Mismatched Disease
: "Do You Want to Treat the Lesion or the Patient?"

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Case #1

- **78/F**

- **CC: effort angina x 1 month (1 yr ago)**

- **Risk factors: old age**

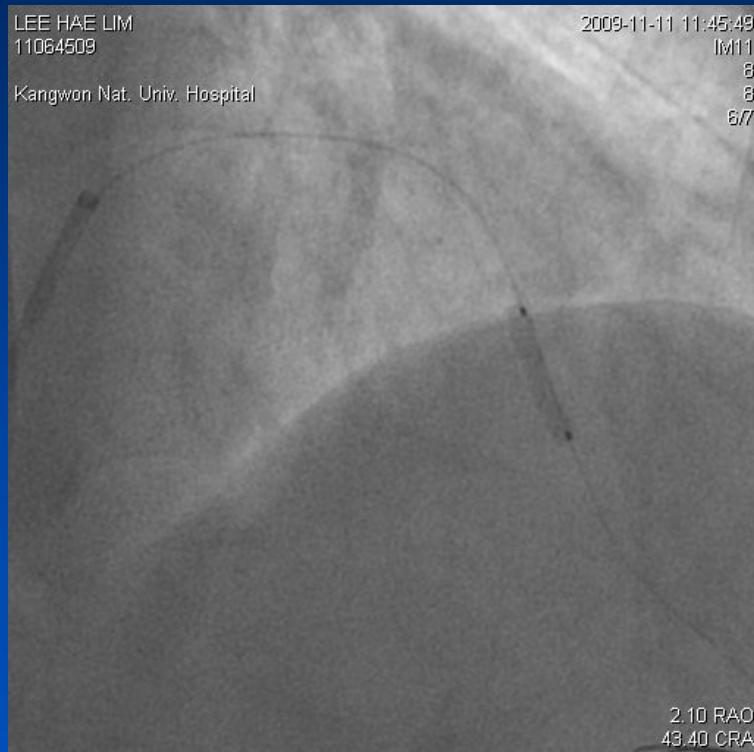- **Treadmill test**

   - not performed for s/p THR (Lt hip)

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Coronary angiogram
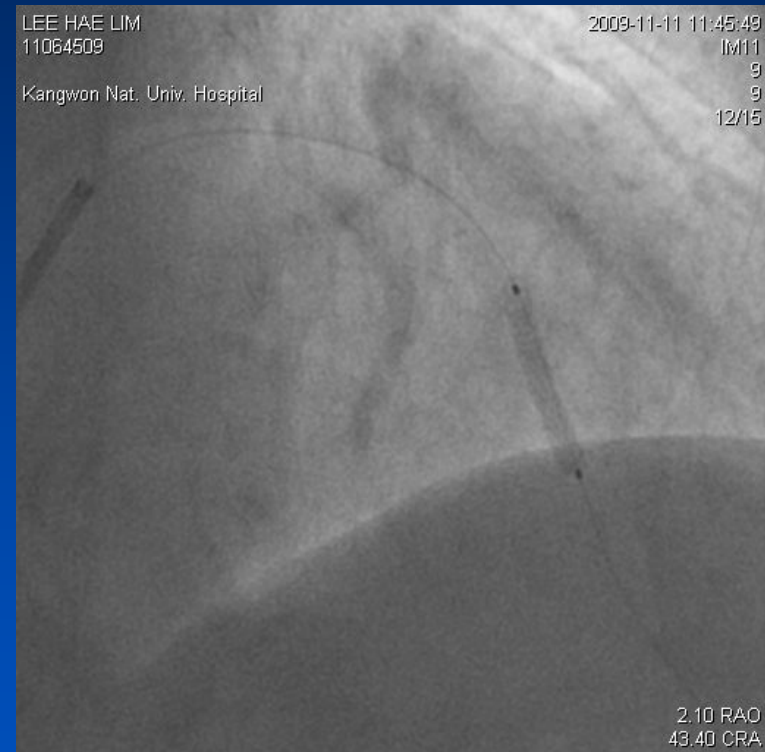## 11 Nov, 2009
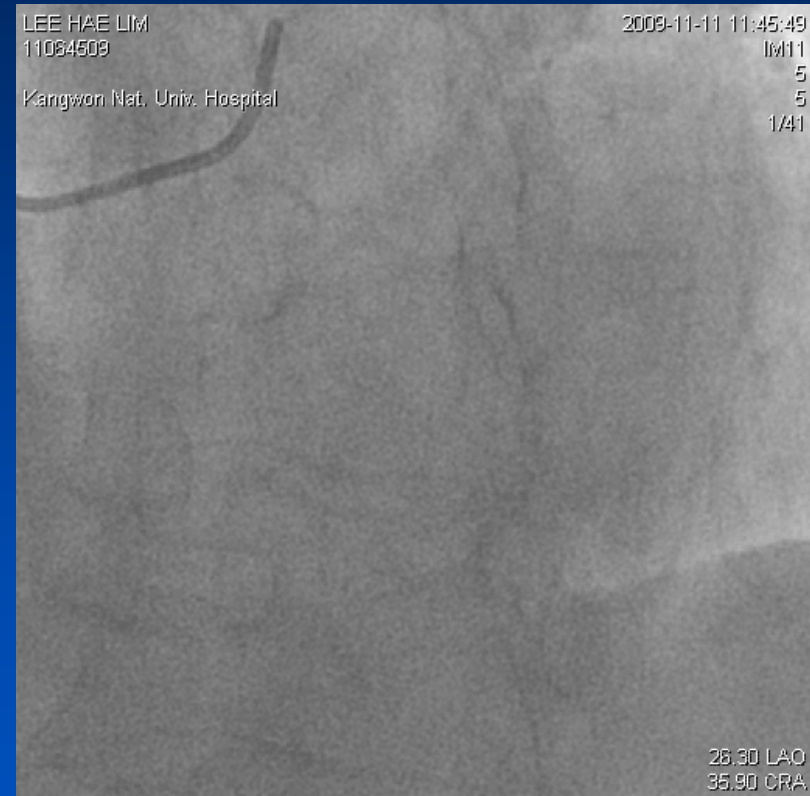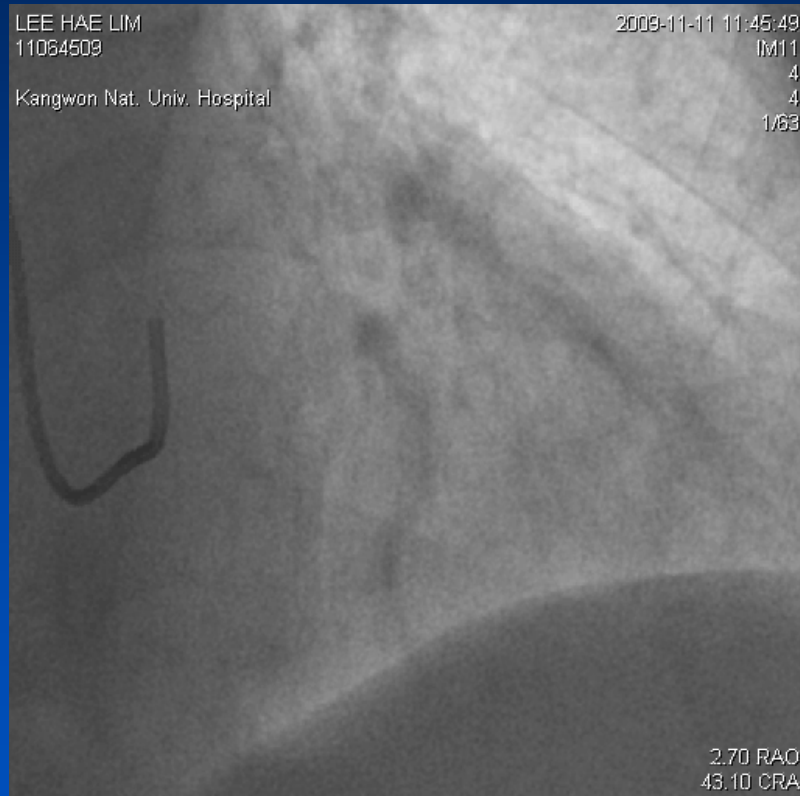
PCI
11 Nov, 2009
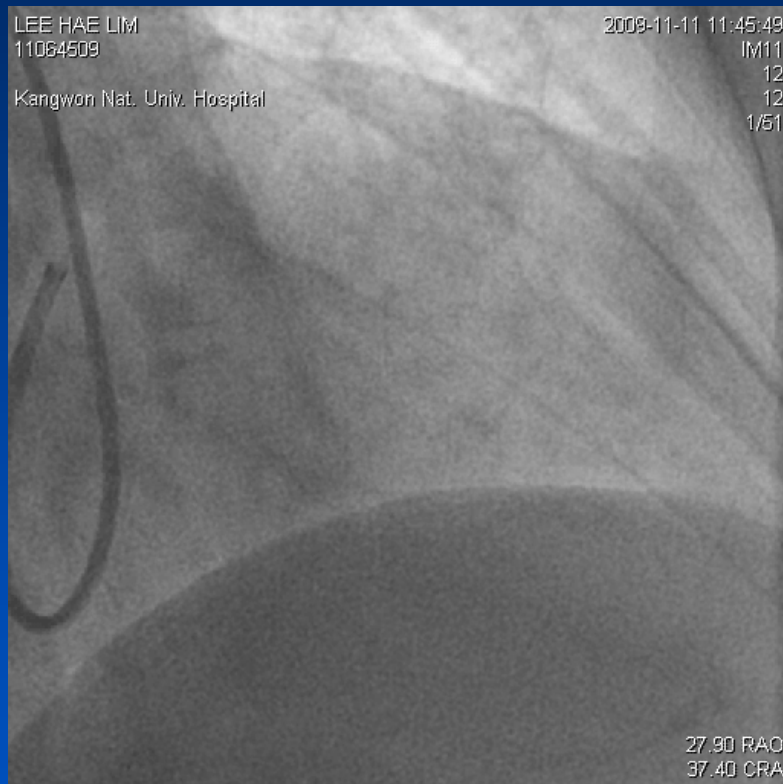
Pre-dilatation

Stenting

Sapphire 3.0 x 15 mm (6 atm)
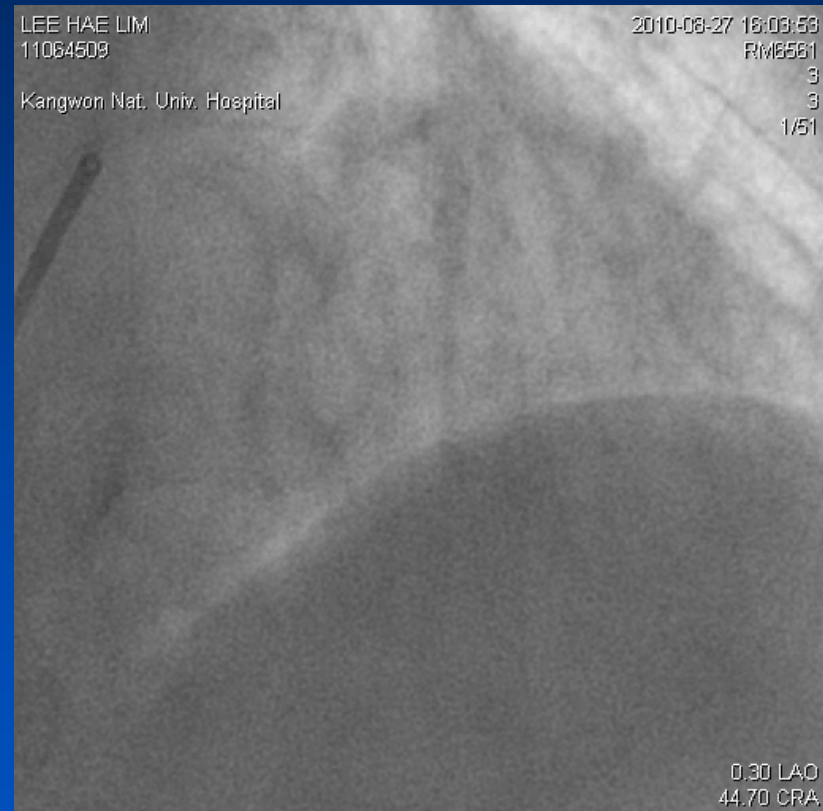
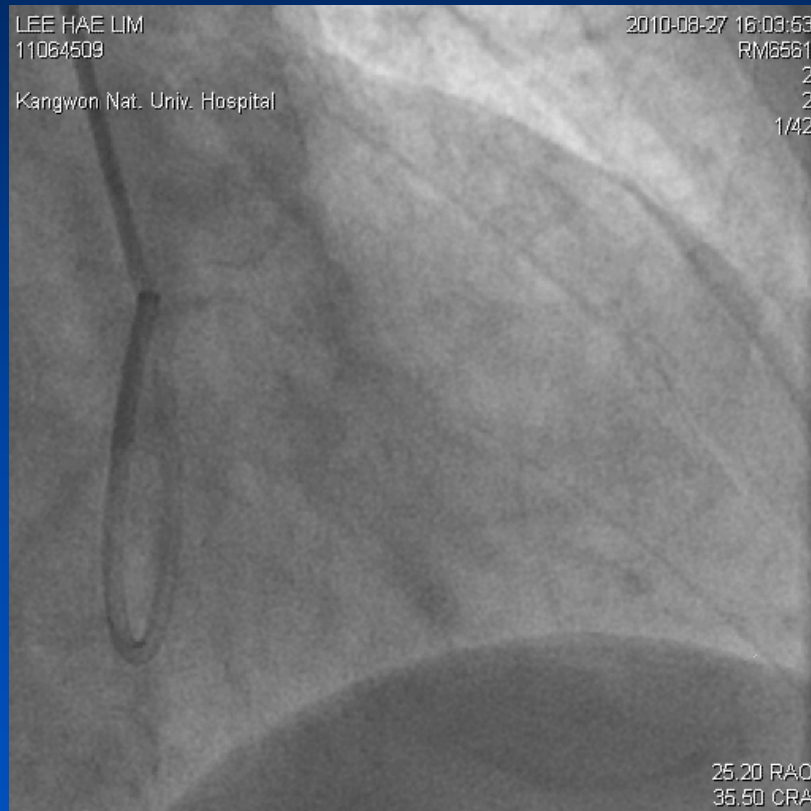PICO-Elite 3.0 x 18 mm (12 atm)

Final CAG
Successful result
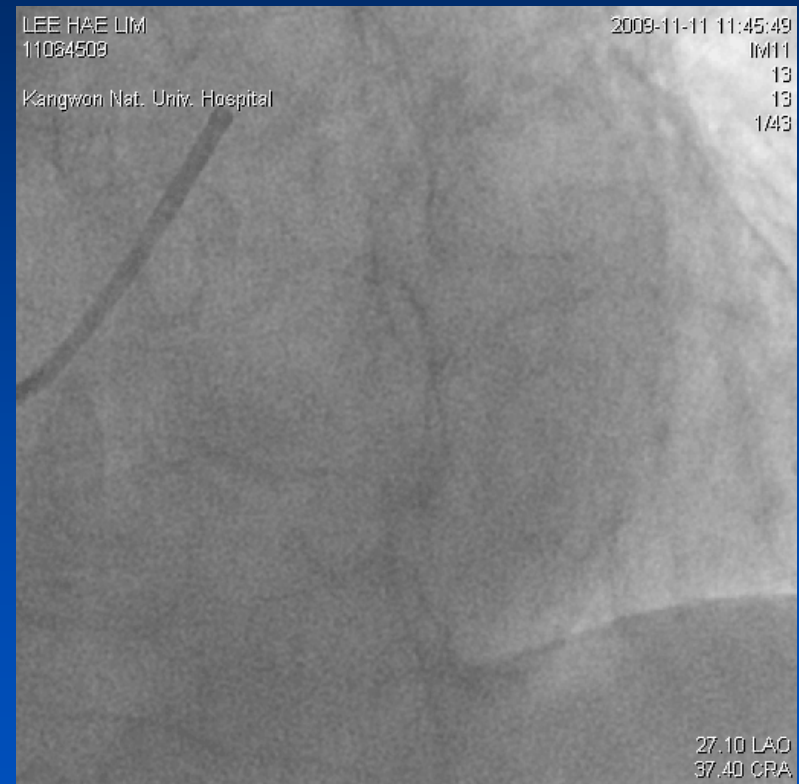
8 months later…

- **She complained recurred chest pain, but the pain character was atypical.**

- **We performed follow up CAG.**

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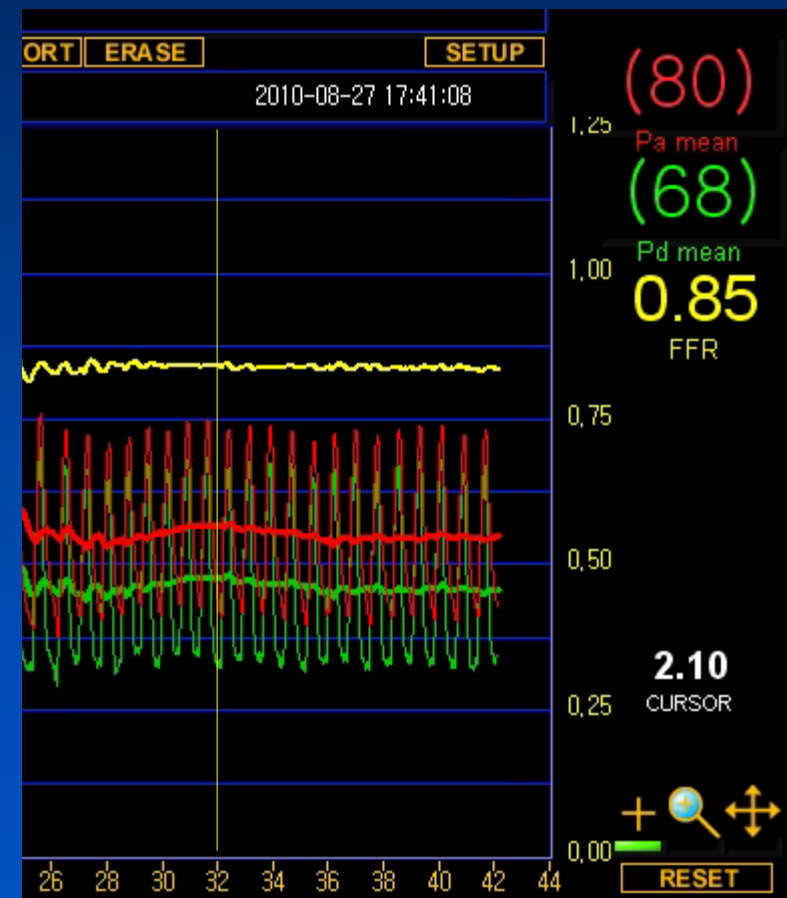College of Medicine
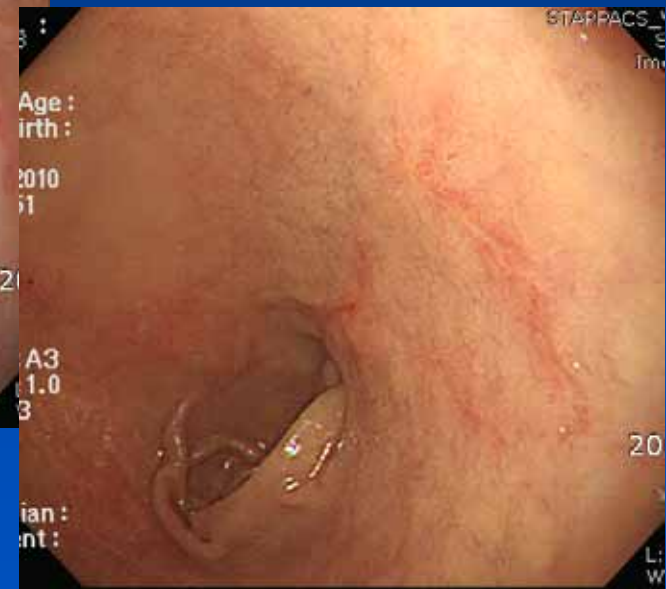
F/U Coronary angiogram
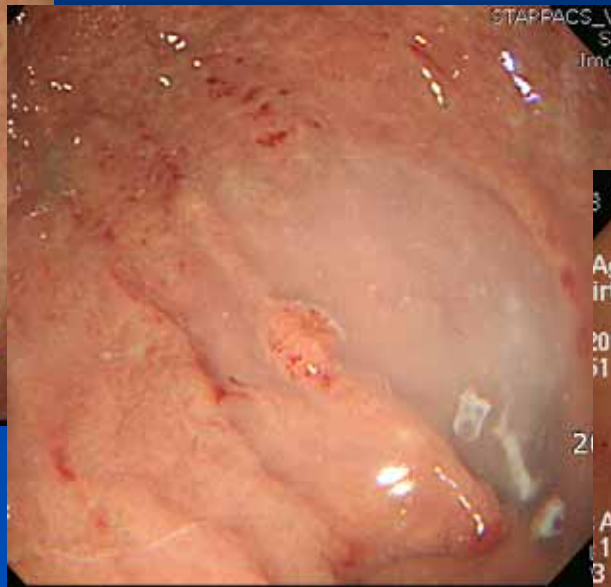## 27 Aug, 2010
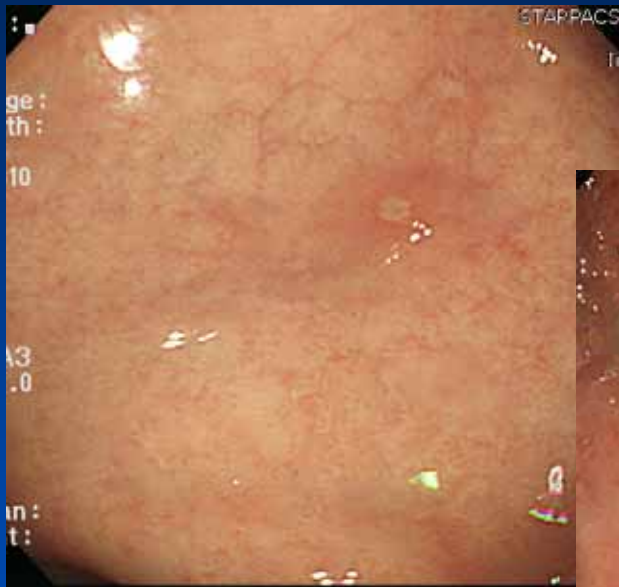
We measured FFR
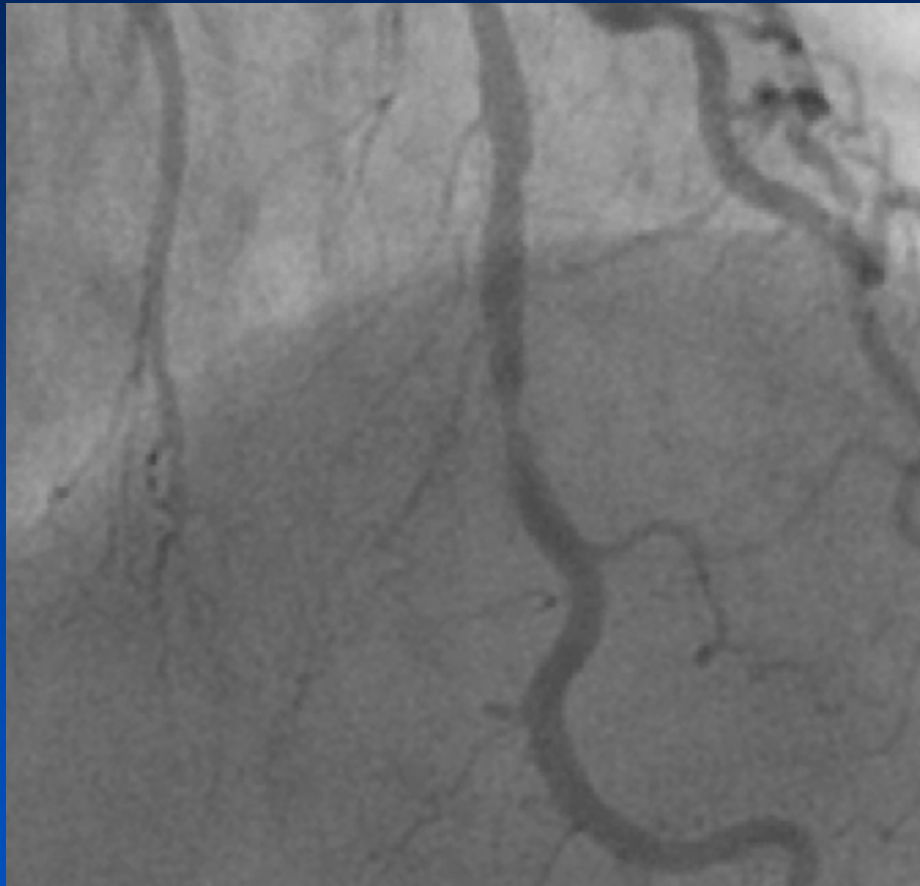
Then, deferred PCI…

Endoscopy
Erosive gastritis & duodenal ulcers

GI medication started
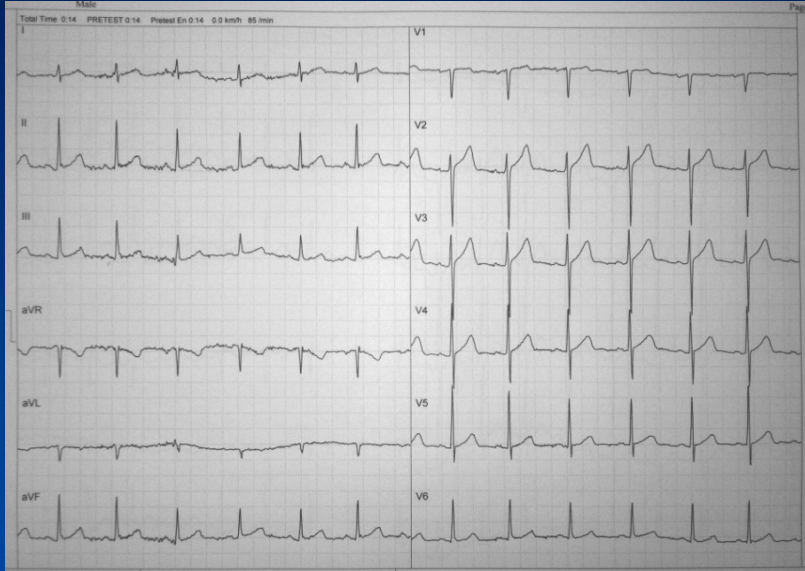
- Then the 'chest pain' had been improved.

Case #2

- **58/F**
- **CC: effort angina x 3 weeks**
- **Risk factors: Hypertension, T2DM**
- **Treadmill test**

    - Positive at stage 3

Treadmill test

Baseline
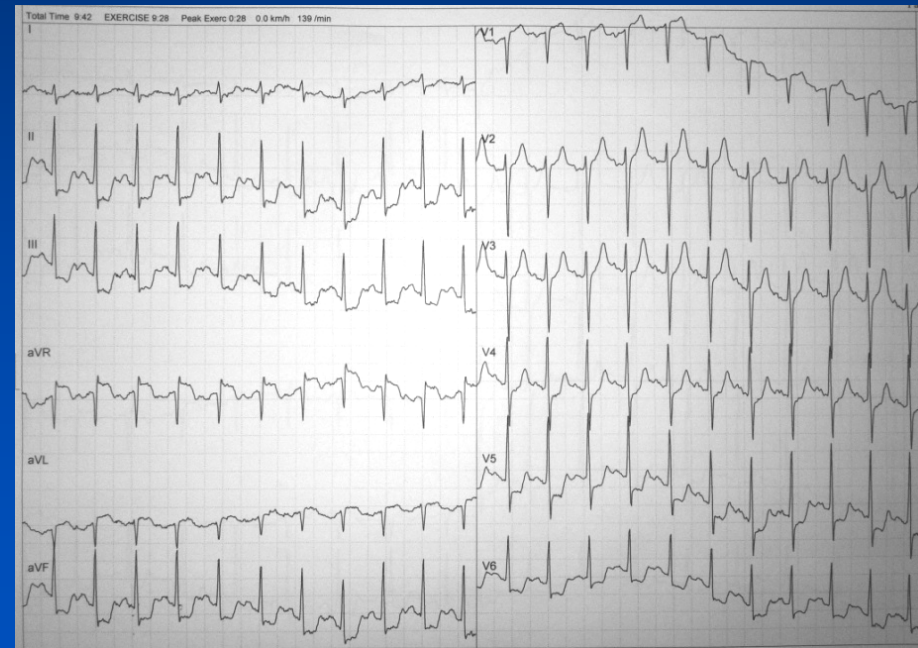
Angina at stage 3

Coronary angiogram
RCA

Coronary angiogram
Left coronary system

IVUS & FFR for RCA lesion

Deferred!

14
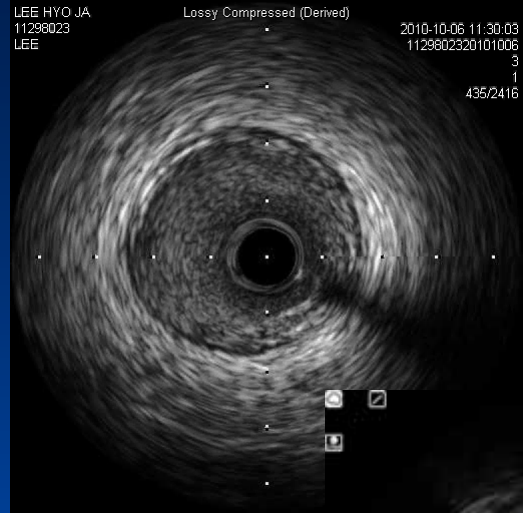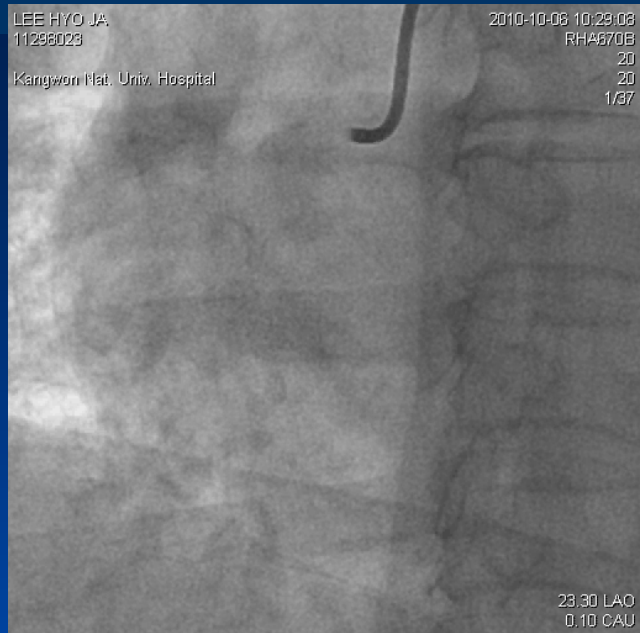
IVUS & FFR for LAD lesion
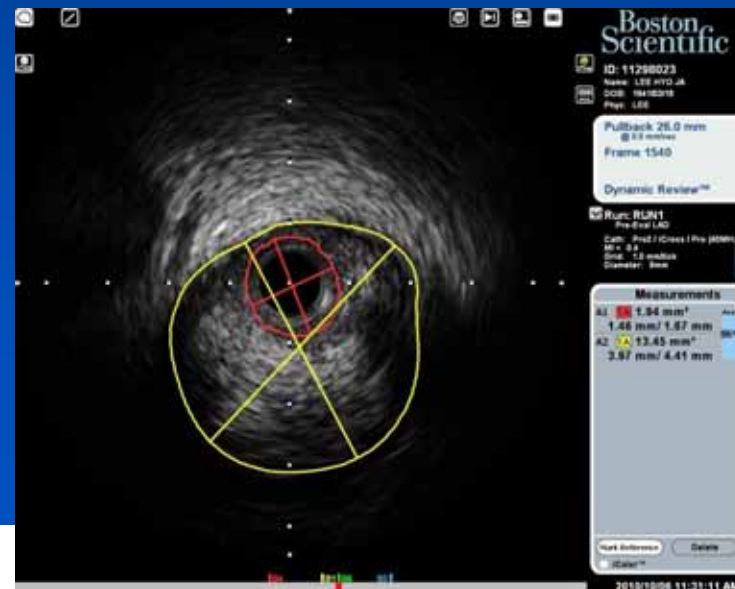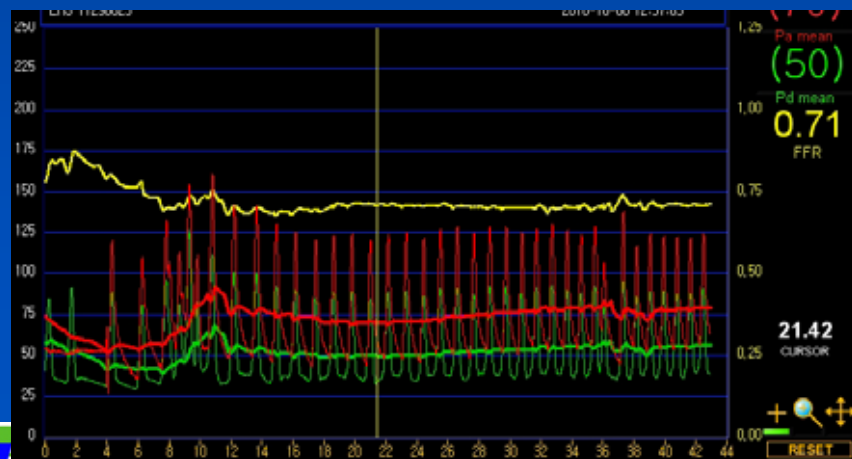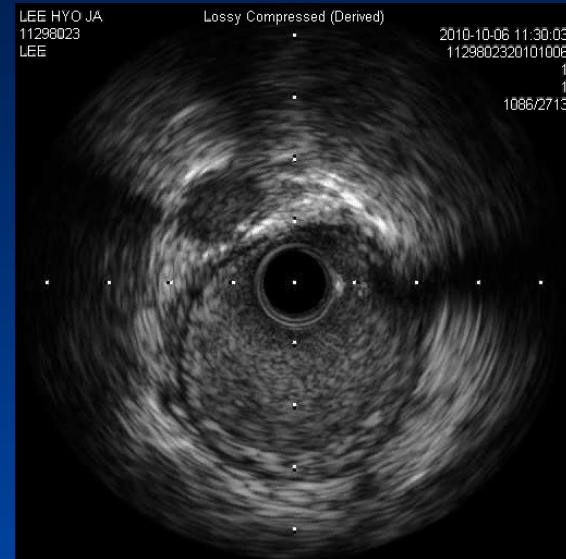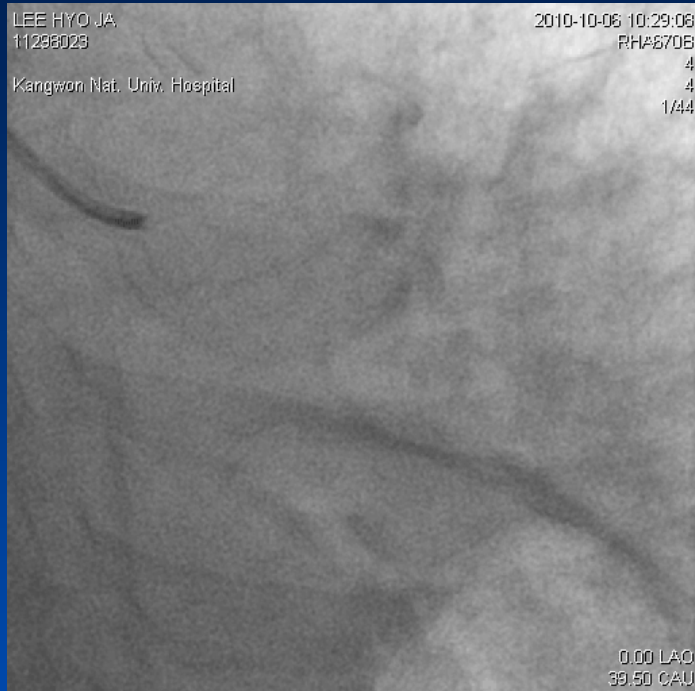
PCI for LAD Lesion

Pre-dilatation
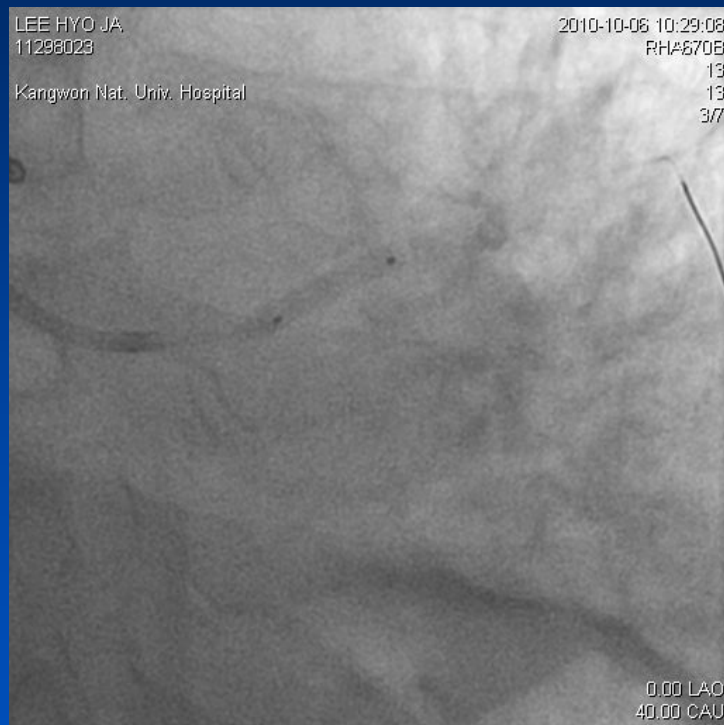
Stenting

Sapphire 3.0 x 15 mm (6 atm)
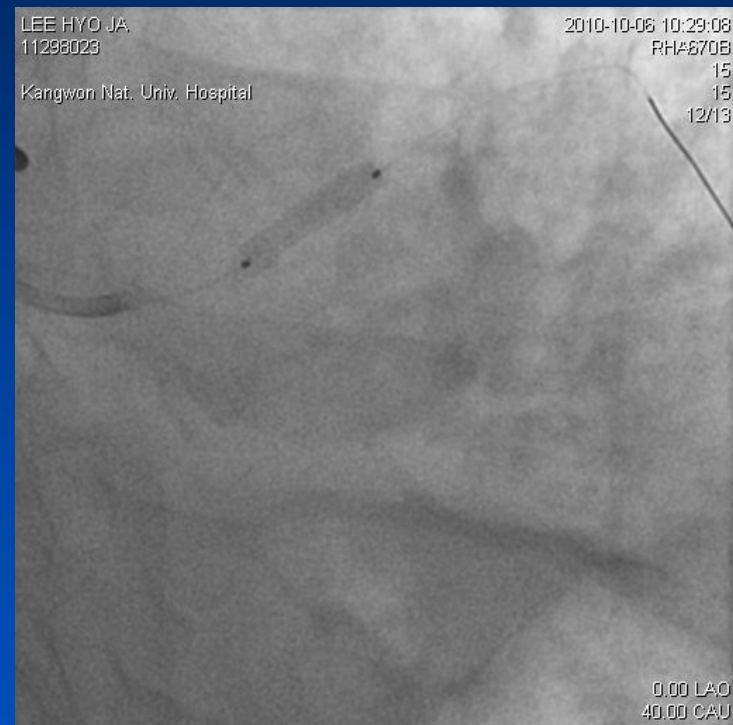
PICO-Elite 3.0 x 18 mm (12 atm)

Final CAG
Successful result
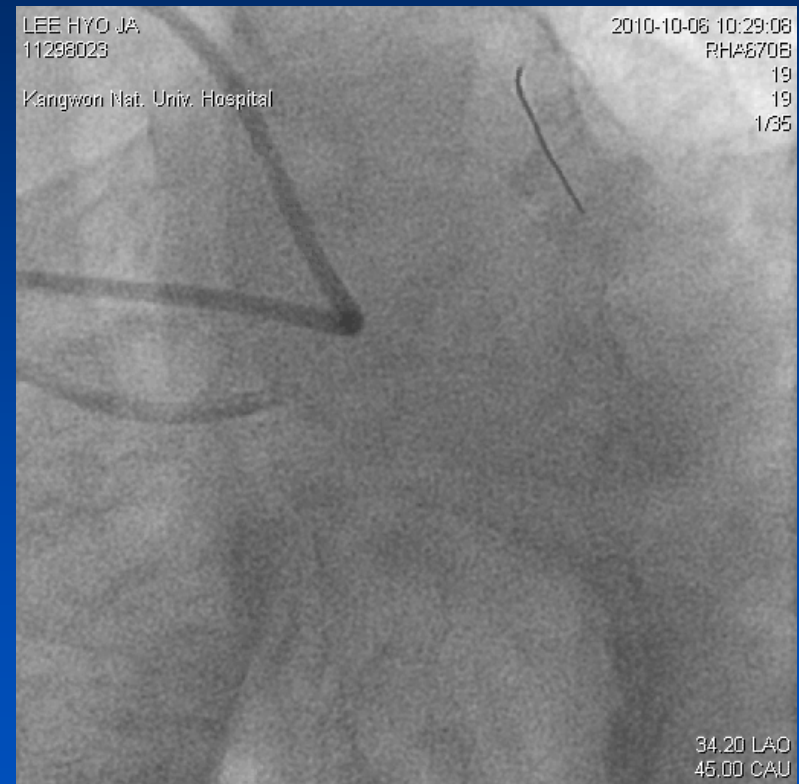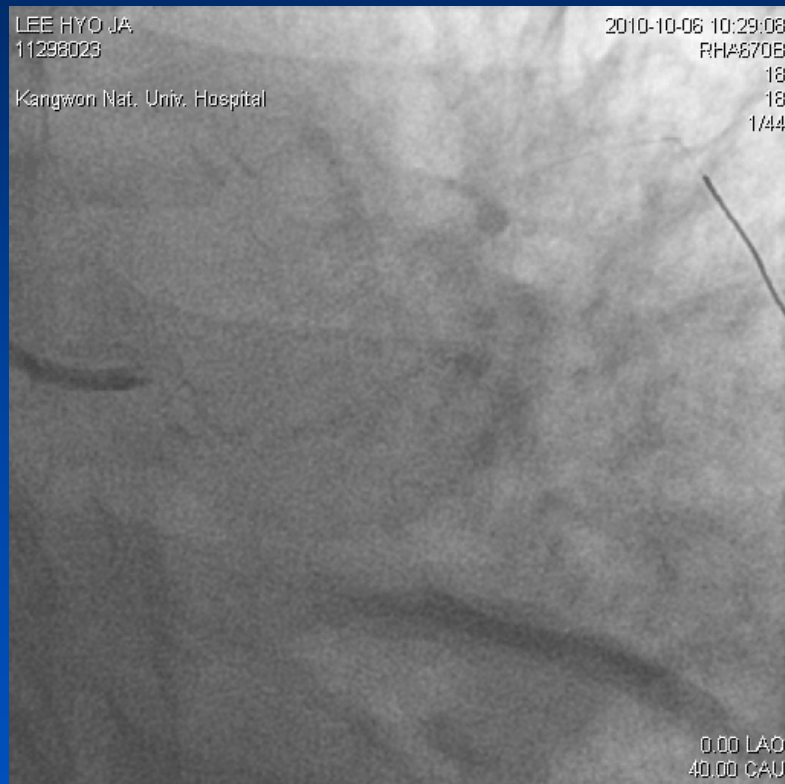
Treadmill test follow up

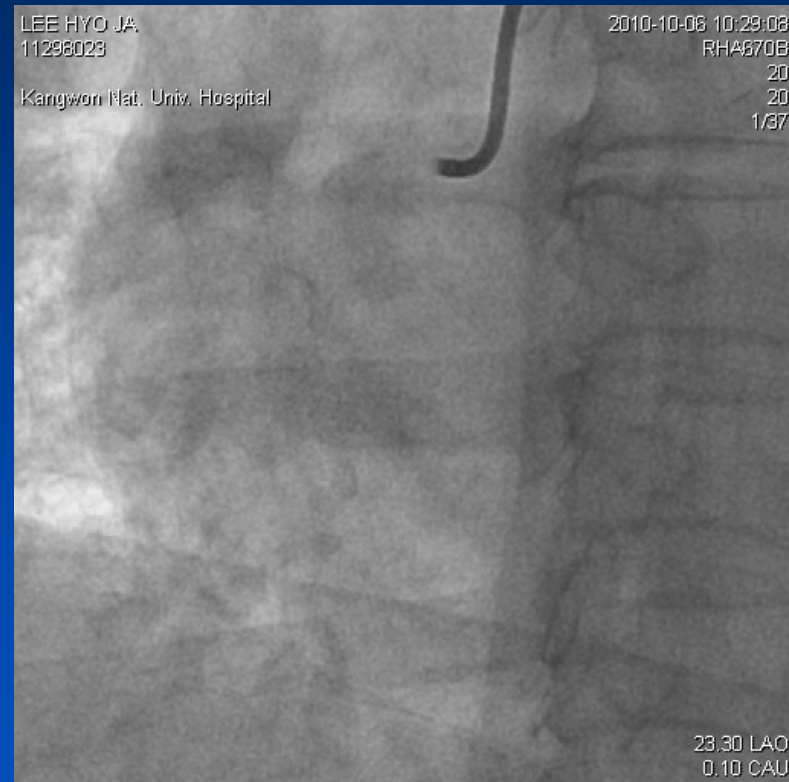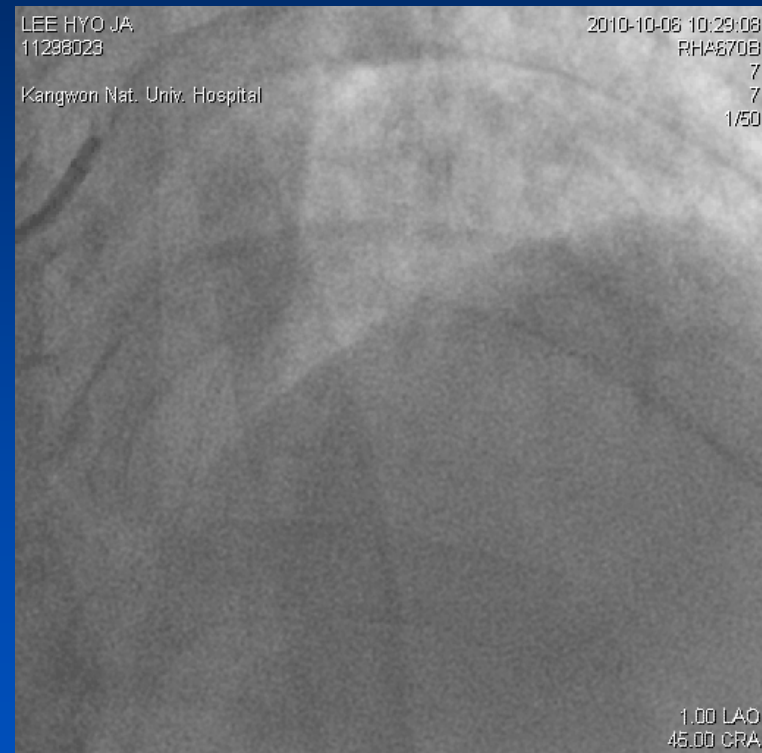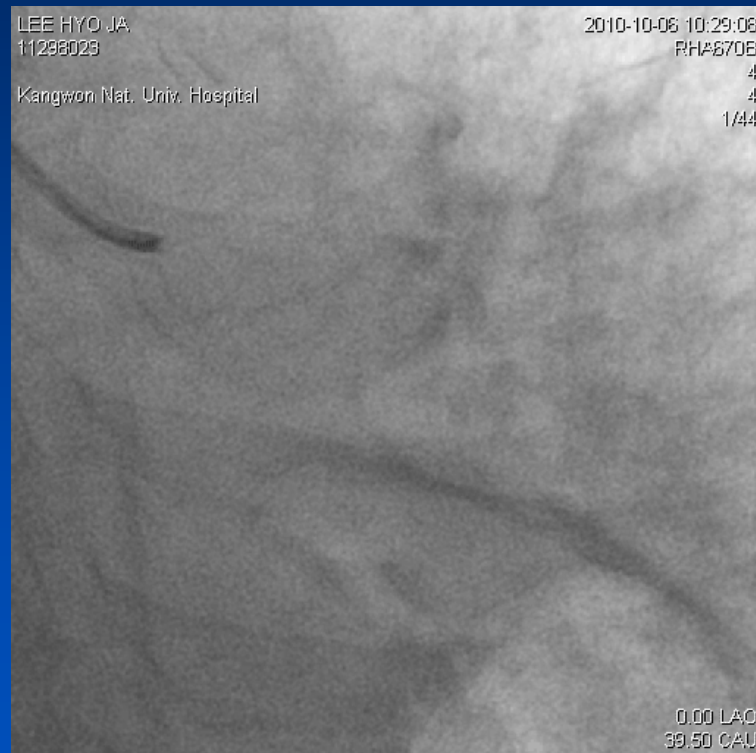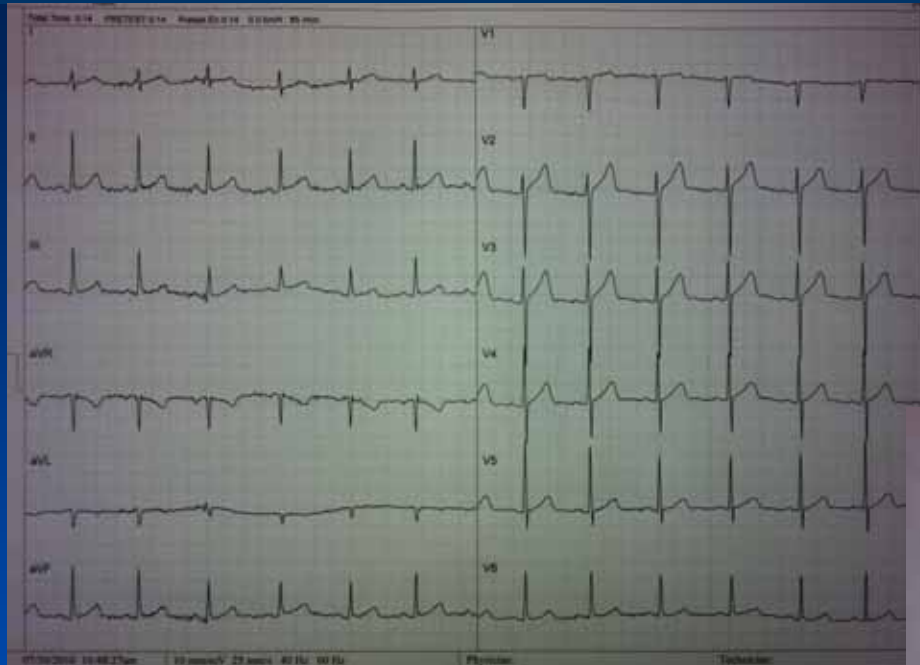Stage 4

Baseline
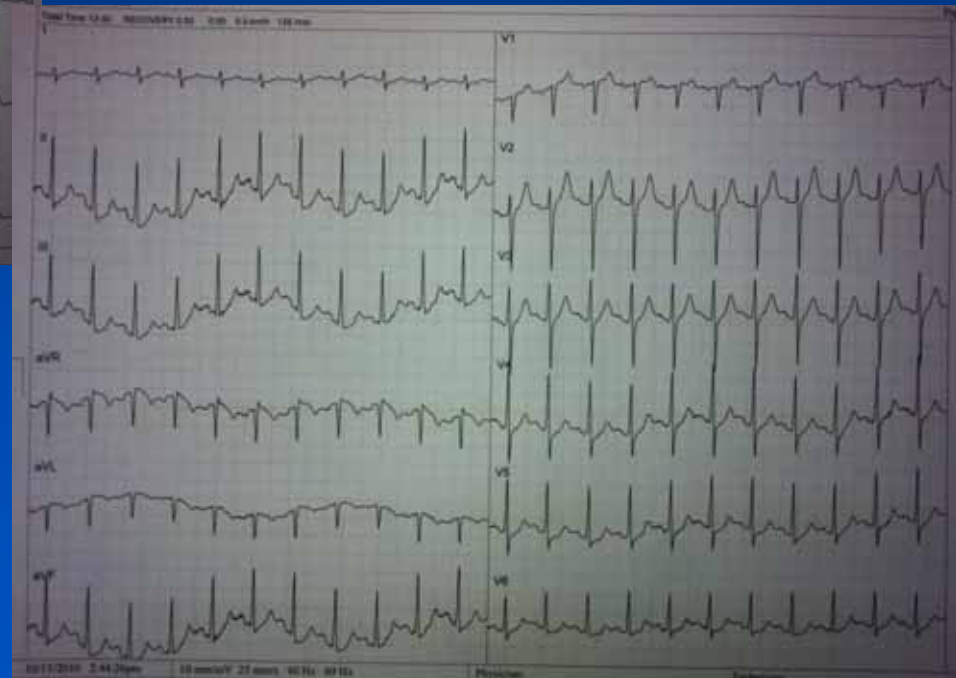
If I Did "Unnecessary PCI"......

- **Might experienced PCI related complications**

  - Restenosis

  - Stent thrombosis

  - No-reflow

  - Coronary perforation

  - Access site complication

- **Anti-platelet therapy must be reinforced**

- **The patient must paid more money…**

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Summary & Conclusion

- FFR can be useful as an alternative to stress test in the cath lab to have decision making-treat or not treat.
- "Start the procedure with FFR, finish the procedure with IVUS" rule seems quite feasible.
- FFR is a useful tool to avoid "unnecessary PCI".

Thank You!

4 MM² TOO SMALL?

CSA 4 mm²

55% stenosis

FFR = 0.60

4 MM² SUFFICIENT?

CSA 4 mm²

10% stenosis

FFR = 0.90
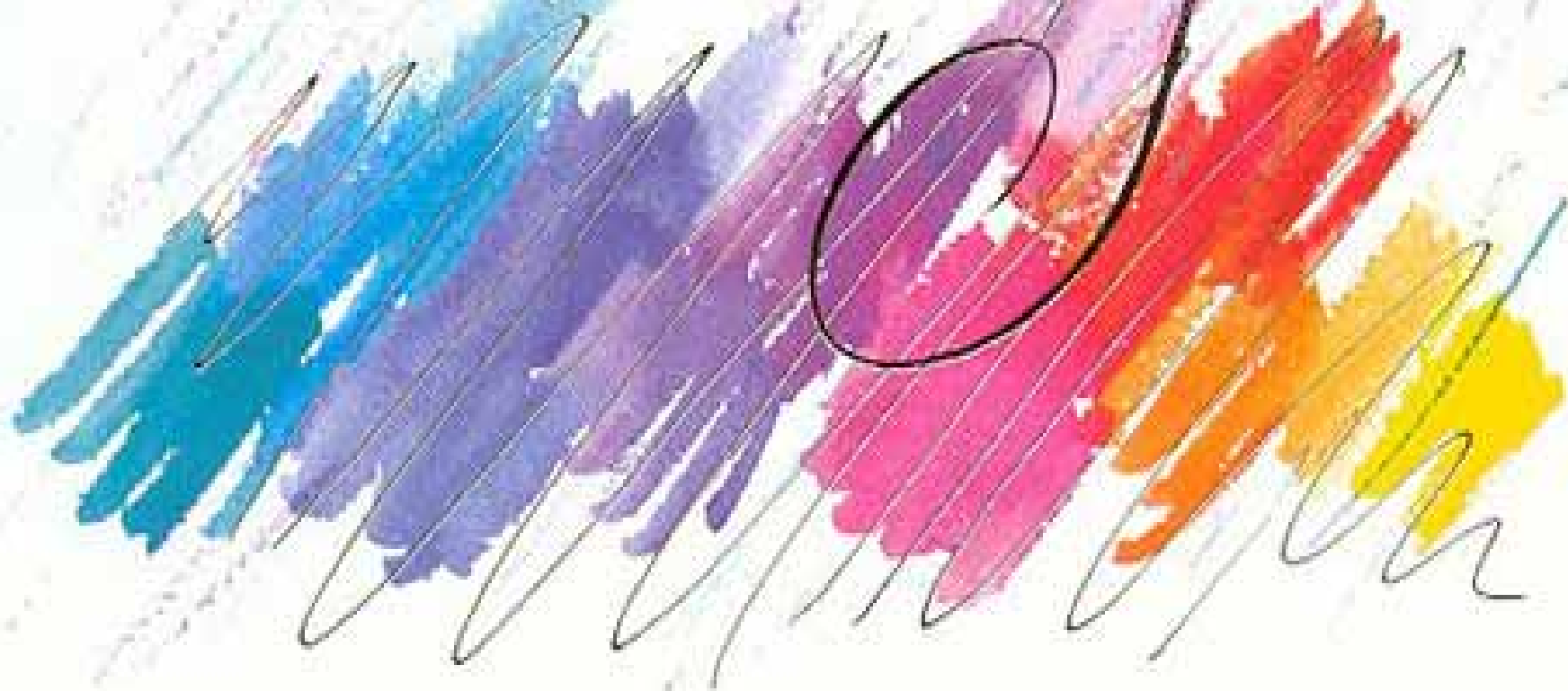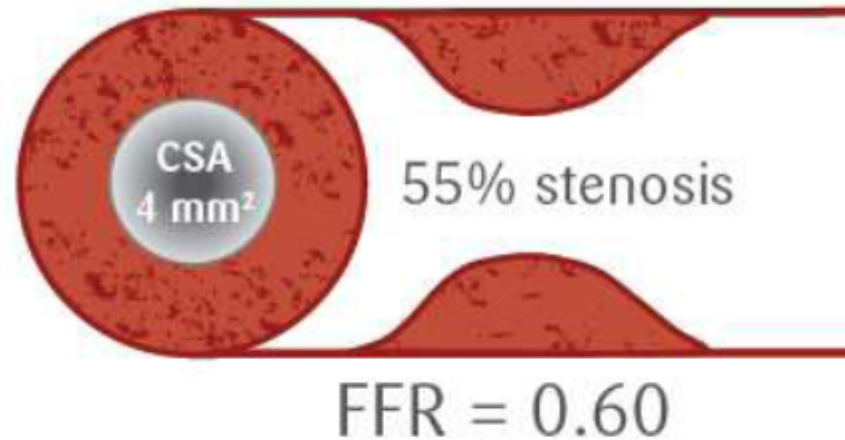
IVUS cutoff Value
Published Data Review

	Nishioka T, JACC 1999	Briguori et al AJC 2001	Takaki et al Cir. 1999	Abizaid et al AJC 1998
	70 lesions	53 lesions	42 pts	86 pts
Cut-off of MLA (mm^2)	<4.0 (Thallium +)	< 4.0 (FFR<0.75)	<3.0 (FFR<0.75)	> 4.0 (CFR >2.0)
Sensitivity **Specificity**	80% 90%	92% 54%	83 % 92.3 %	Accuracy 92%
QCA VD (mm) DS (%)		3.08±0.3 52±11		
MLA (mm^2)	3.3±2.3	3.9±2.5	3.9±2.0	4.4±2.0
MVA (mm^2)		12.0±4.6		13.2±4.4
Area stenosis%		65±18	55±24	43±24

New Cut-off Value of IVUS MLA (mm2)
according to different Vessel Diameter

	FFR <0.8/>0.8	Cut-off	sensitivity	specificity	PPV	NPV	Accuracy	AUC	95%CI
Vessel diameter at the MLA site <3.0mm (n=38)									
MLA	7/31	1.45	71	77.4	42	92	76	0.730	0.562-0.861
Length	7/31	12.0	57	83	44	90	78	0.682	0.511-0.823
PB	7/31	75.4	43	94	60	88	85	0.654	0.483-0.801
Area stenosis	7/31	66.8	86	52	28	94	56	0.696	0.526-0.834
Vessel diameter at the MLA site 3.0-3.5mm (n=53)									
MLA	13/40	1.8	61.5	87.5	61	88	81	0.769	0.633-0.874
Length	13/40	4.9	72.5	84	94	50	80	0.772	0.636-0.876
PB	13/40	74.5	84.6	67.5	46	93	71	0.765	0.629-0.871
Area stenosis	13/40	75.8	46						0.528-0.794
Vessel diameter at the MLA site 3.5-4.0mm (n=72)									
MLA	18/54	2.15	83						0.736-0.917
Length	18/54	3.57	83	75	54	93	77	0.813	0.704-0.895
PB	18/54	80.2	83	75	54	93	77	0.850	0.746-0.923
Area stenosis	18/54	70.0	89	72	52	95	76	0.824	0.716-0.904
Vessel diameter at the MLA site >4.0mm (n=73)									
MLA	11/62	2.41	91	83	50	98	84	0.874	0.775-0.940
Length	11/62	0.83	91	72.6	37	98	75	0.792	0.682-0.879
PB	11/62	80.7	100	61	31	100	67	0.855	0.753-0.926
Area stenosis	11/62	79.3	55	95	67	92	89	0.770	0.656-0.860

2.15 mm^2