A case of very late stent thrombosis caused by obvious very late acquired stent malapposition assessed by optical coherence tomography after everolimus-eluting stent implantation into sirolimus-eluting stent

Wakayama Medical University Division of Cardiovascular medicine

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Case : 70's y.o. Male

Chief complaint: Chest pain

Clinical Course:

In 2007, he underwent a sirolimus-eluting stent (SES) (3.0 * 18 mm) implantation in the proximal left anterior descending artery (LAD) for unstable angina.

On February in 2014, he suffered from ST-elevation myocardial infarction (STEMI) due to very late stent thrombosis (VLST) of SES in the proximal LAD. An everolimus-eluting stent (EES) (2.5 * 23 mm) was implanted into the previous SES. At 9-month follow-up, no in-stent restenosis was documented. He discontinued taking clopidogrel, and had continued aspirin alone.

On September in 2015, he experienced recurrent chest pain at rest and came to our hospital.

Coronary risk factor: Hypertension, Dyslipidemia, past smoking

Past history: none

Personal history: smoking 15 /day * 15 years
allergy(−)

Family history: none

Medication:

Aspirin	100mg	Lansoprazole	15mg
Rosuvastatin	5mg	Enalapril	1.25mg
Carvedilol	5mg		

Physical examination

Body temperature: 35.4 ℃

Respiratory rate:18 /min, SpO_2 98 %(room air)

Pulse rate 82 /min, Blood pressure: 148 / 88 mmHg

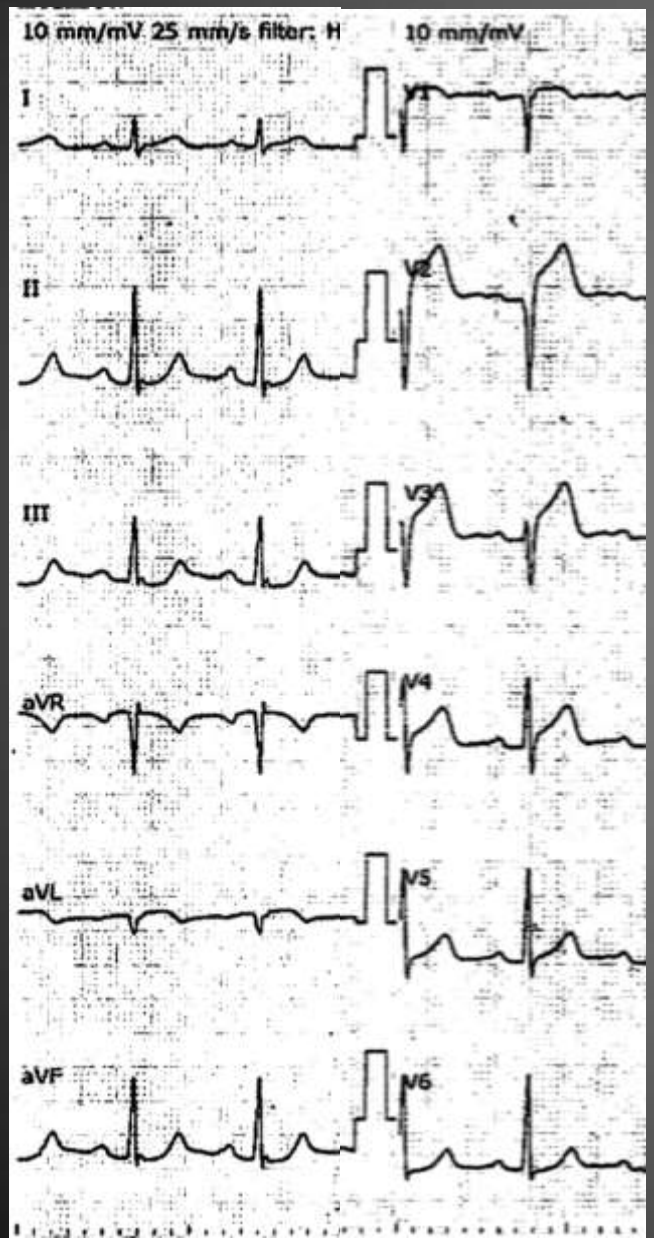
Heart sounds: S1→ S2→ S3(-) S4(-) no murmur

Lung sounds: clear, no rale

Abdomen: soft and flat, no tenderness

Edema in legs(-)

Electrocardiogram



Transthoracic echocardiography

Anterior asynergy
Ejection fraction 45%

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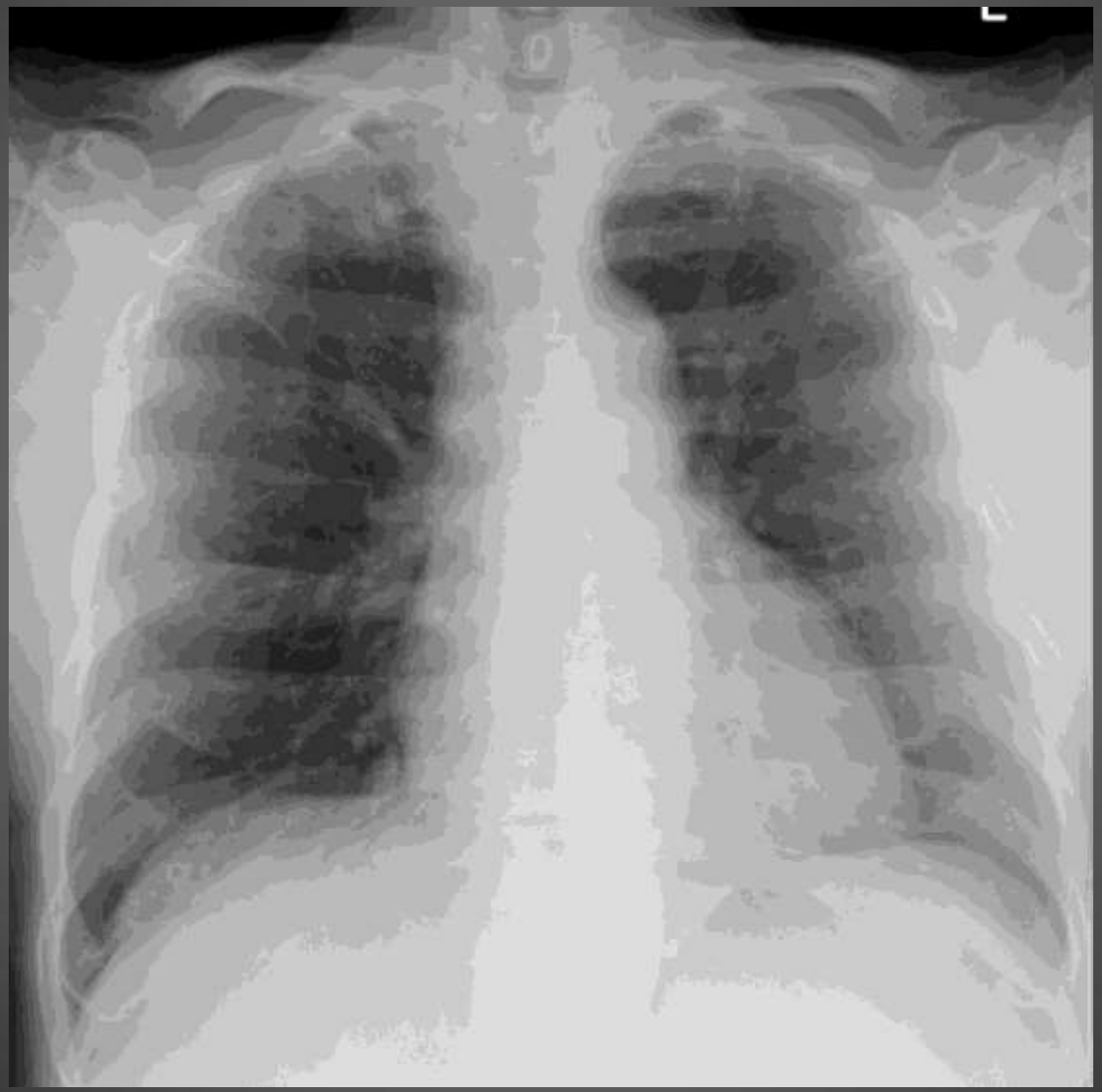
Chest X-ray

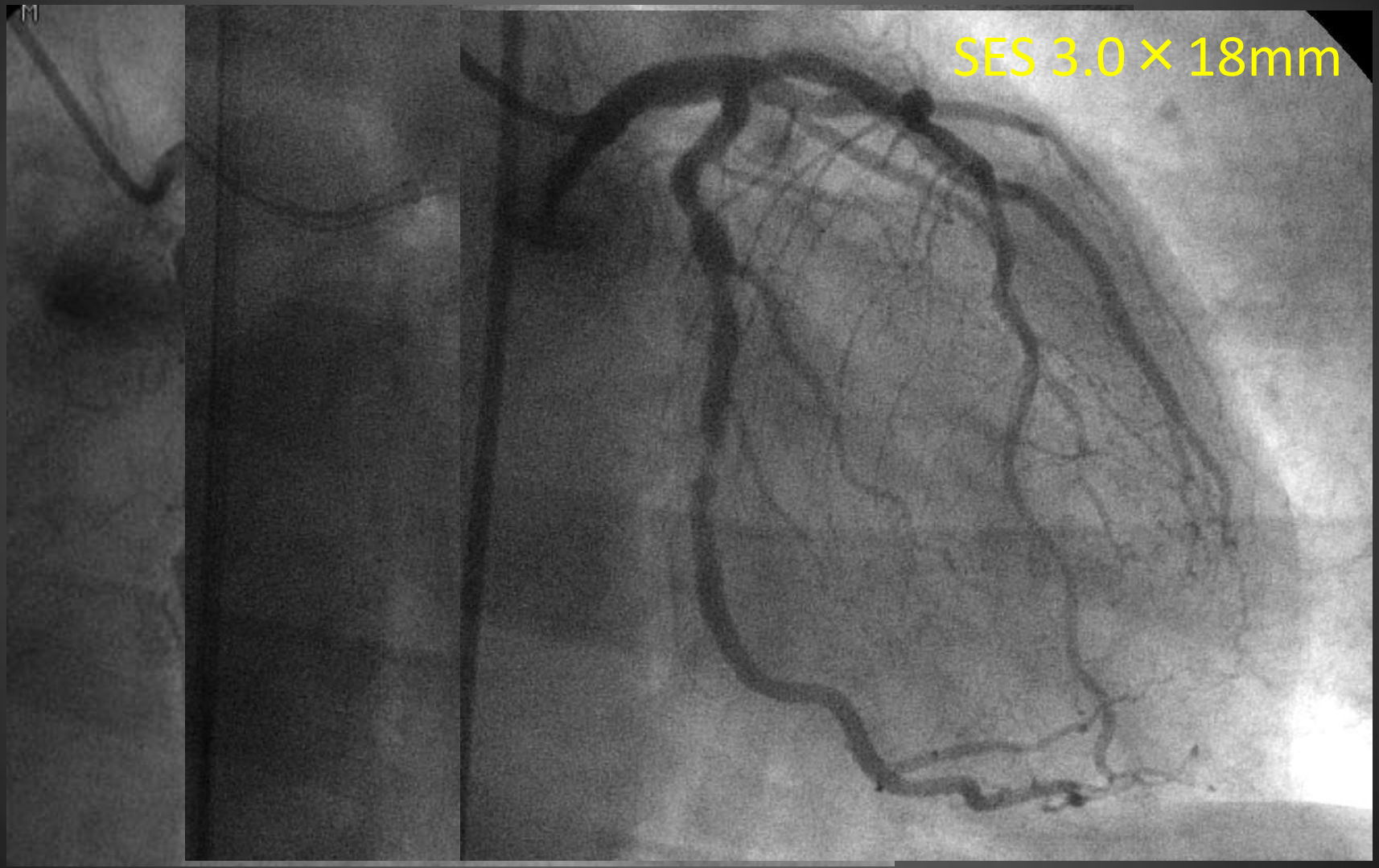


Cardio
Thoracic Ratio
50%

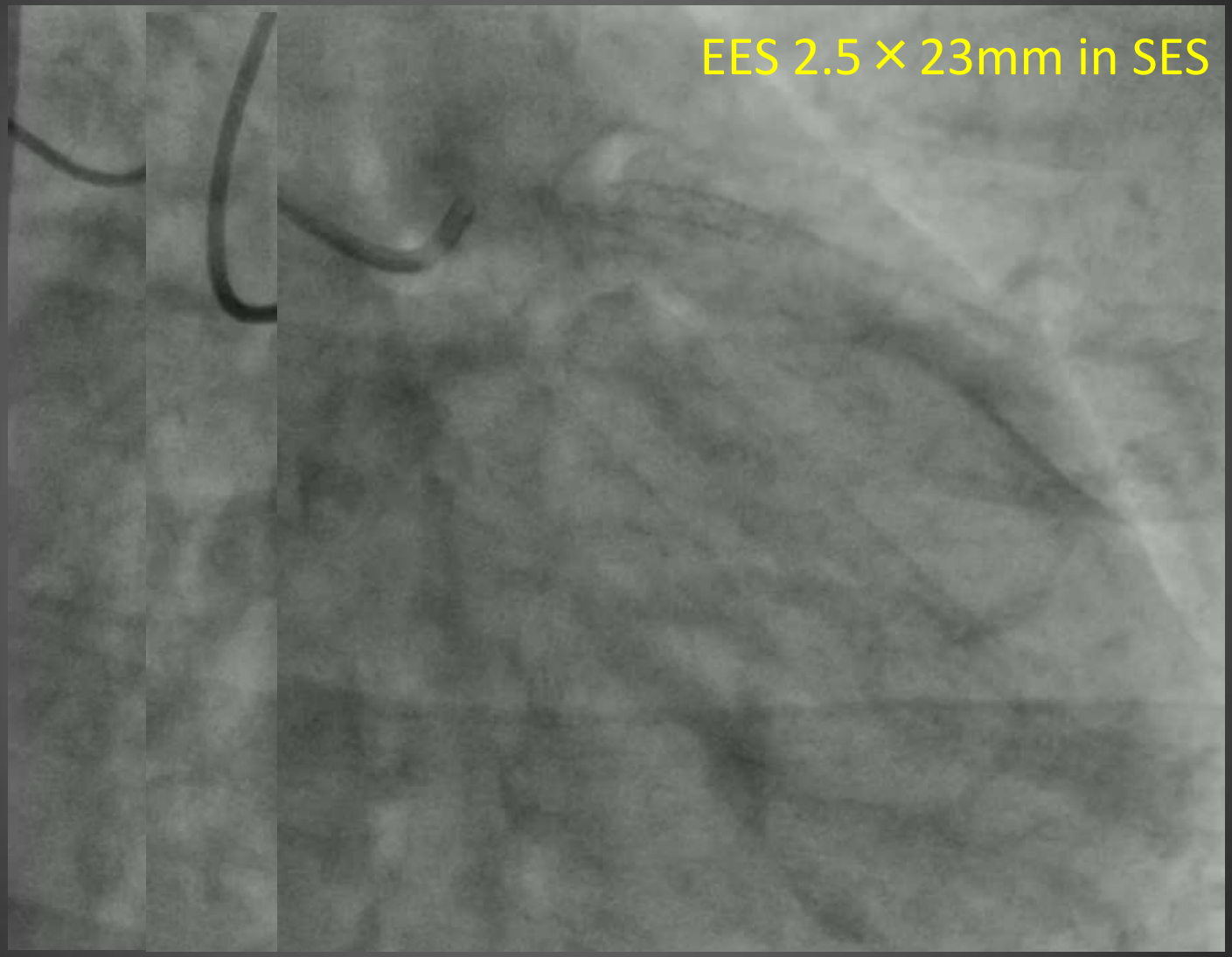
Laboratory data

WBC	7630	/μL	BUN	17	mg/dL
Hb	13.9	g/dL	UA	7.0	mg/dL
Plt	15.5万	/μL	HbA1c	5.8	%
TP	7.3	g/dL	TG	120	mg/dL
Alb	4.6	g/dL	HDL-C	40	mg/dL
CK	718	IU/L	LDL-C	77	mg/dL
CK-MB	14	IU/L	Na	142	mEq/L
AST	34	IU/L	K	3.5	mEq/L
ALT	25	IU/L	Cl	108	mEq/L
LDH	280	IU/L	CRP	0.04	mg/dl
Cr	0.82	mg/dL	Trop-I	14.3	pg/mL

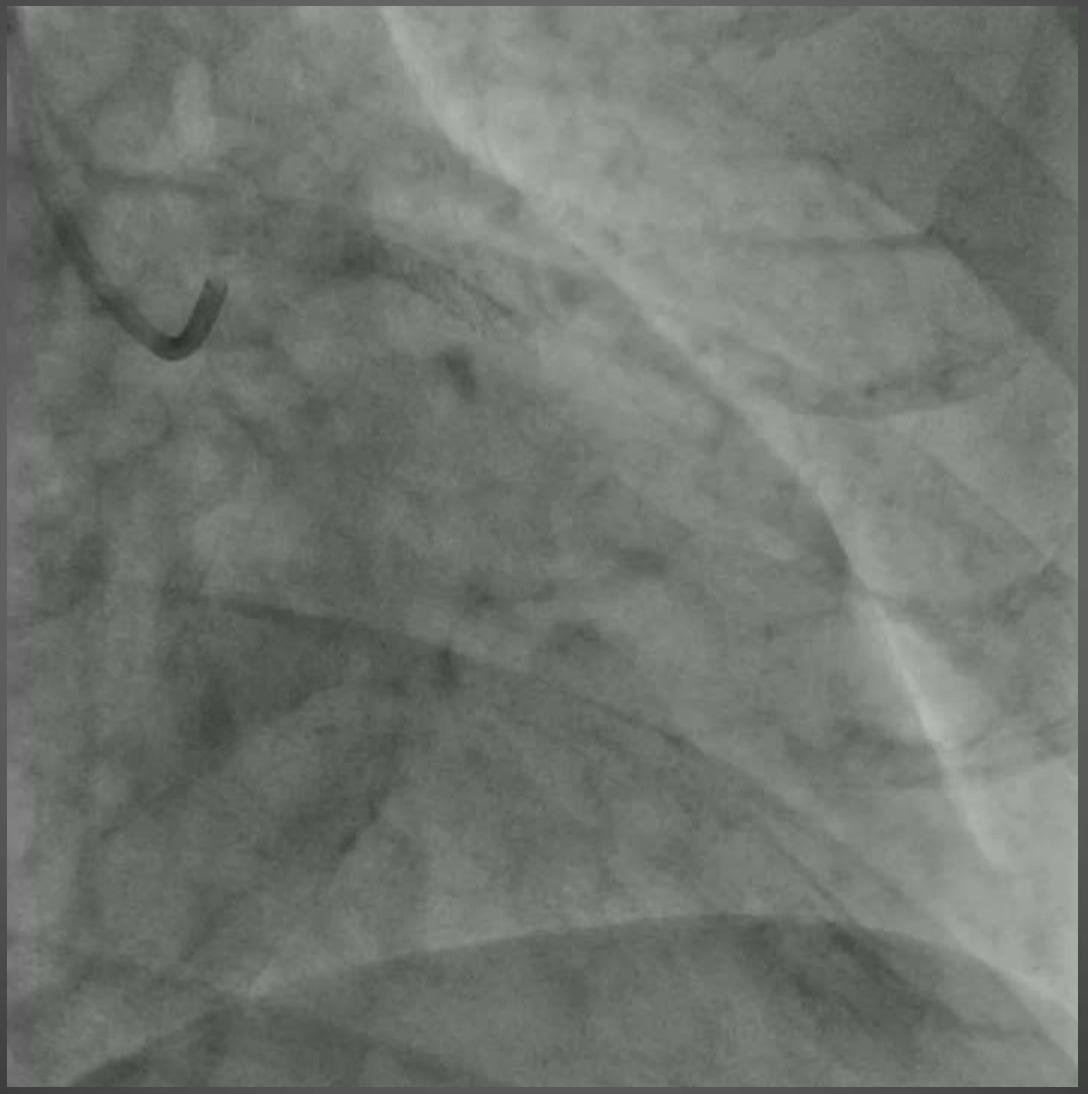
Initial PCI for LAD In 2007



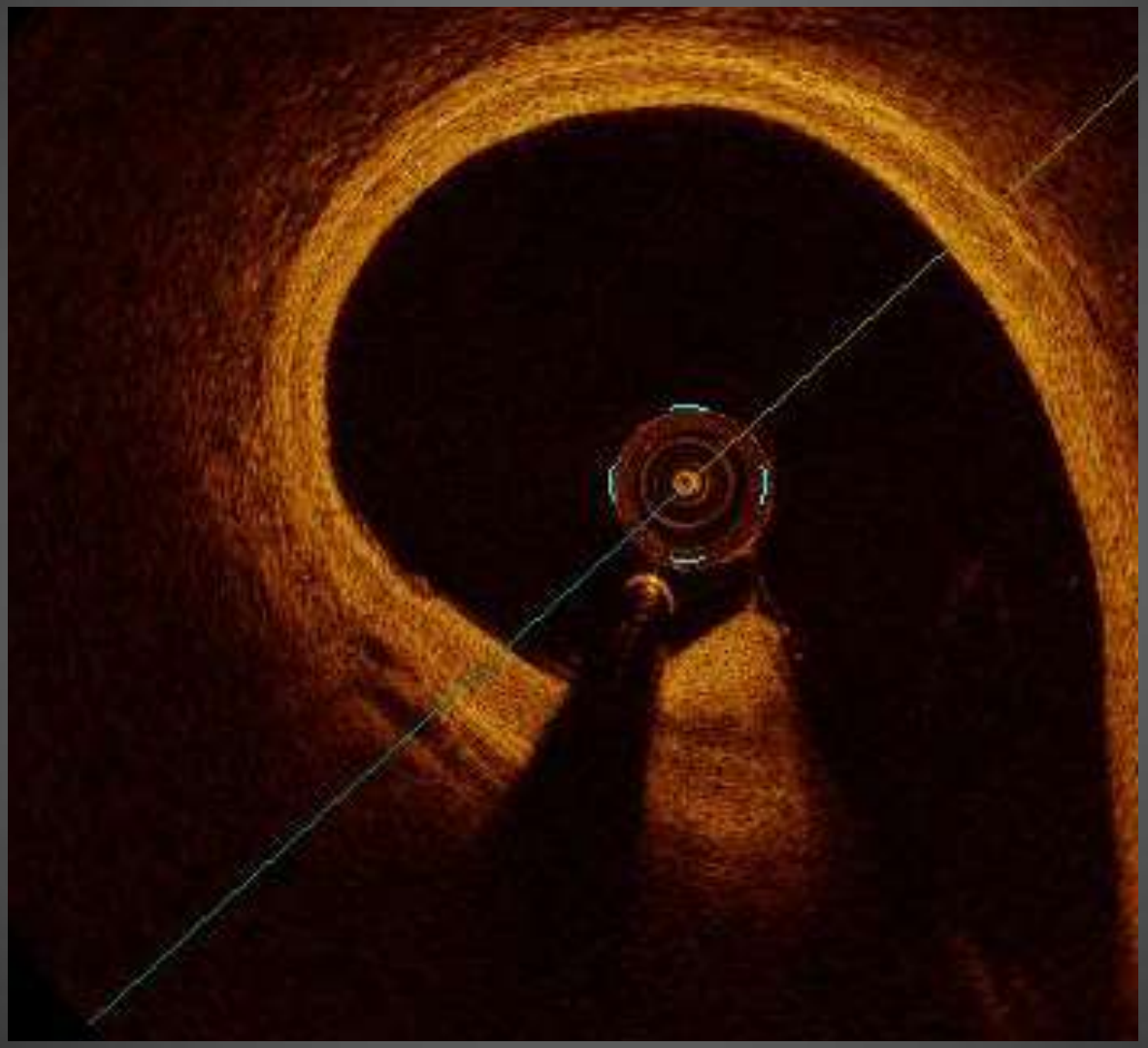
PCI for #6 VLST (On February in 2014)



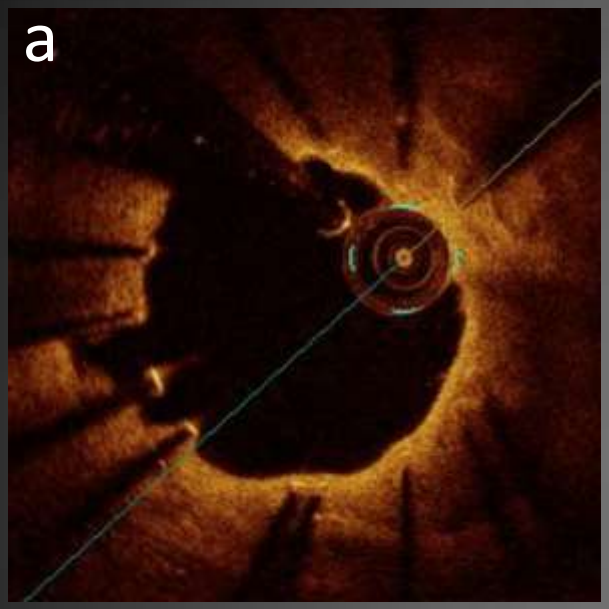
9-month follow-up

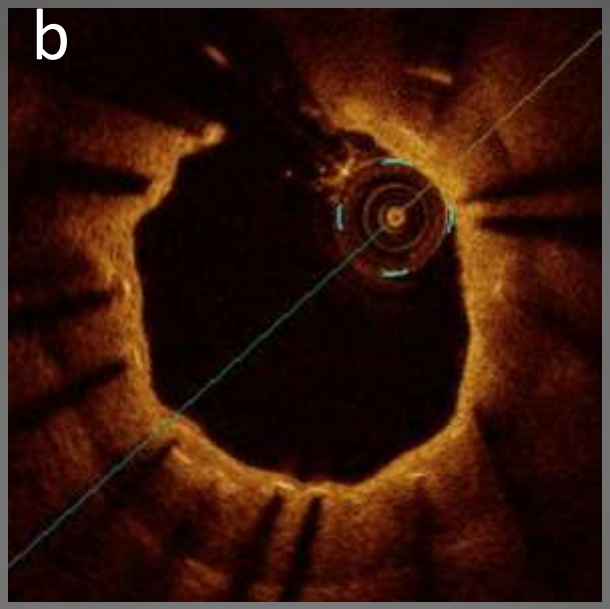


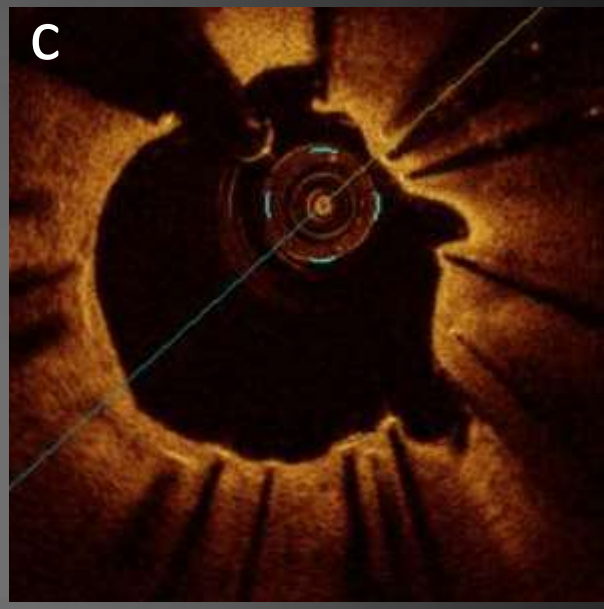
OCT（9-month follow-up）

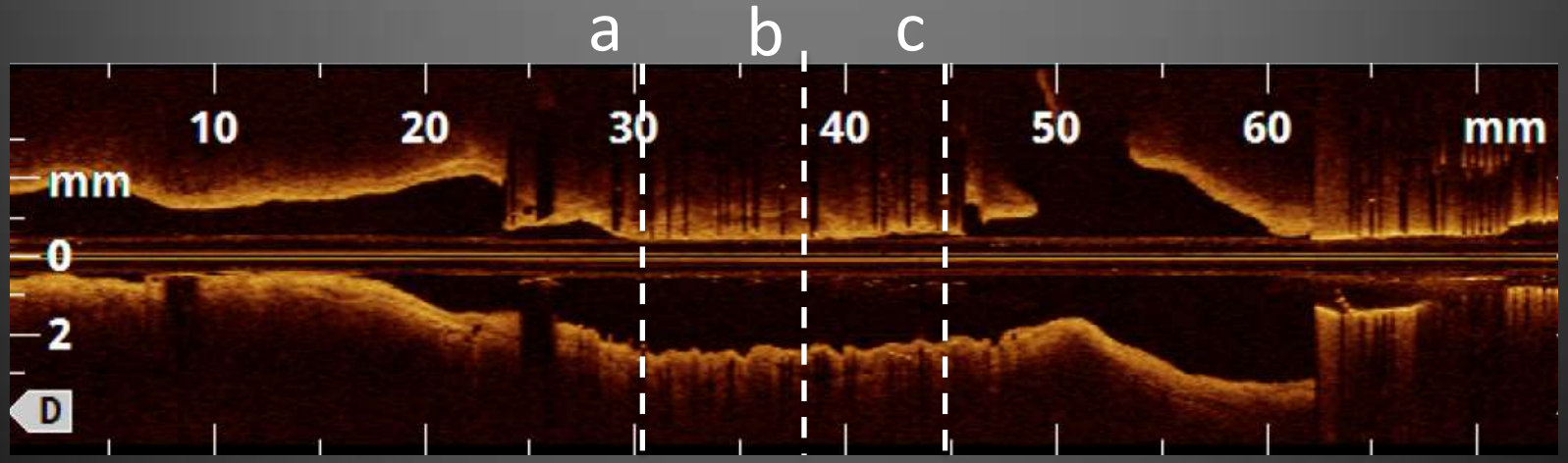


OCT（9-month follow-up）









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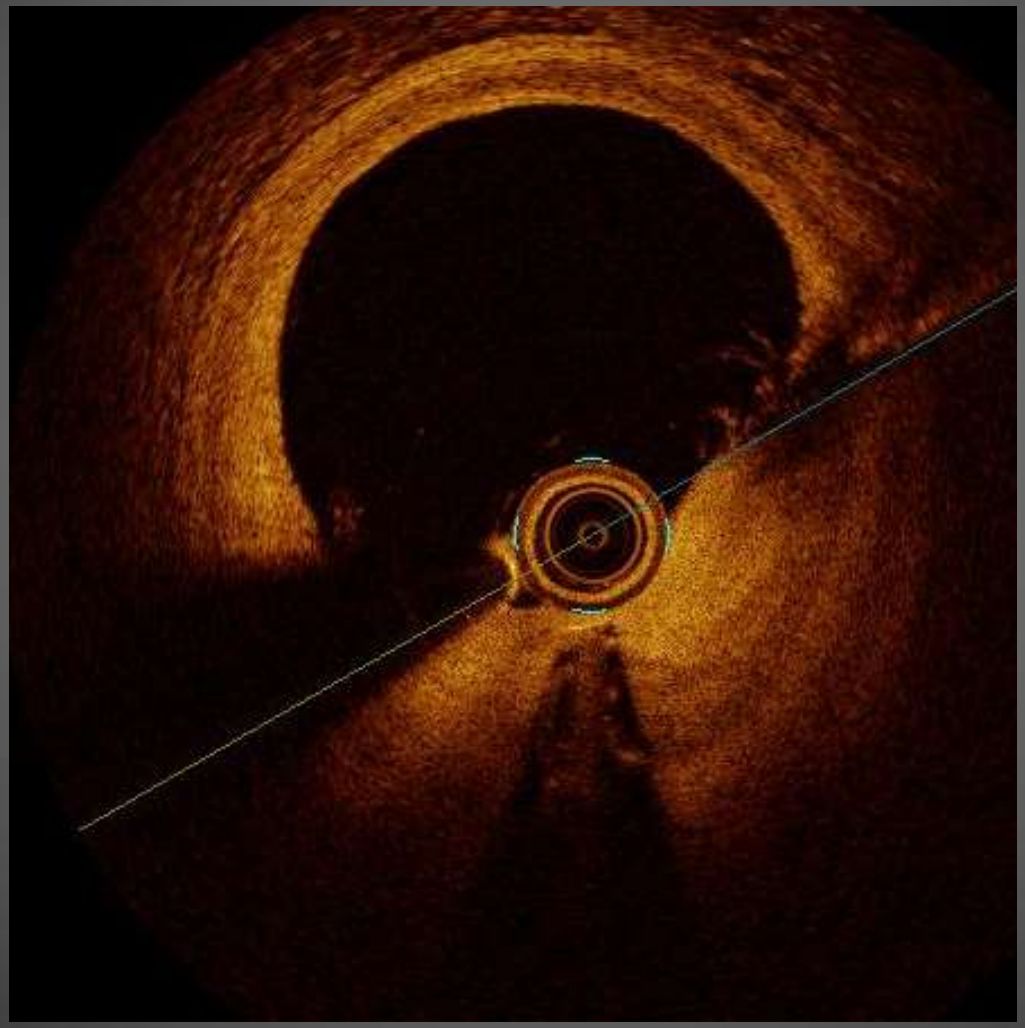
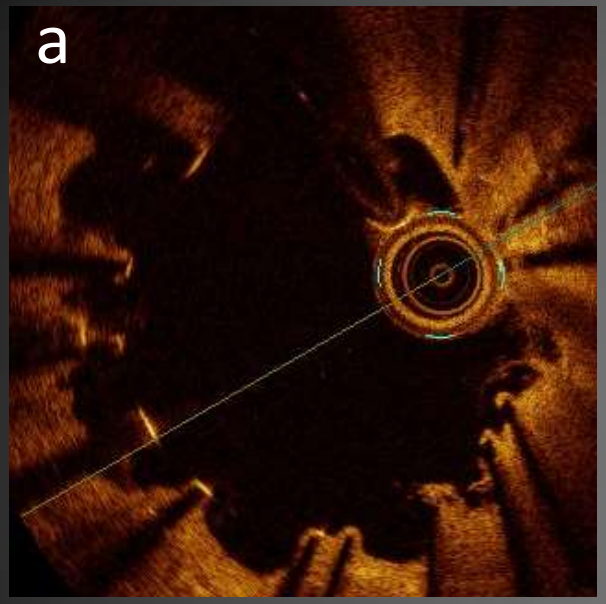
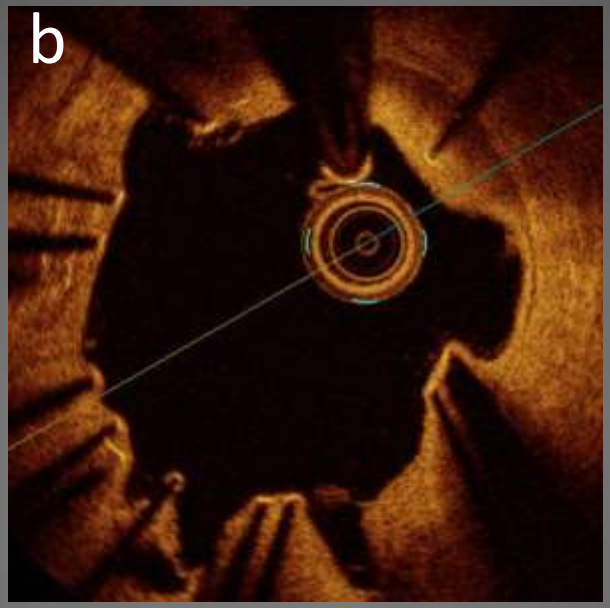
PCI for #6 VLST
(19 months after EES implantation)

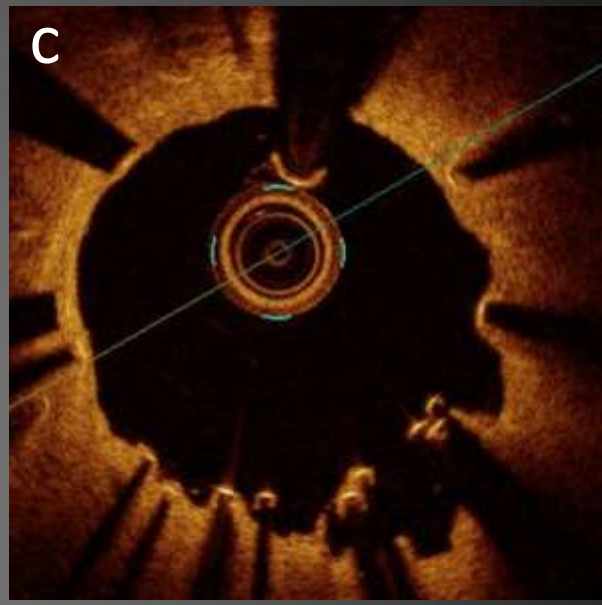
OCT（19 months after EES implantation）

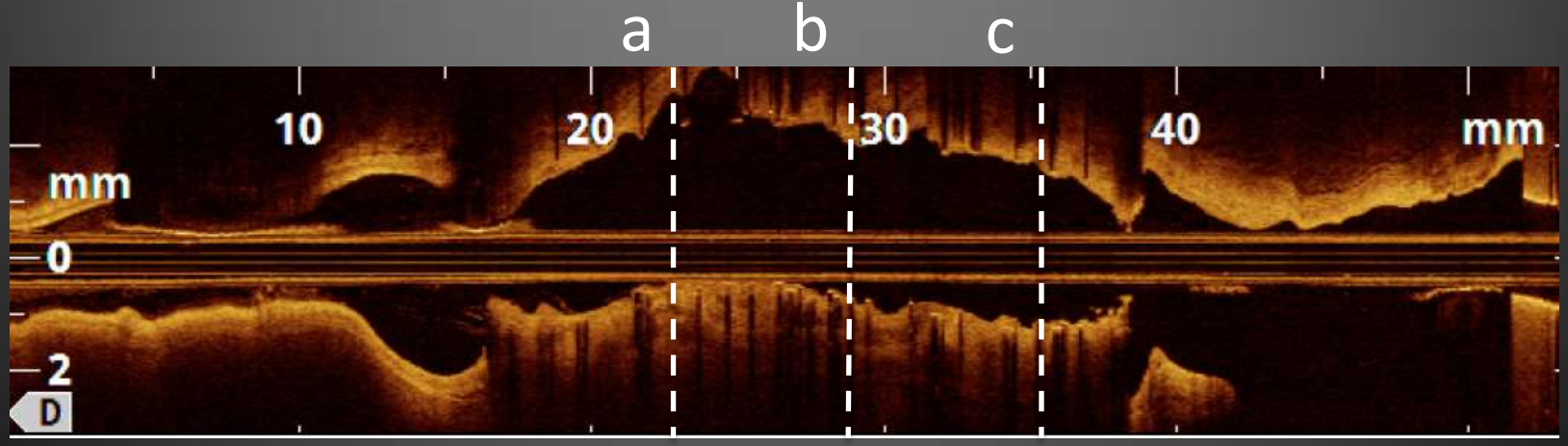


OCT（19 months after EES implantation）









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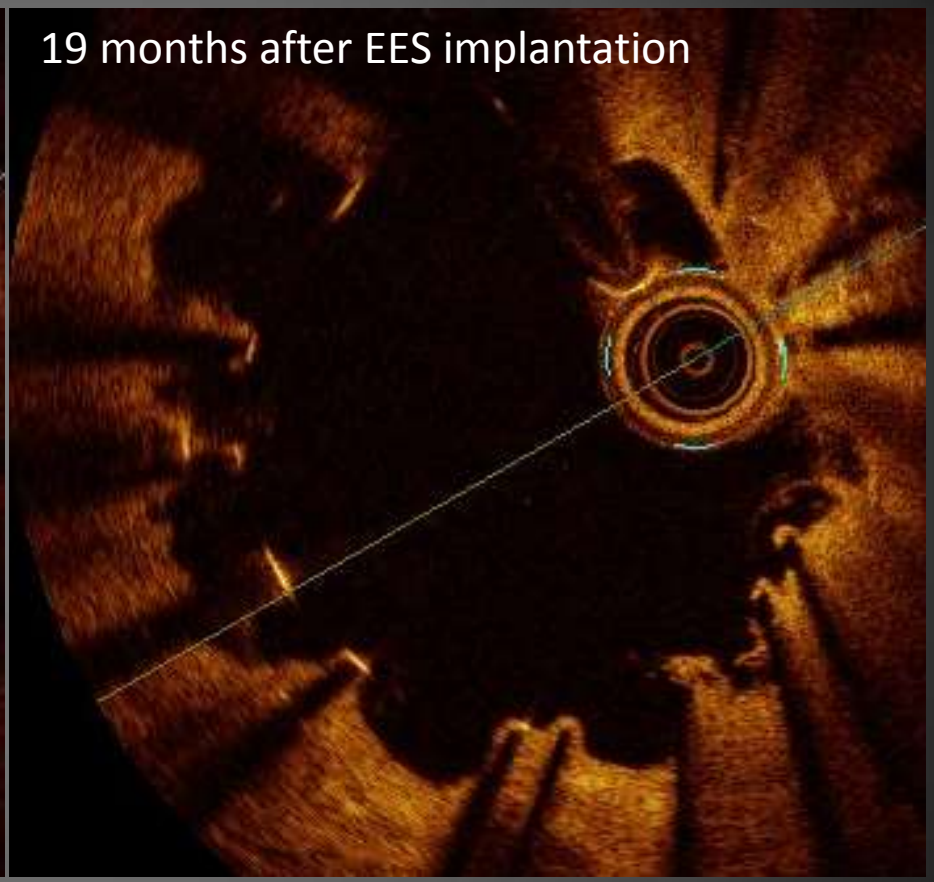
OCT



CME

Examination of the In Vivo Mechanisms of Late Drug-Eluting Stent Thrombosis

Findings From Optical Coherence Tomography and Intravascular Ultrasound Imaging

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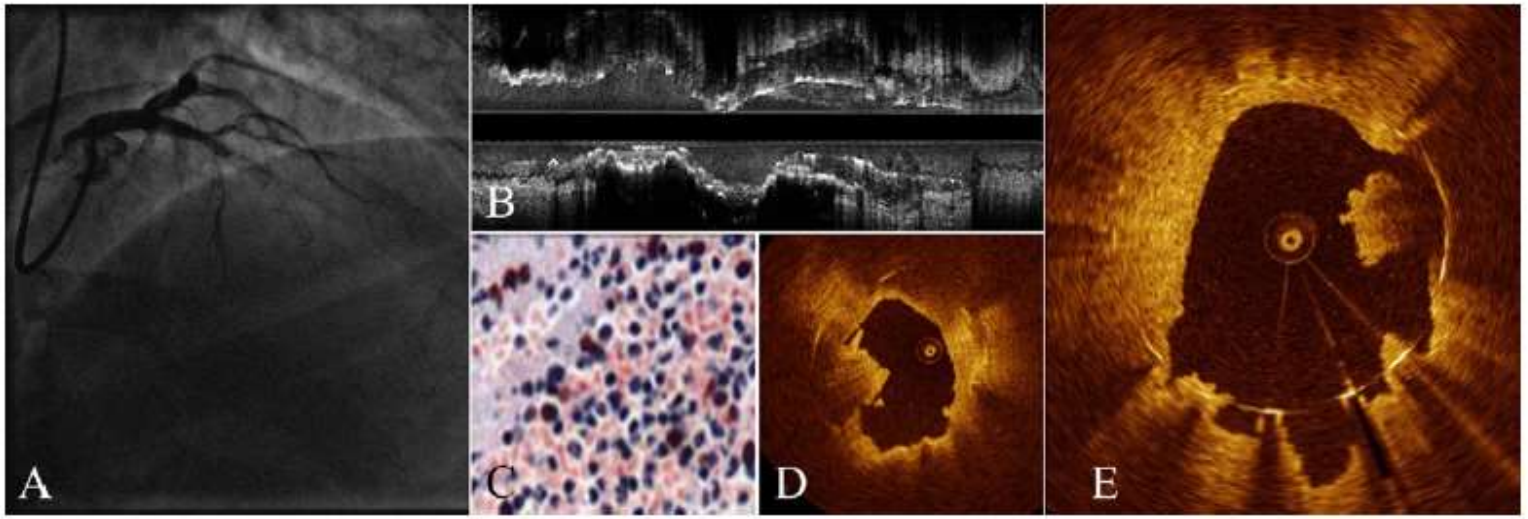

•As a predictor of late stent thrombosis after DES plantation

①The distance of the long axis of the stent struts which are not covered with neointima

②Positive remodeling of blood vessels

(Guagliumi G,et al. *J Am Coll Cardiol intv* 2012;5;12-20)

Mechanisms of Very Late Drug-Eluting Stent Thrombosis Assessed by Optical Coherence Tomography

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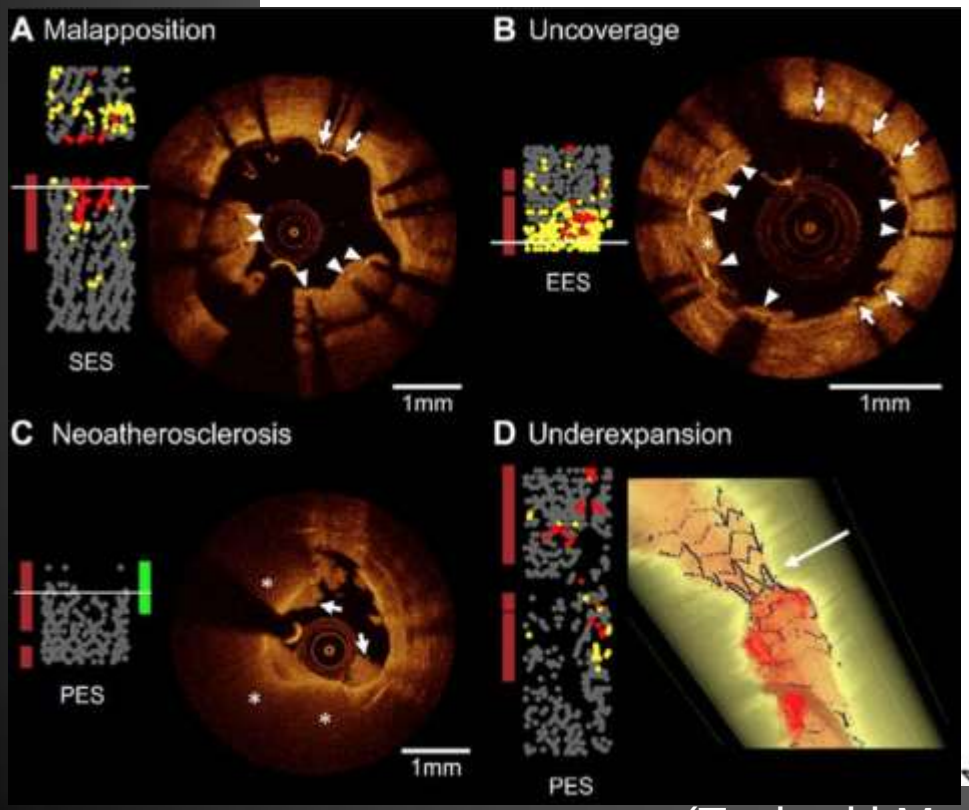

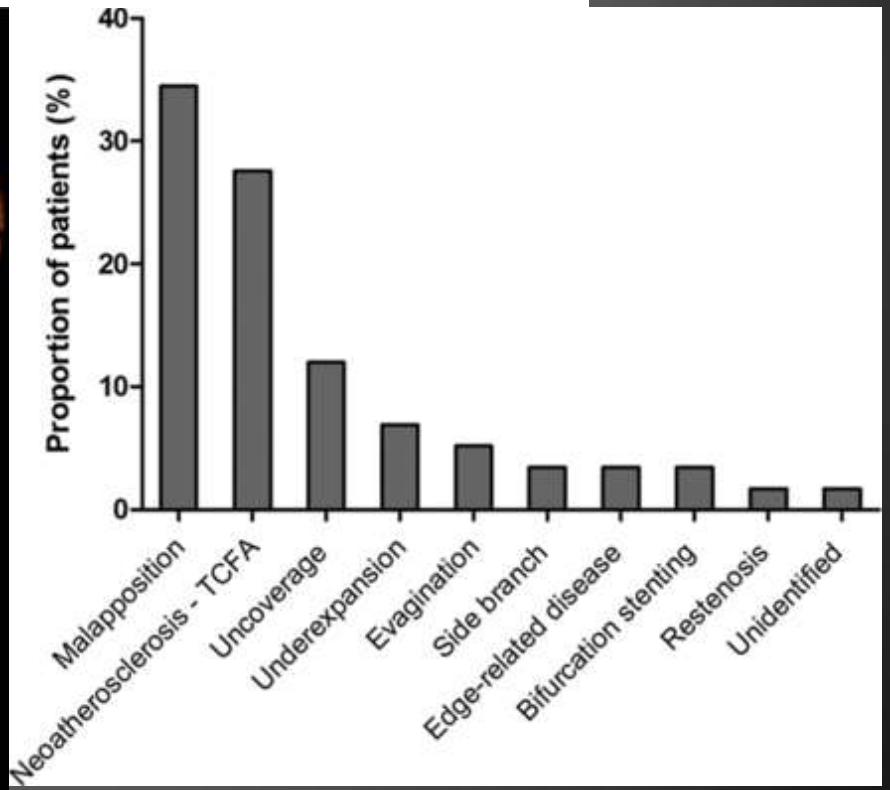

(Taniwaki M, et al. *Circulation.* 2016; 133: 650-660)

Conclusions

- ✓ VLST was attributed to obvious very late acquired stent mal-apposition.

- ✓ Because mal-apposition within stent in stent may progress in a short term period, we have to follow such cases carefully even when OCT detects small mal-apposition.