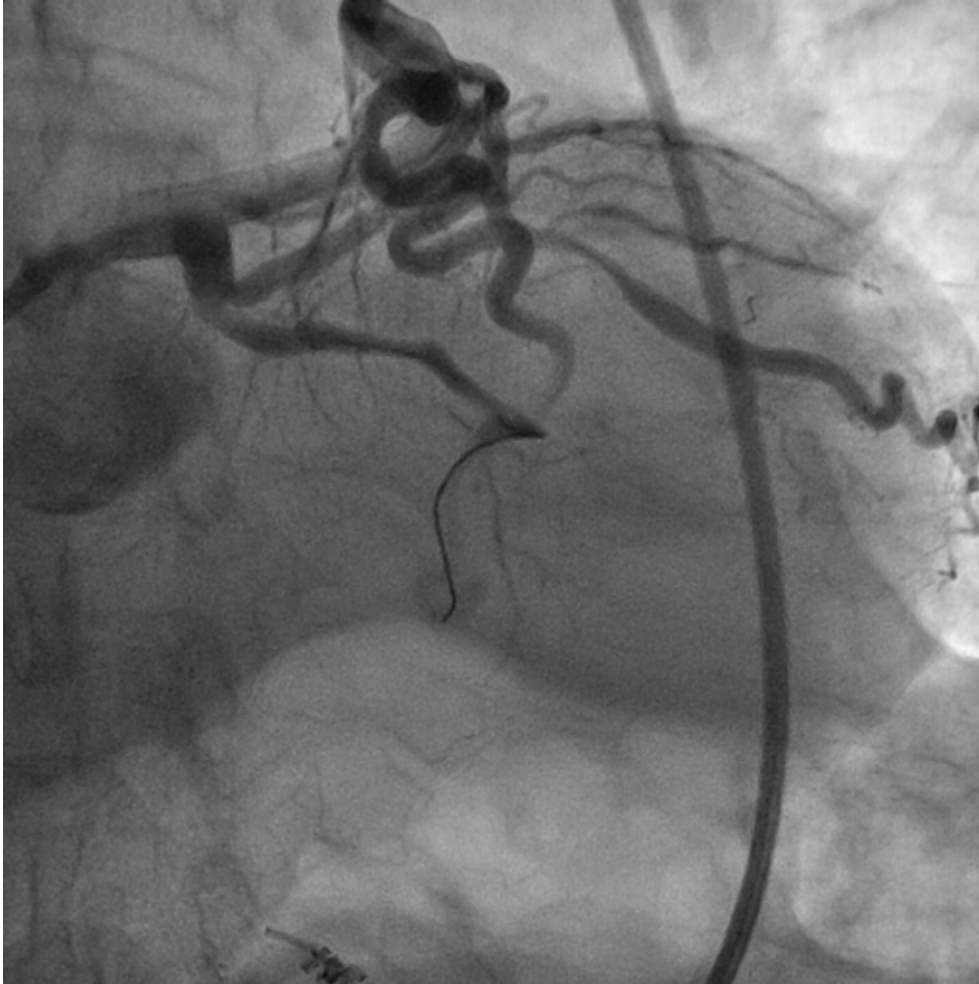
Coronary angiography revealed total occlusion at distal portion of left circumflex.

Coronary angiography

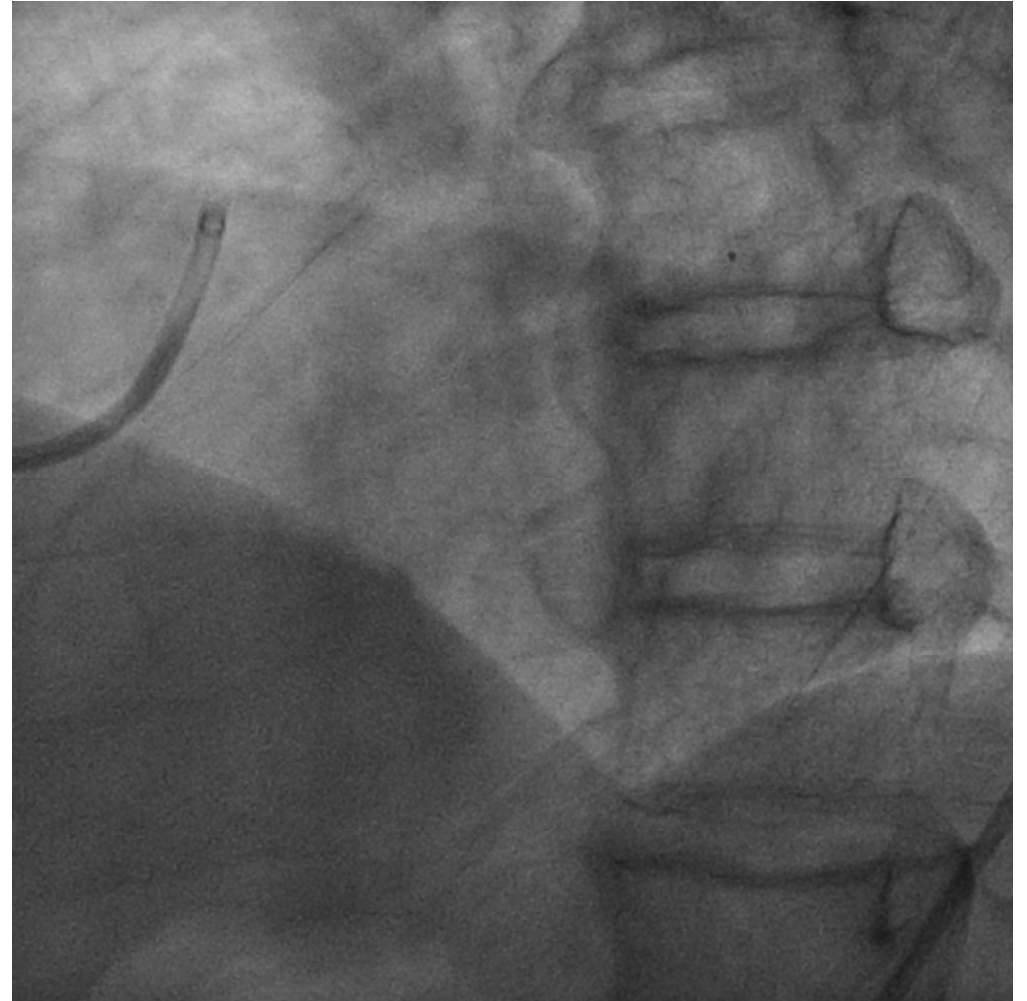
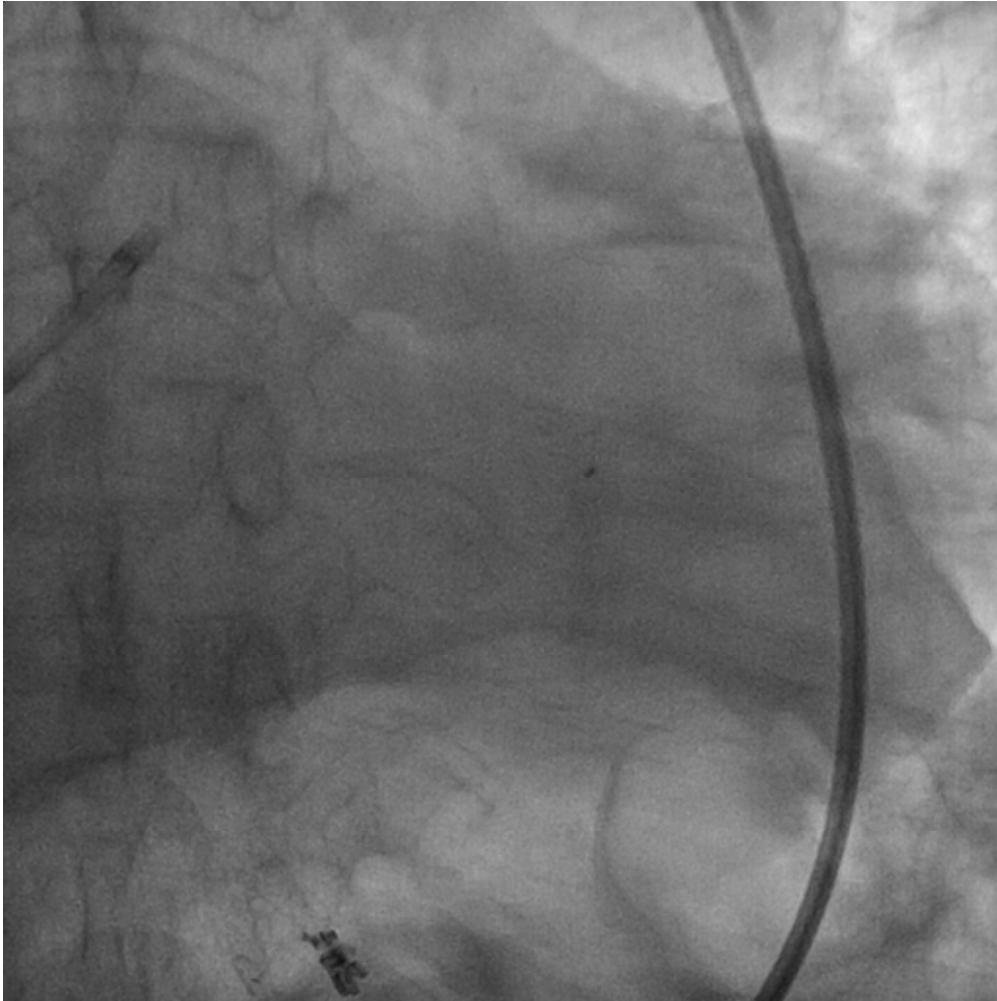
RCA



PCI (first session)

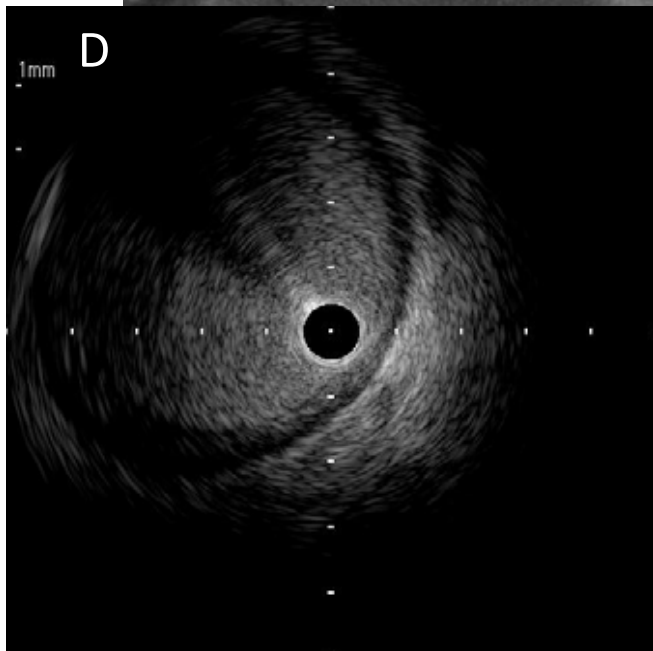
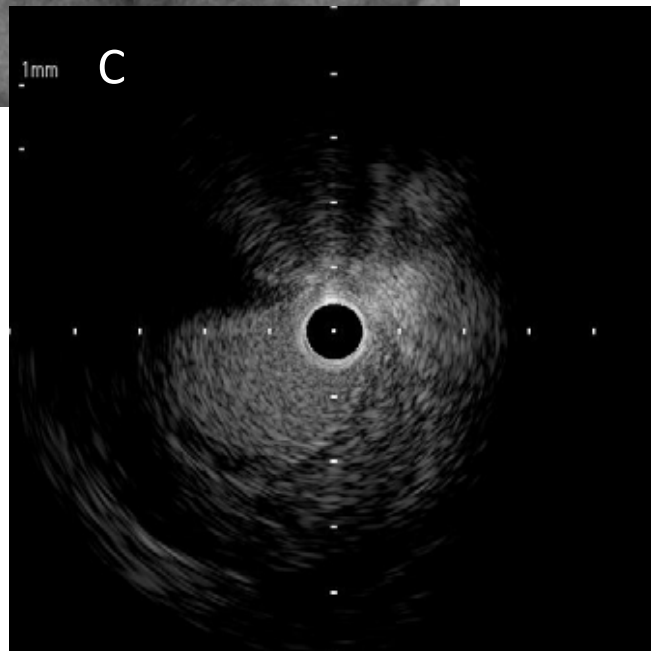
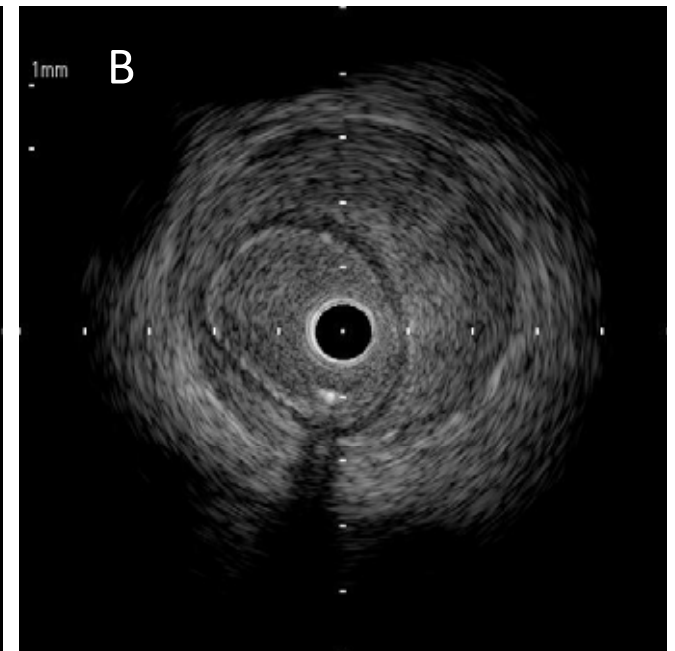
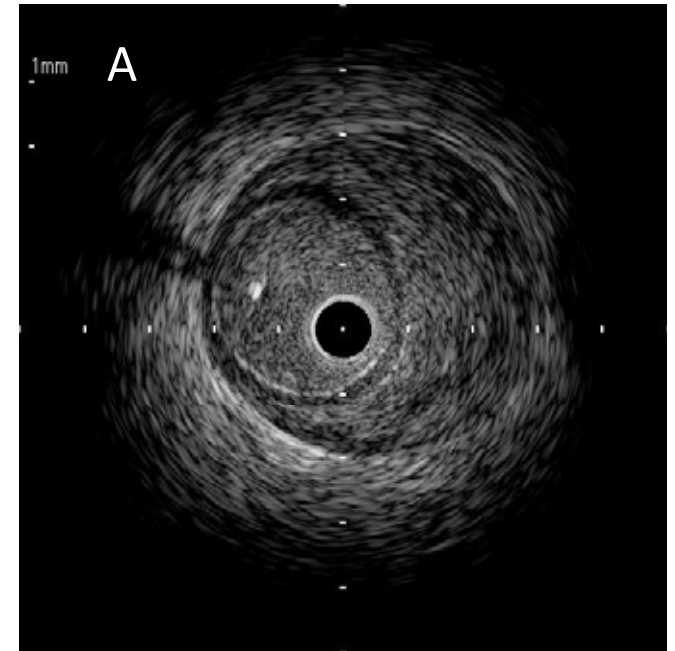
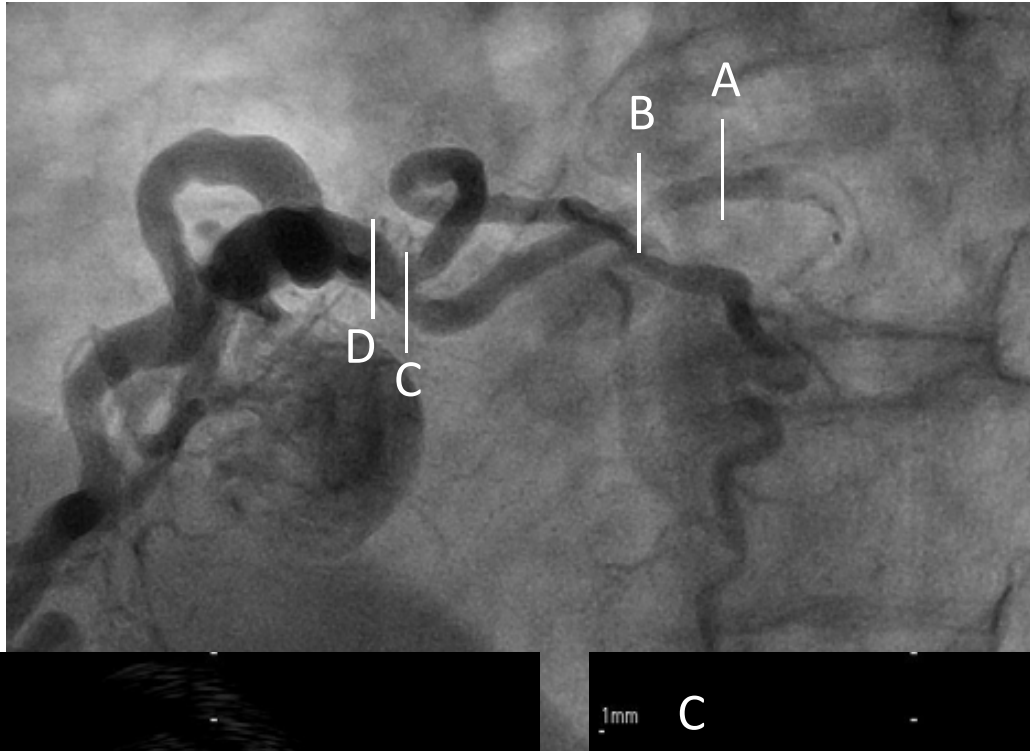


Runthrough. NS extra floppy guide wire under the support of Finecross MG coronary micro-guide catheter could be advanced at distal portion of LCX.



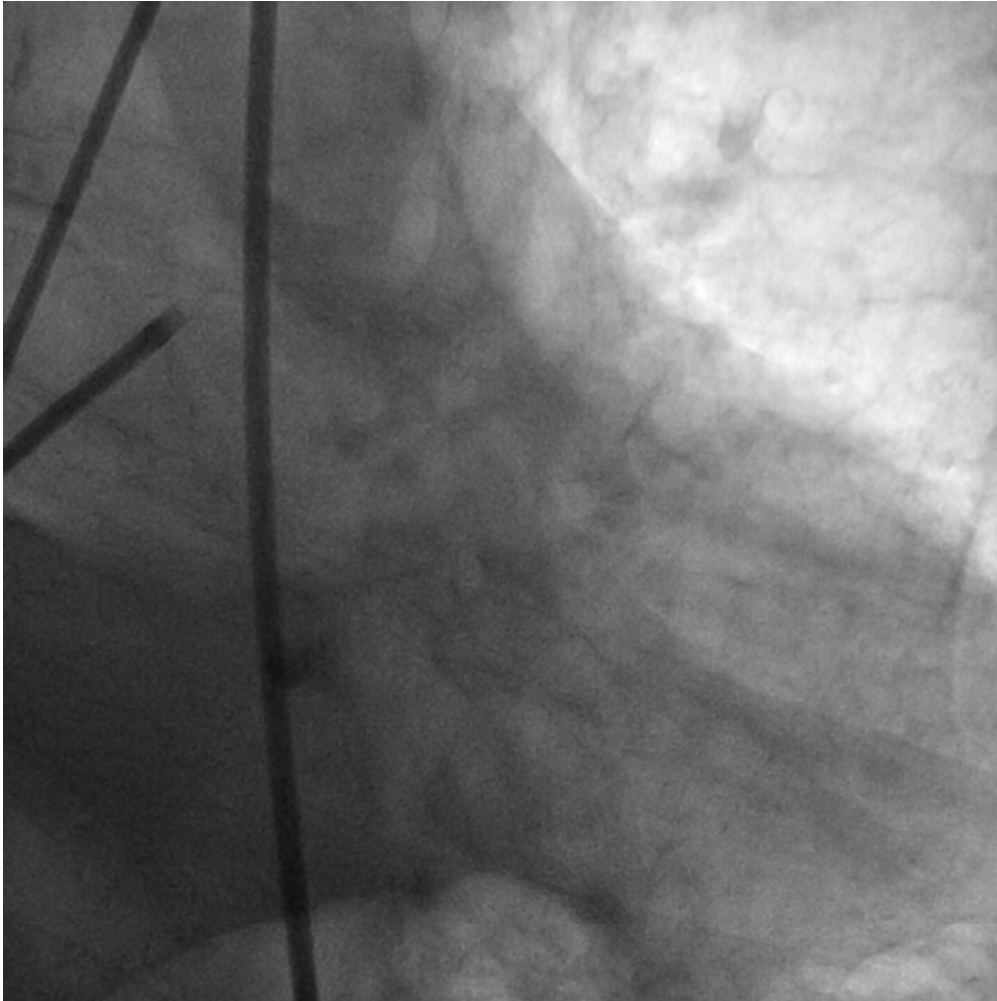
We carefully performed angiography with Finecross MG, but could not see beyond the occluded site.

IVUS for LCX



IVUS revealed coronary dissection without apparent intimal disruption.

Final CAG at first session

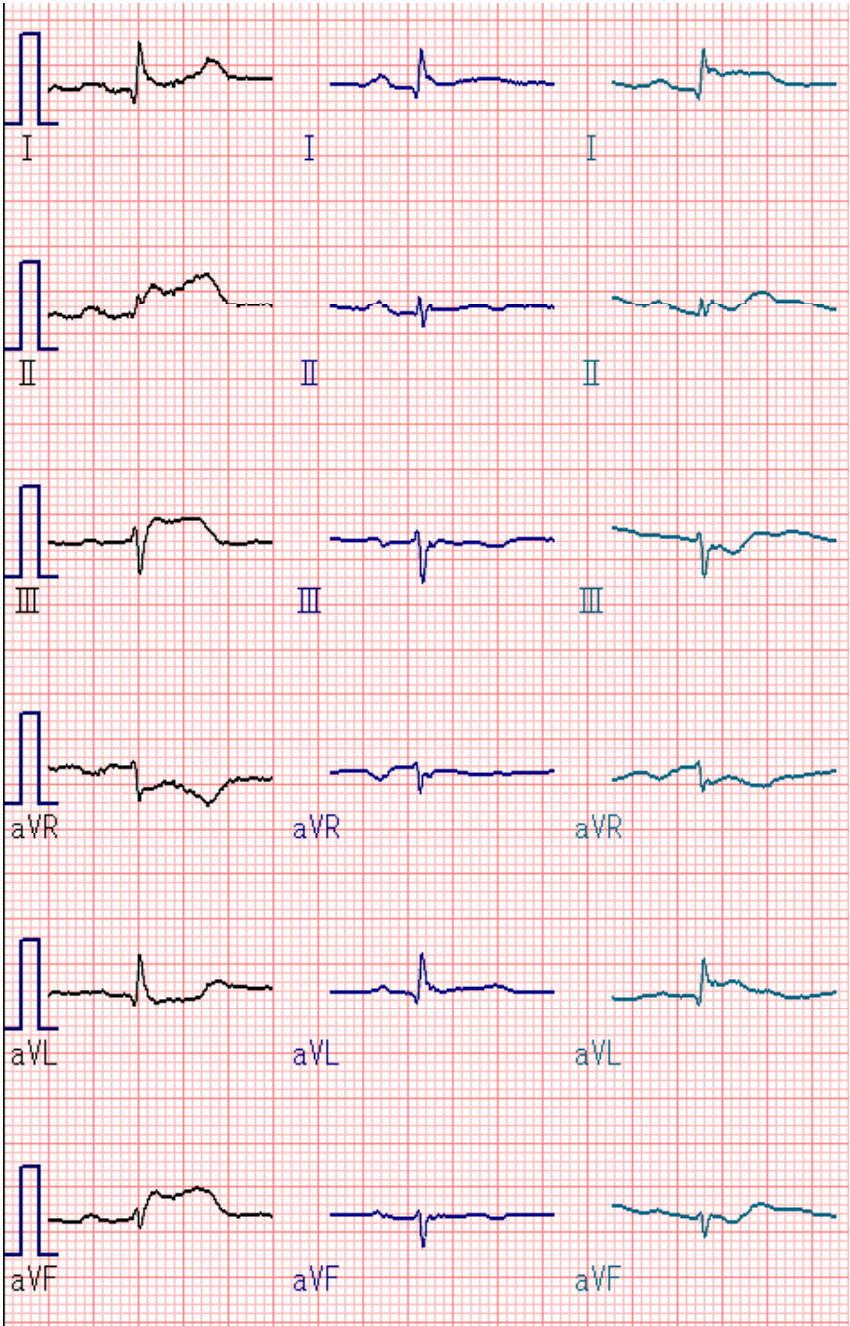


The patient's symptom became less severe and ST-segment elevation recovery could be found. Thus, we terminated the procedure due to the difficulty in guide wire crossing.

Before 1st session

After 1st session

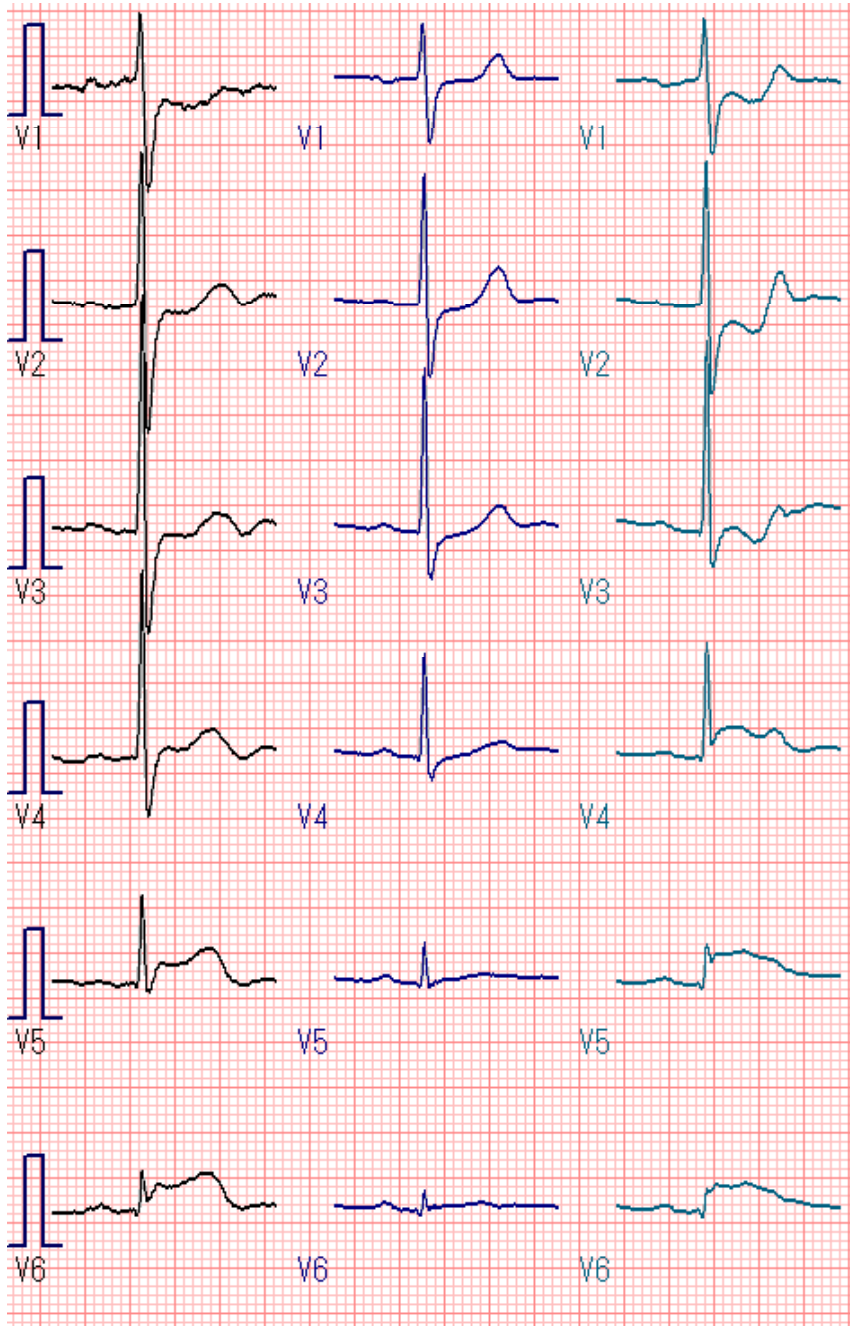
Before 2nd session



Before 1st session

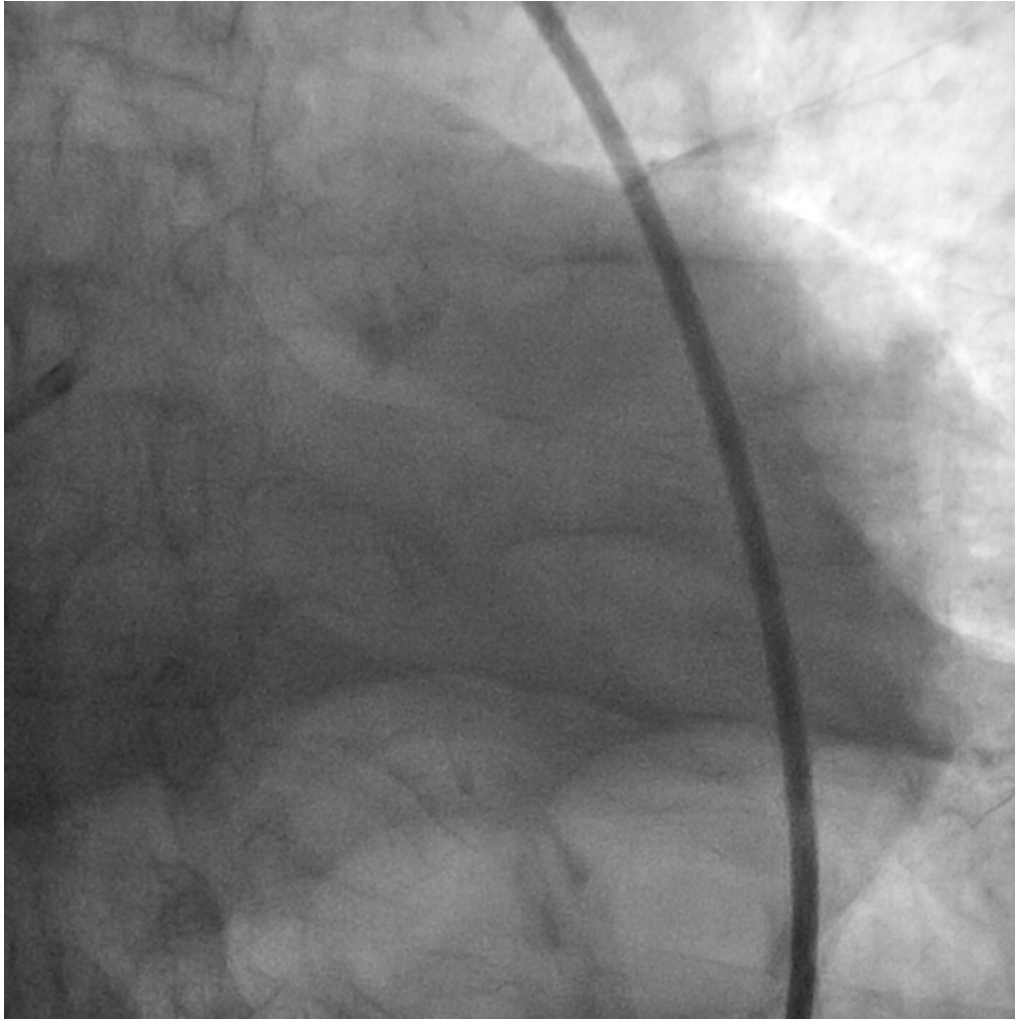
After 1st session

Before 2nd session



Coronary angiography

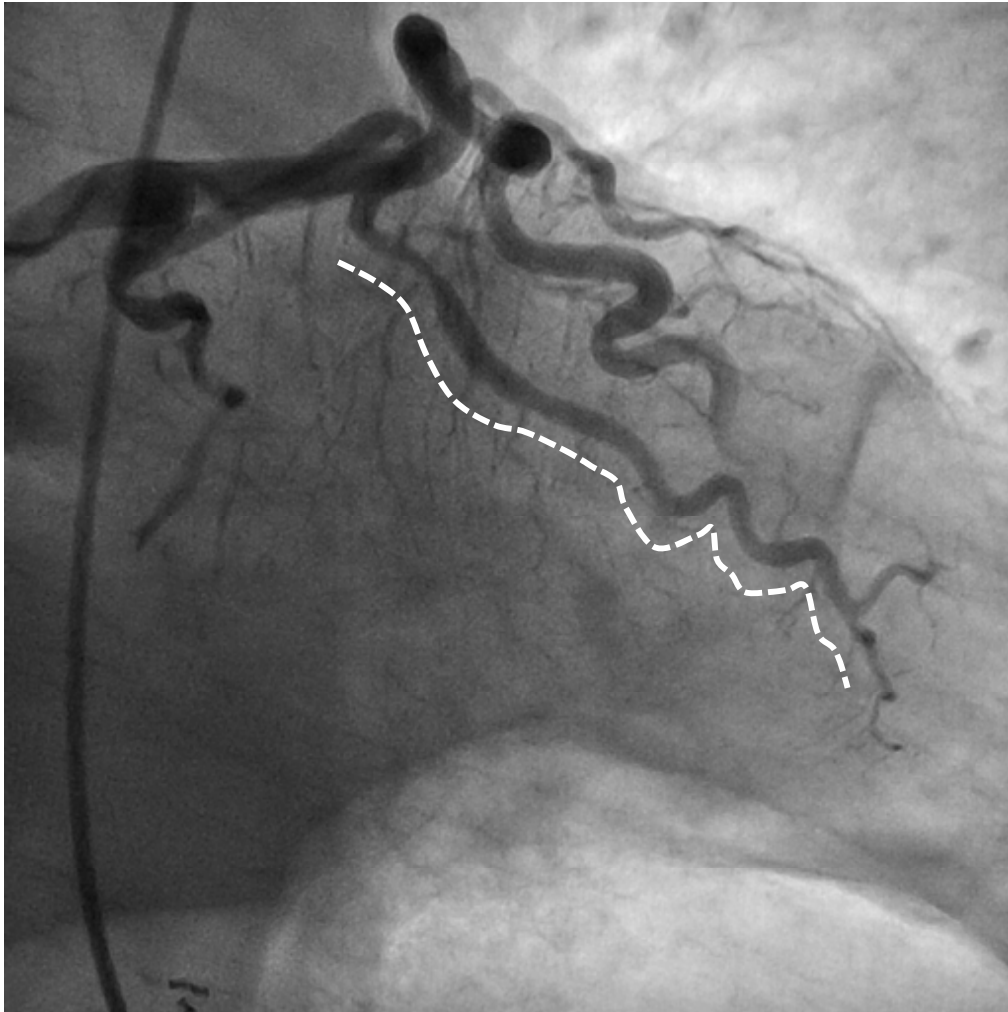
LCA



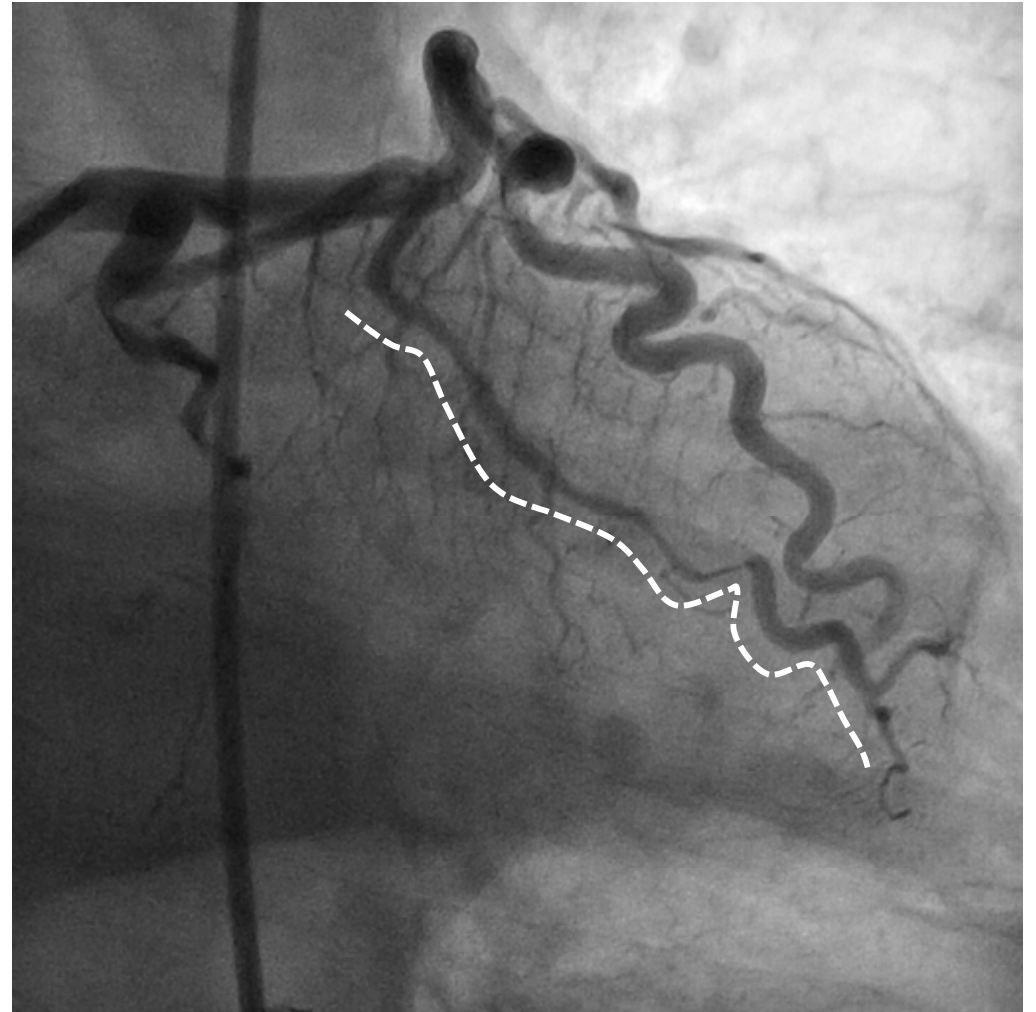
We could find lumen narrowing at the distal portion of obtuse marginal branch.

Coronary angiography

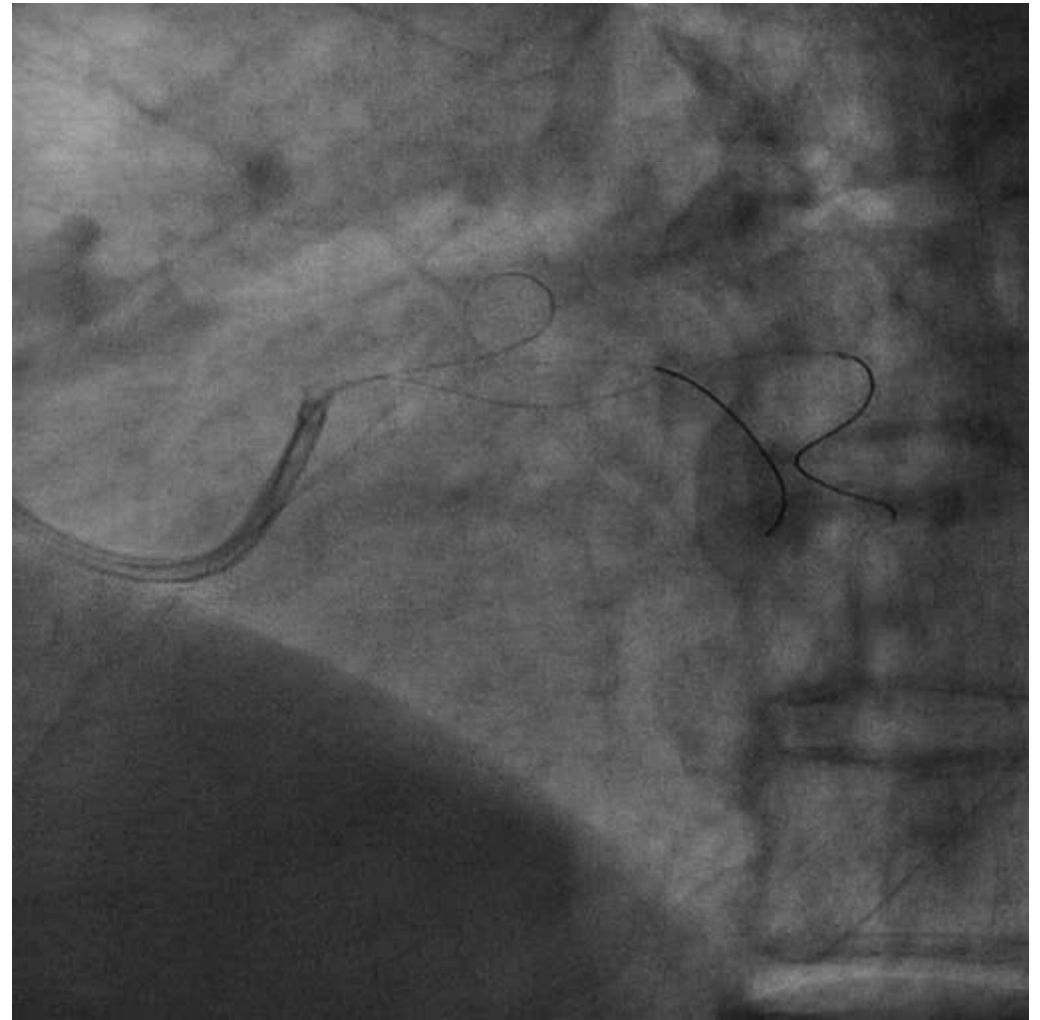
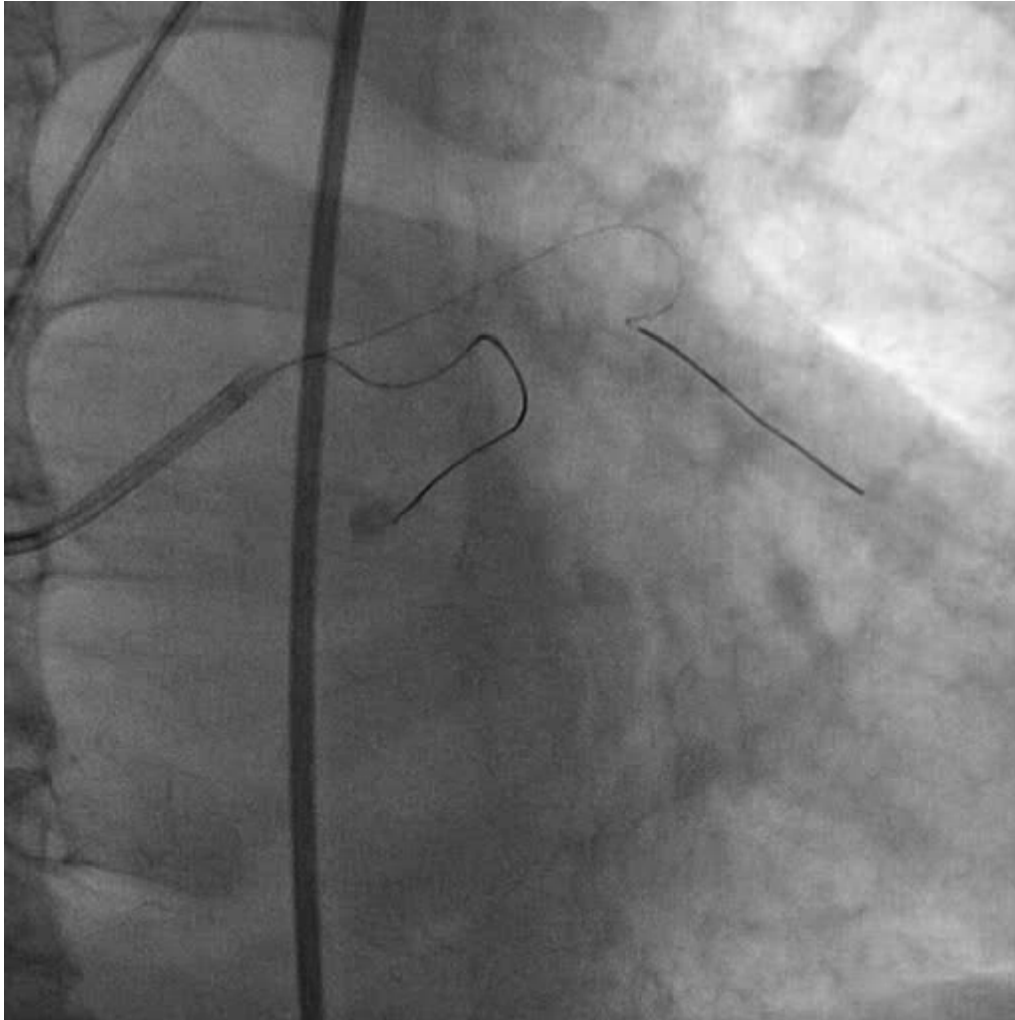
1st session



2nd session



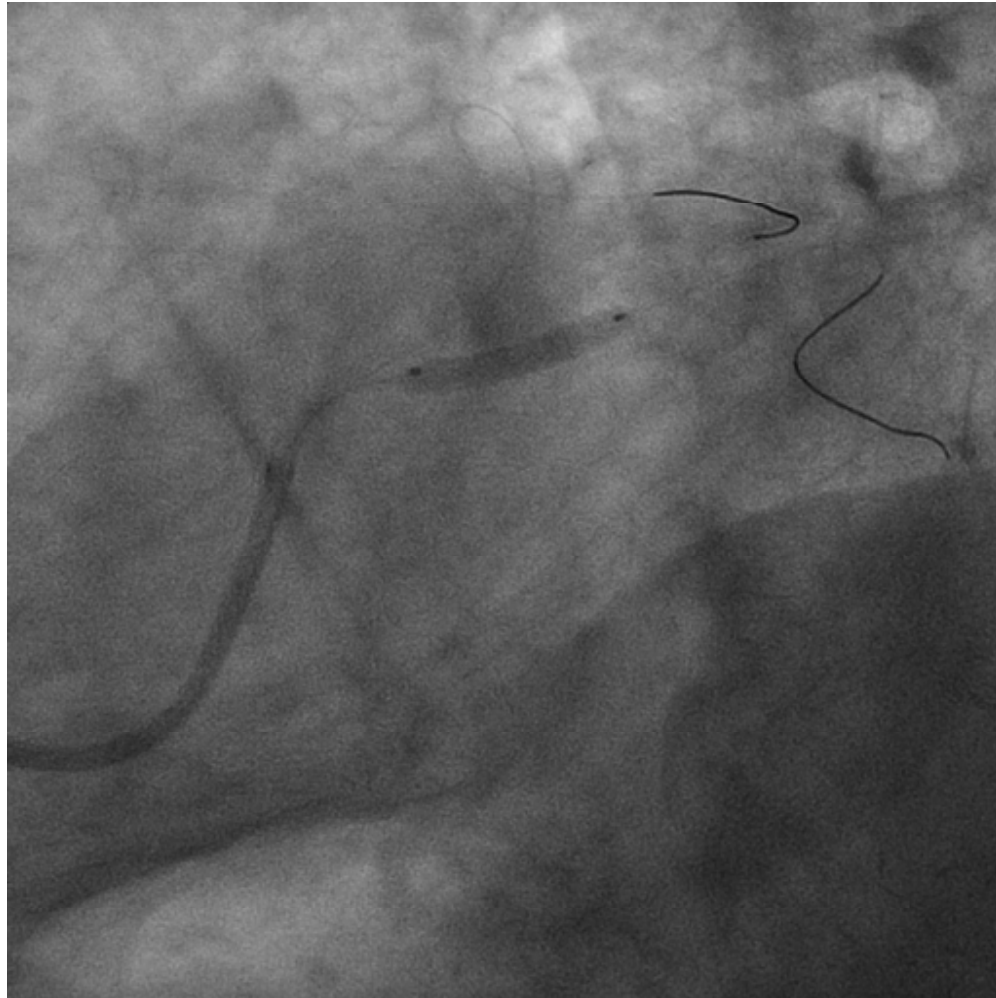
We could find lumen narrowing at the distal portion of obtuse marginal branch.



We selected Sion blue guide wire under the support of Finecross MG coronary micro-guide catheter to pass through the occulted lesion and advanced it in the mid-portion of LCX. Furthermore, we passed through obtuse marginal branch with Runthrough.

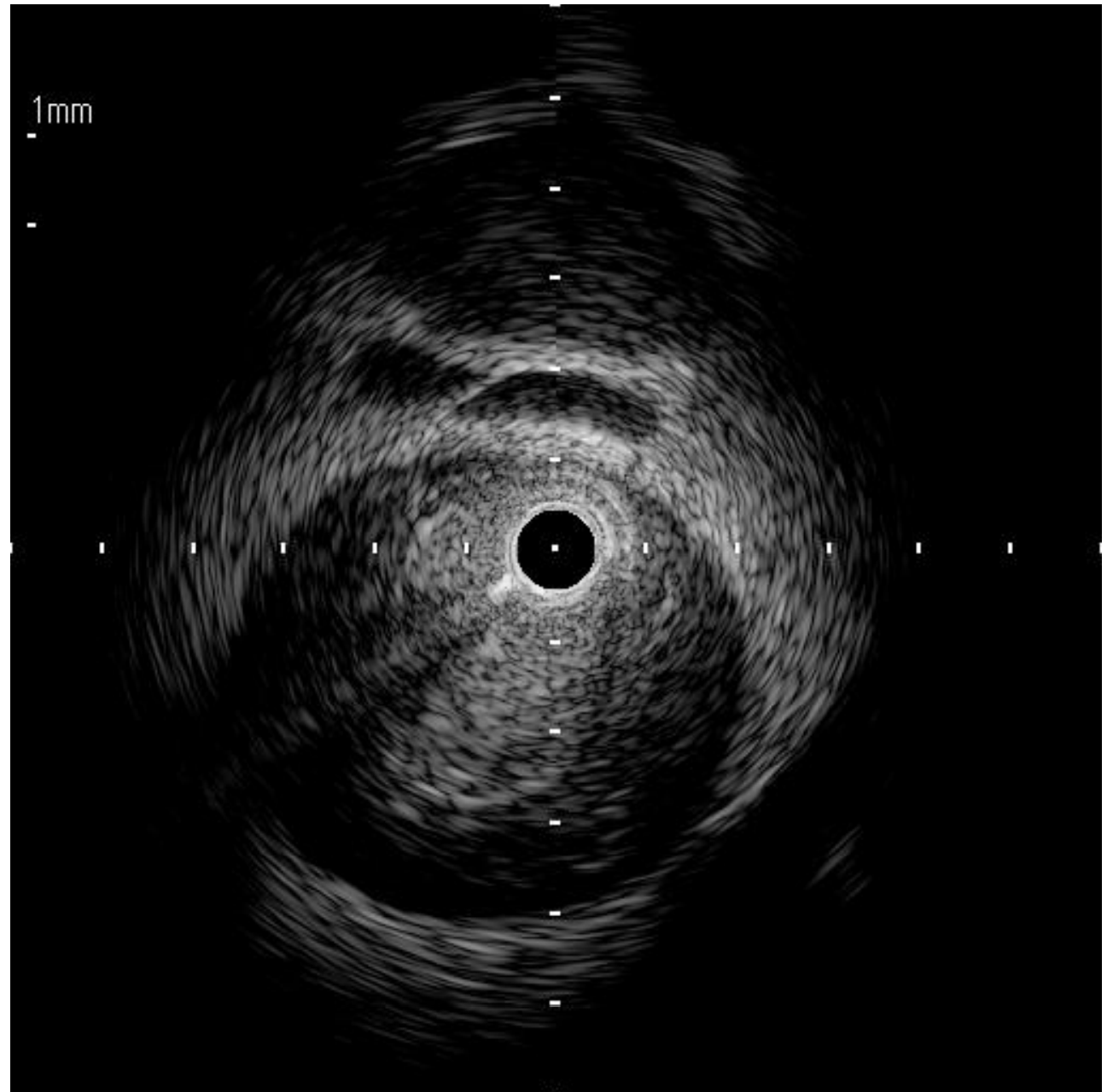
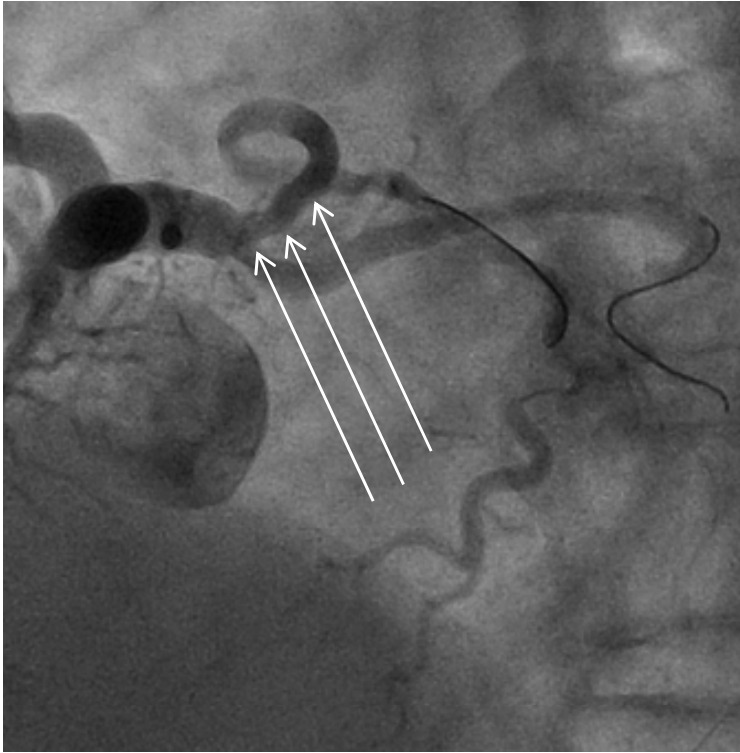
Stent implantation

The mid-portion of LCX

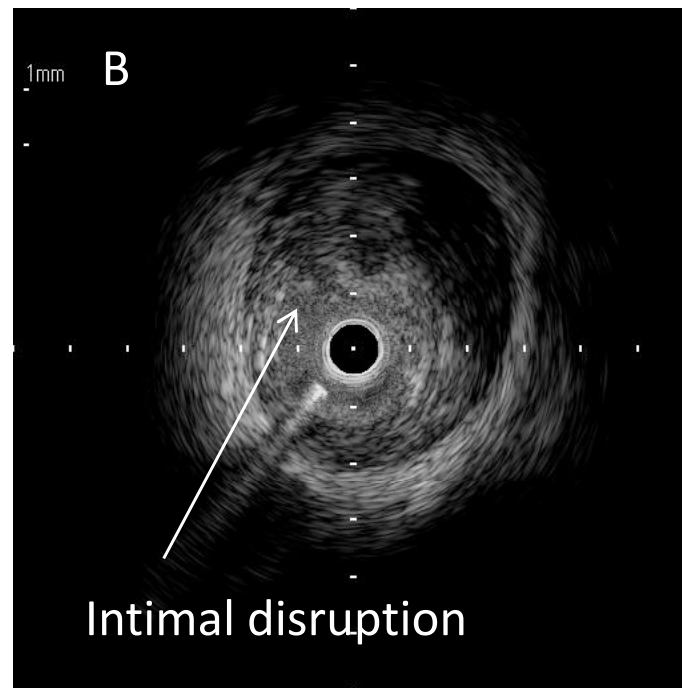
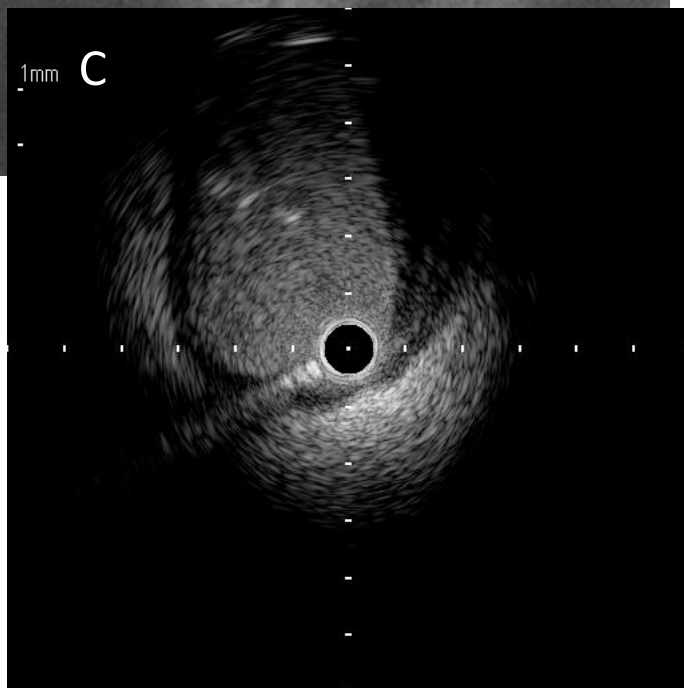
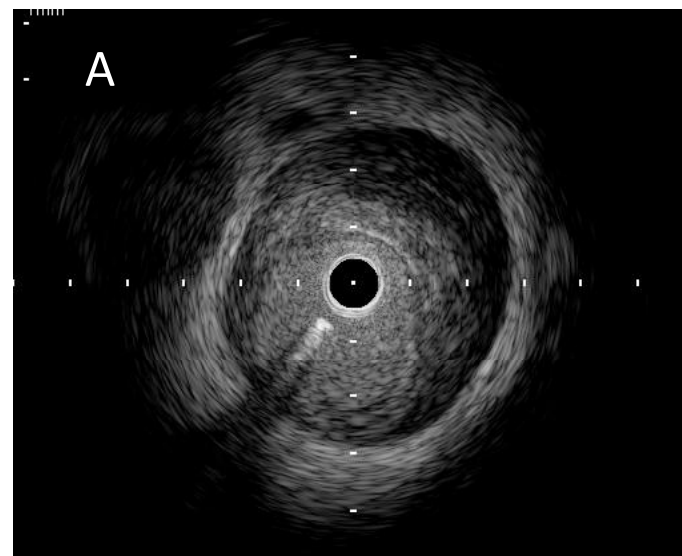
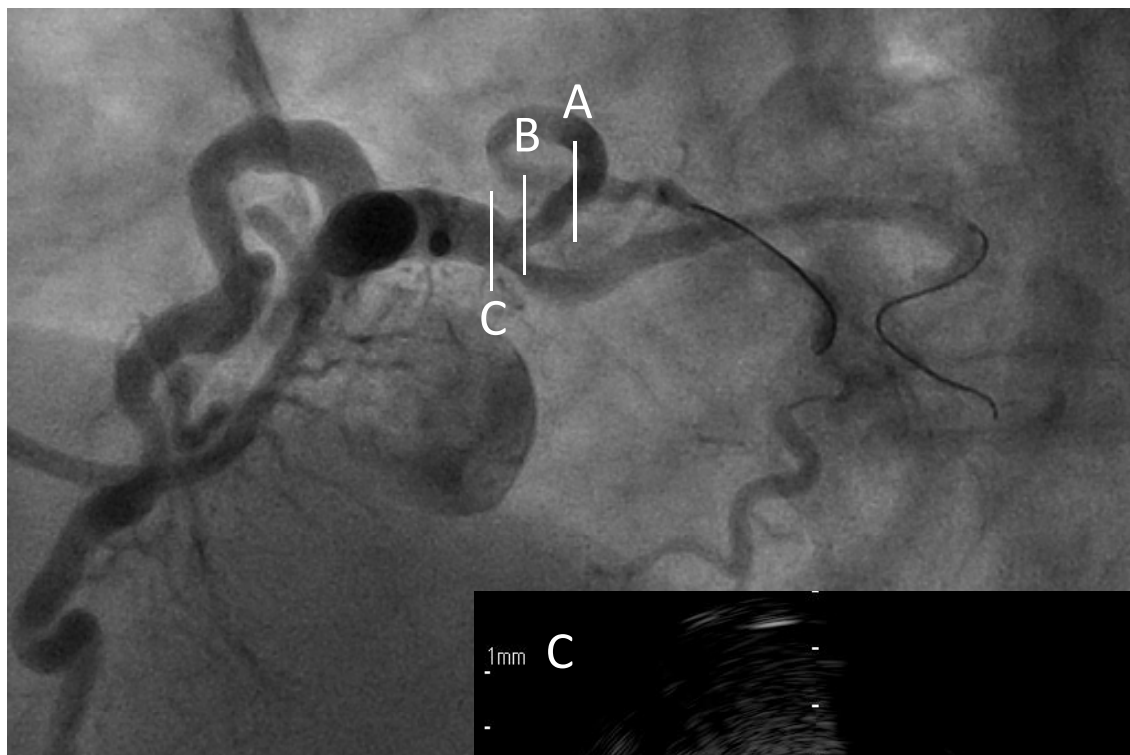


At first, pre-dilatation with NC QUANTUM 3.0/15 mm balloon catheter and NOBORI 3.0/18 mm stent implantation was performed in the mid portion of LCX.

IVUS for obtuse marginal branch



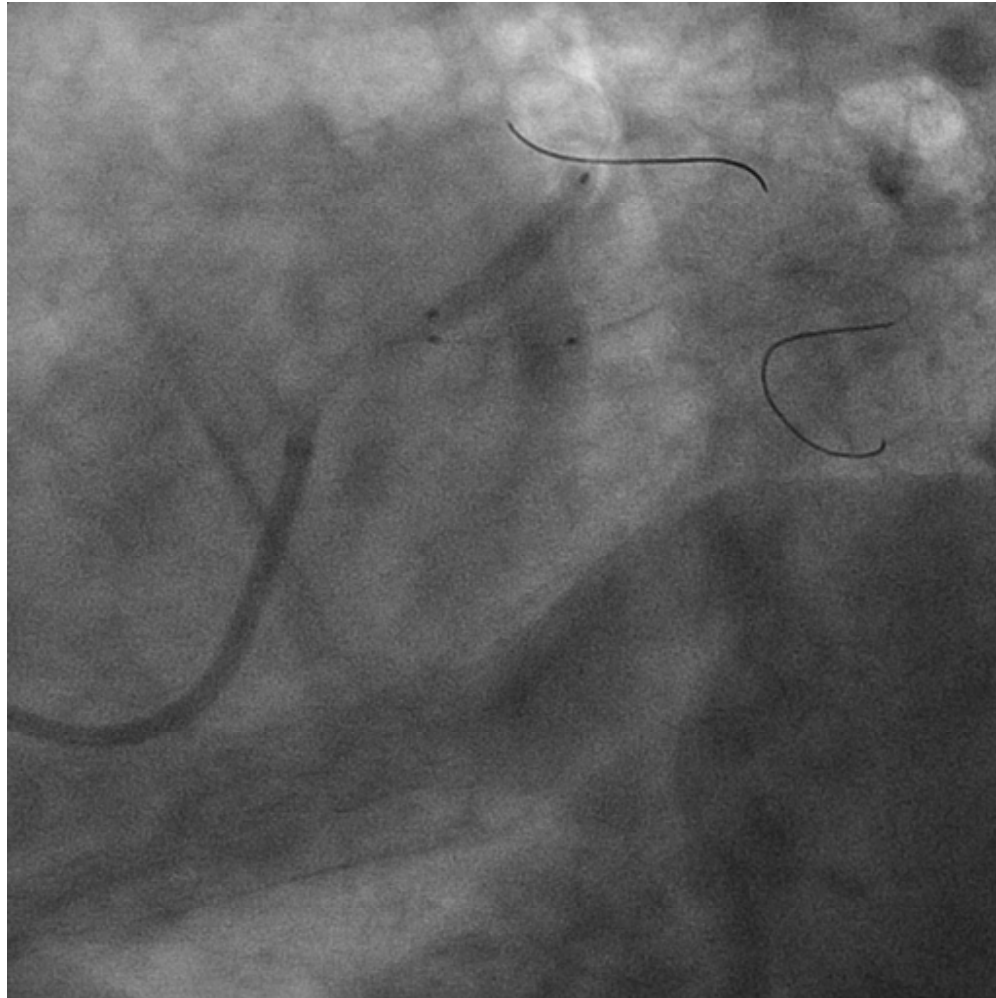
IVUS for obtuse marginal branch



IVUS revealed coronary dissection with intimal disruption at the ostium of obtuse marginal branch.

Stent implantation

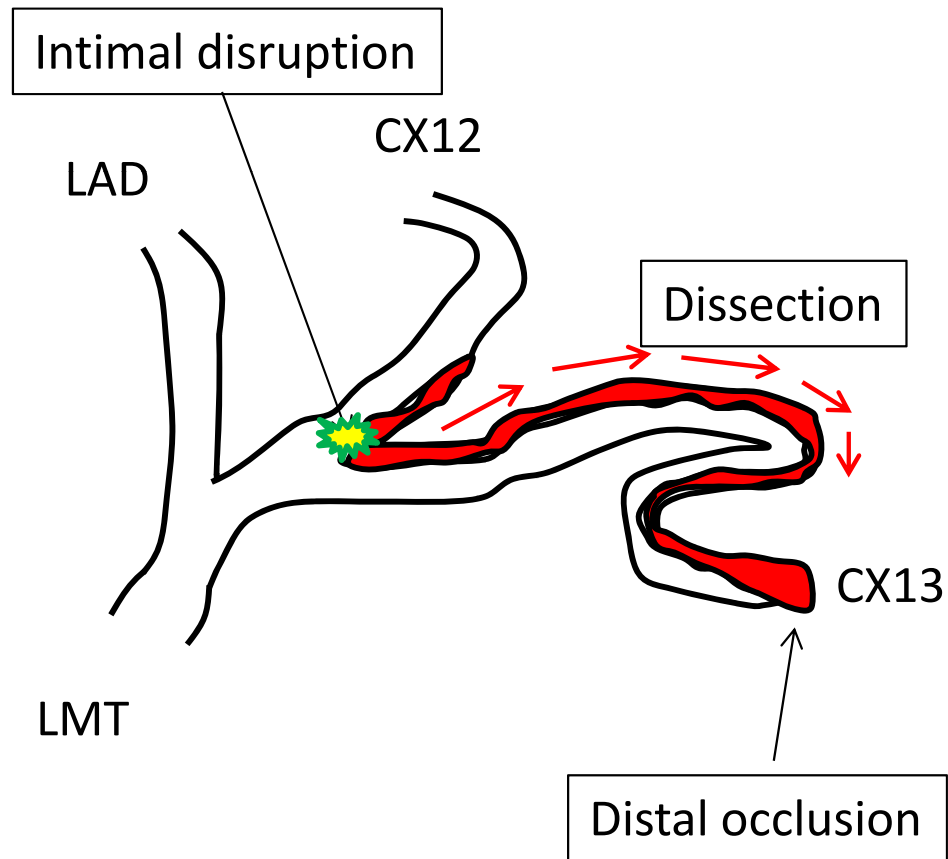
Obtuse marginal branch



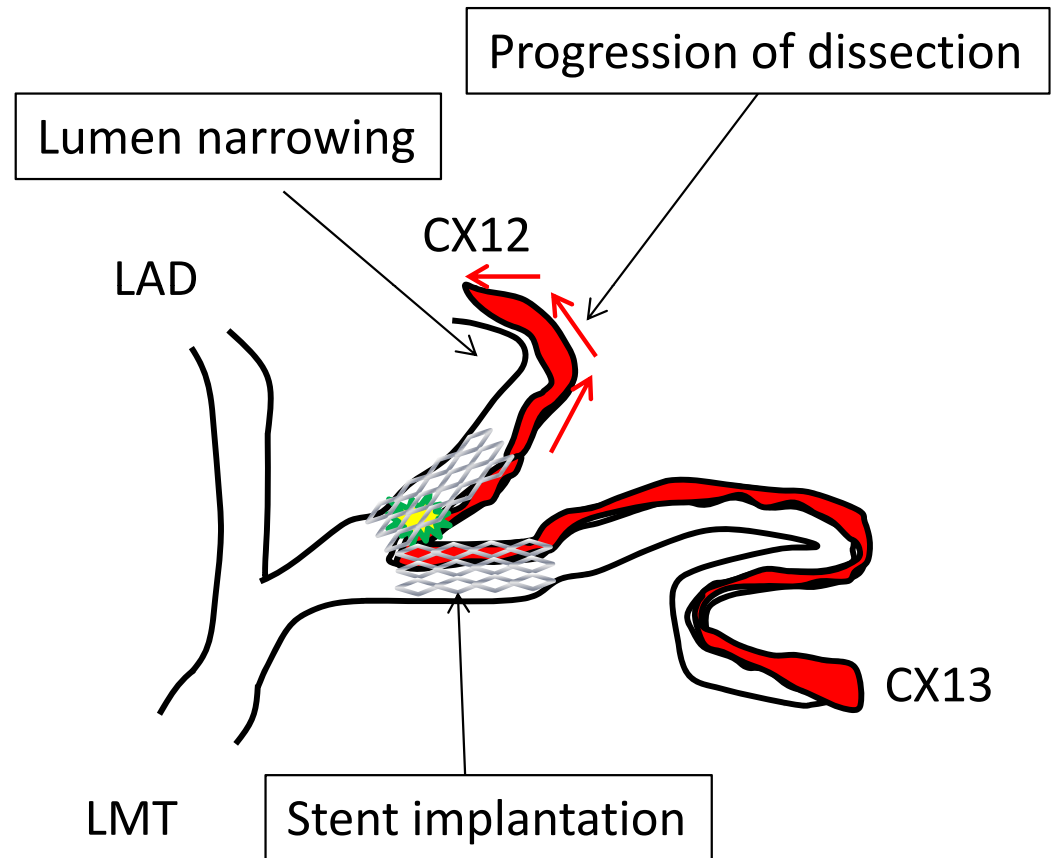
Next, NOBORI 3.0/18 mm stent implantation was performed in the ostium of obtuse marginal branch.

Schema

1st session

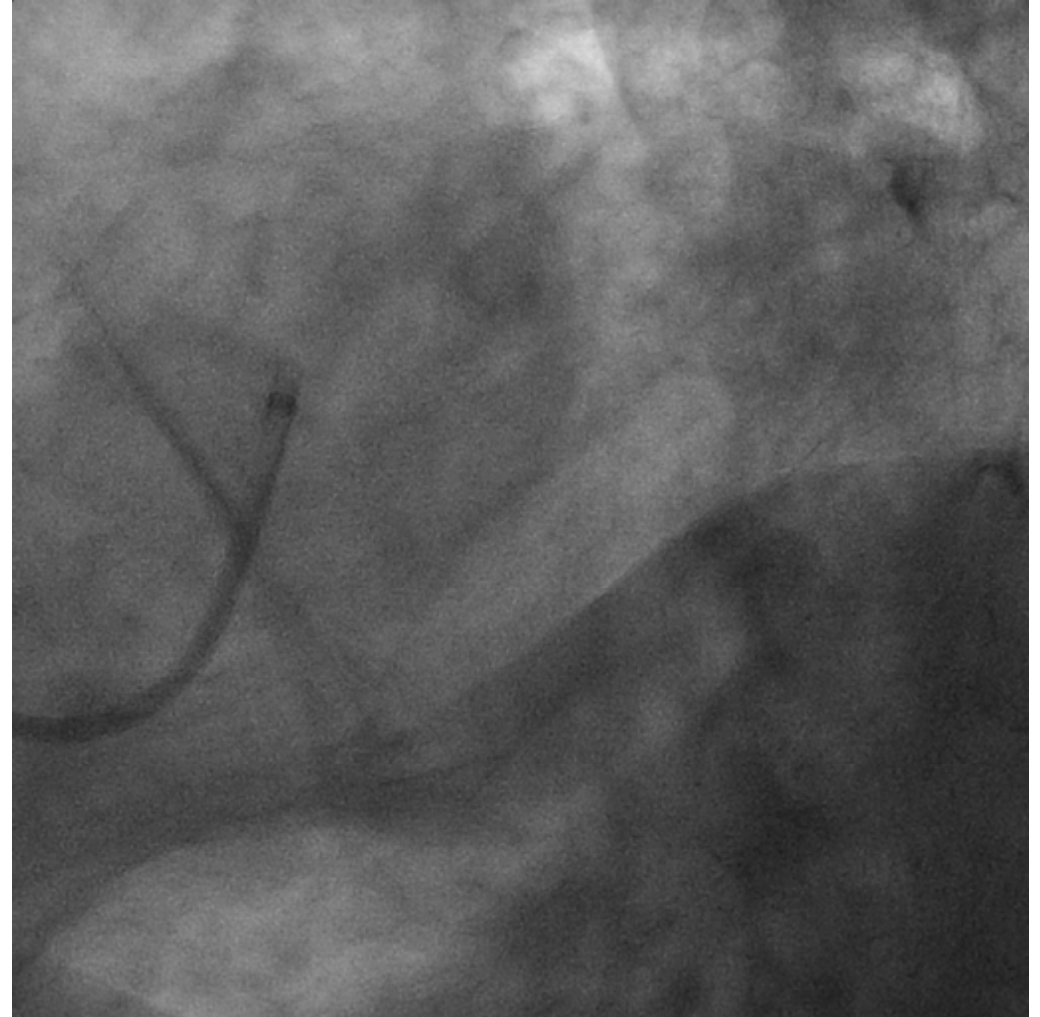
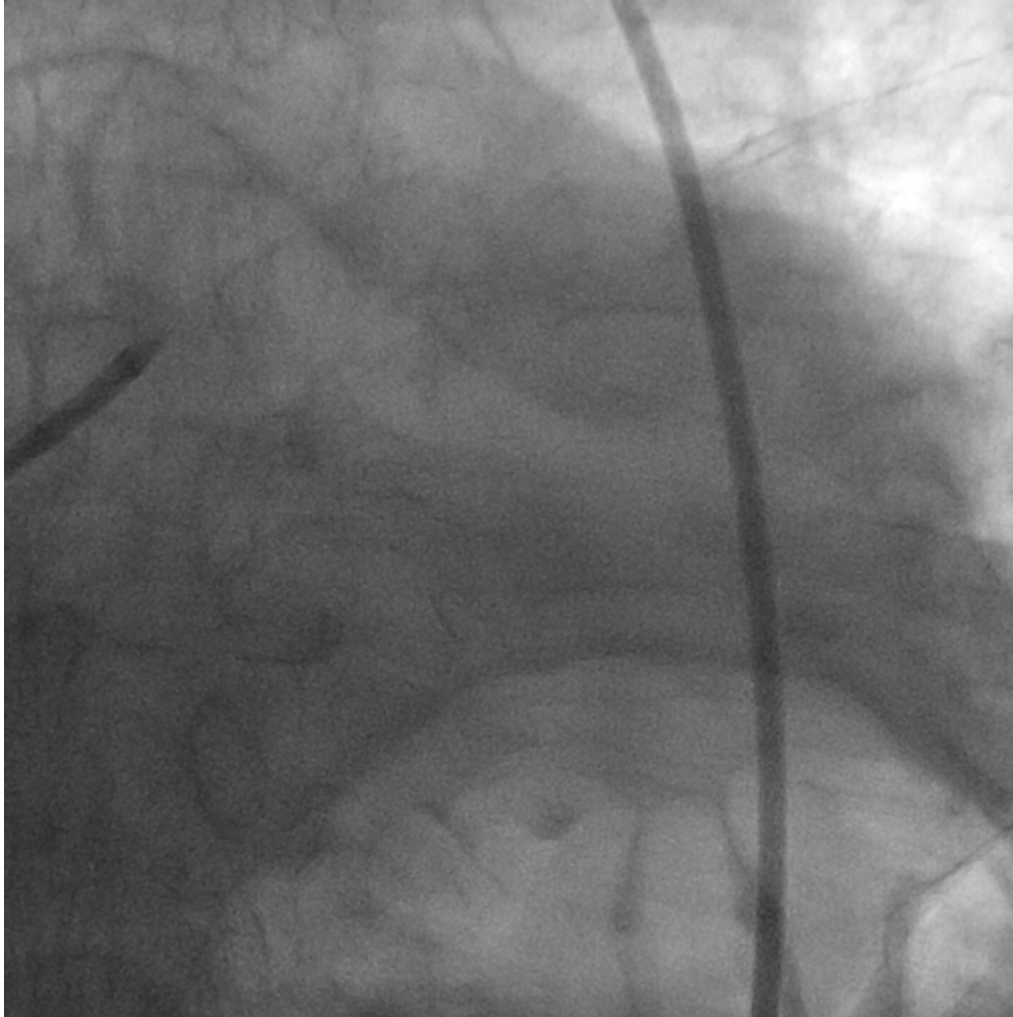


2nd session



Final CAG at 2nd session

Max CK	1789 (IU/L)
Max CKMB	93.6 (IU/L)



The lumen narrowing at the distal portion of obtuse marginal branch improved after stent implantation at the ostial site of obtuse marginal branch .

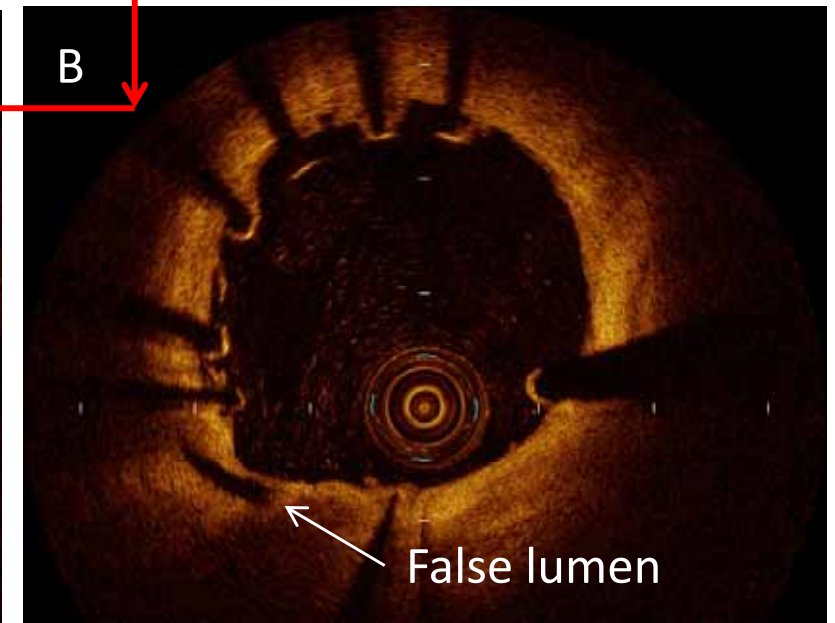
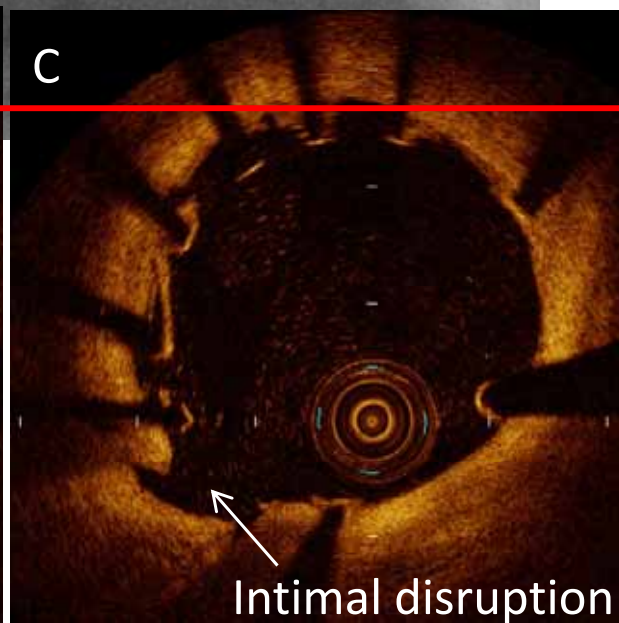
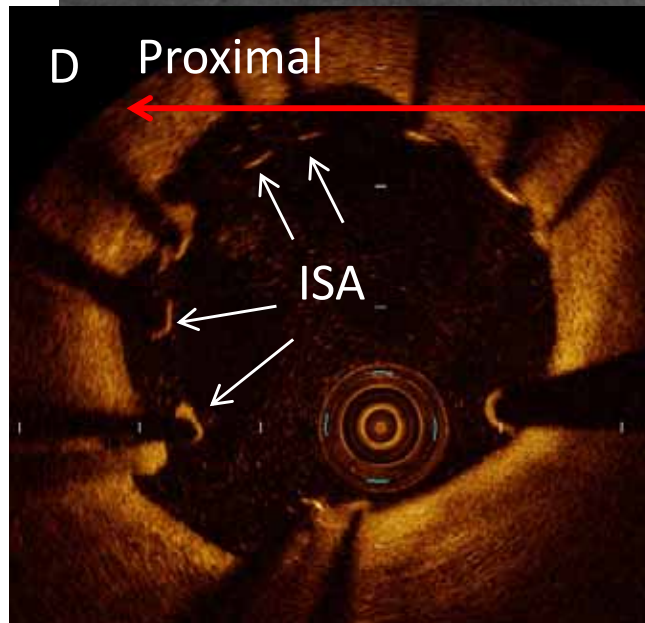
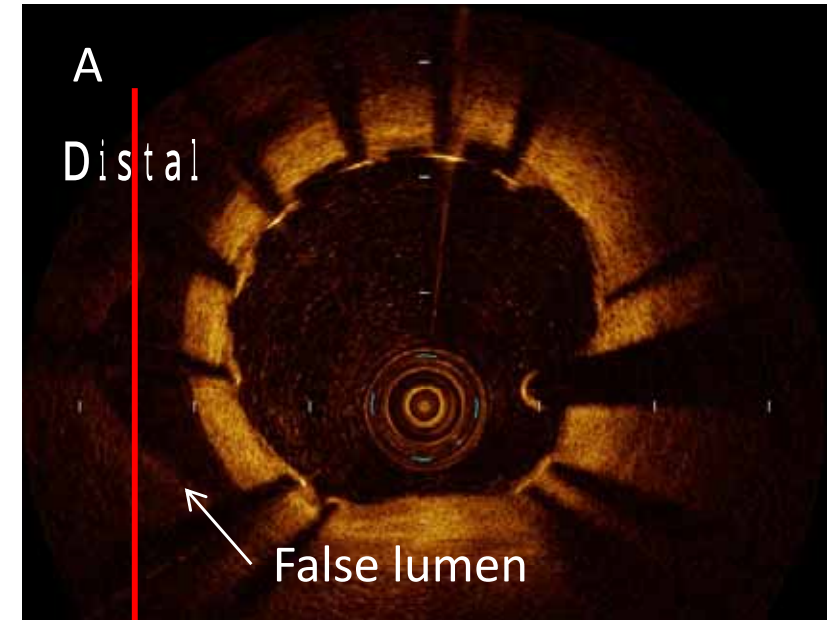
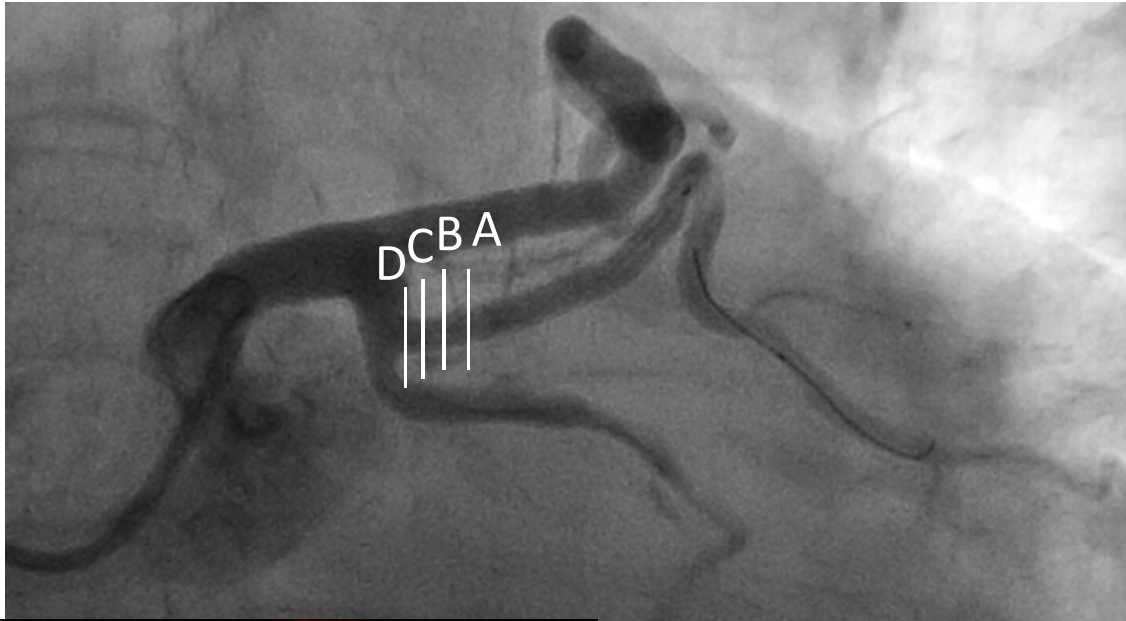
Coronary angiography 10 days after PCI

LCA



Residual false lumen appeared outside the stent in obtuse marginal branch. Further improvement of the lumen narrowing at the distal portion of obtuse marginal branch was observed.

OCT for obtuse marginal branch



OCT revealed incomplete stent apposition (ISA), residual false lumen, and intimal disruption at the ostium of obtuse marginal branch.

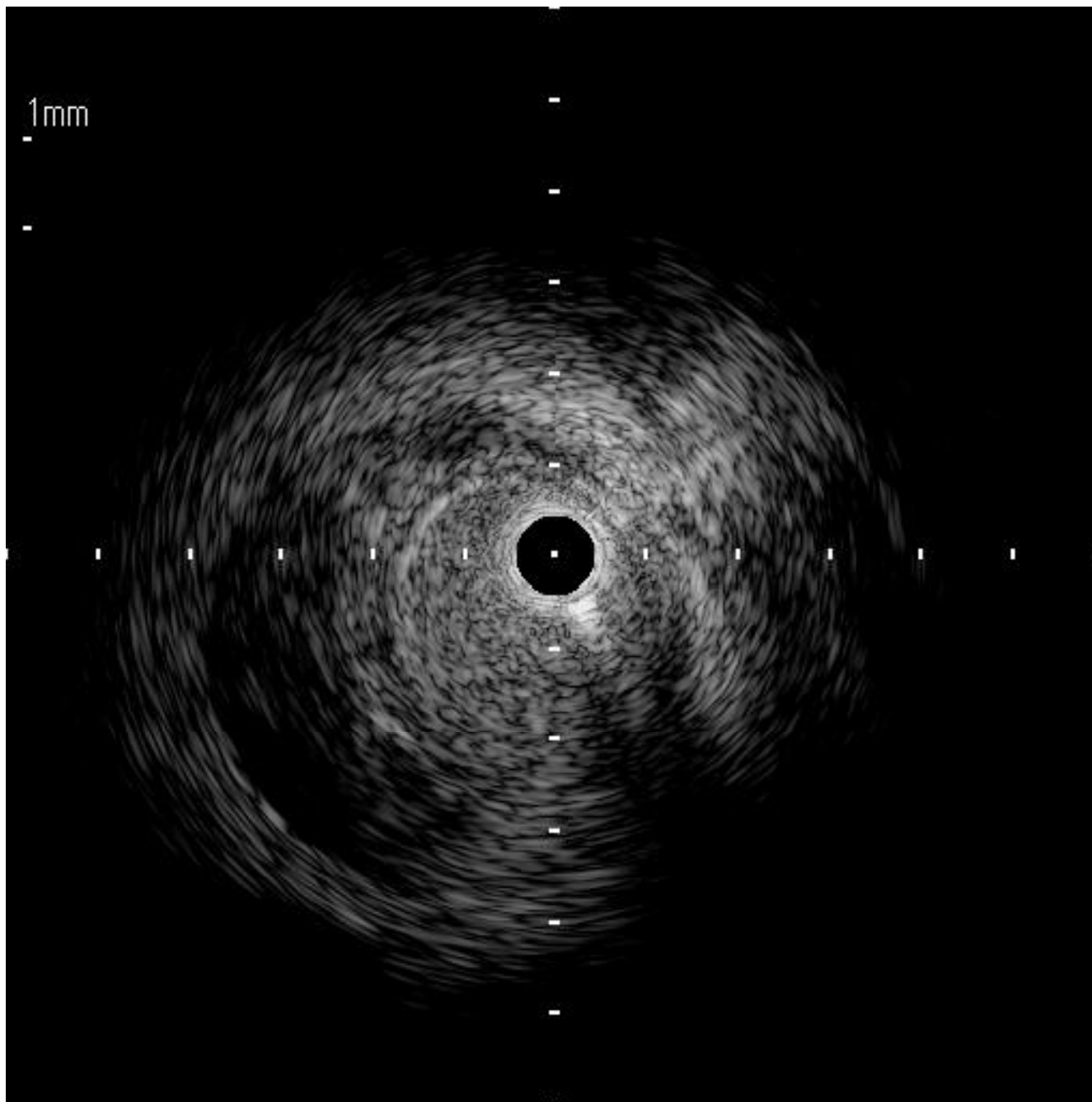
Summary

- We could not detect intimal disruption site in main branch of LCX at 1st session and could detect it in proximal site of side branch at 2nd session with IVUS.
- At 2nd session, the progression of antegrade coronary dissection to the distal portion of obtuse marginal branch might cause the recurrence of chest pain. We performed stent implantation over the disruption site.
- There may be another intimal disruption site at the distal portion of the LCX, but we could not advance IVUS and could not observed the distal portion of the LCX.

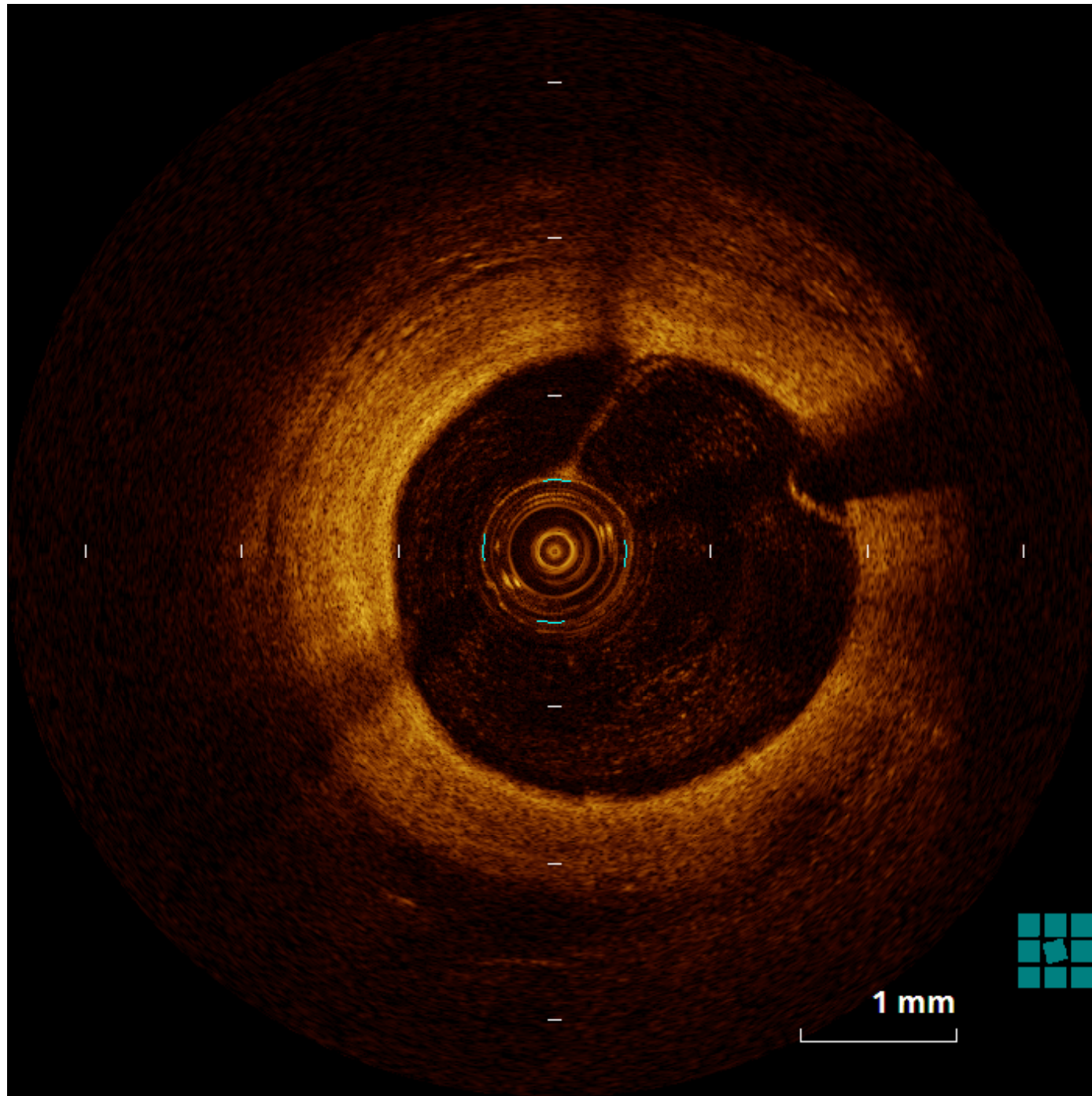
Conclusions

- Retrograde coronary dissection from side branch impaired coronary blood flow of main branch of left circumflex and caused acute myocardial infarction.

IVUS from the distal portion of LCX



OCT for obtuse marginal branch



BMIPP+TL (day8)

