27th TCTAP 2022
Reach for PCI Optimization
May 29, 2021, Korea

How to Have a Fun Dive into the OCT: A to Z

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Changing Guidelines on Myocardial Revascularisation regarding OCT use

2014 ESC/EACTS Guidelines

Recommendations	Class[a]	Level[b]	Ref.[c]
FFR to identify haemodynamically relevant coronary lesion(s) in stable patients when evidence of ischaemia is not available.	I	A	50,51,713
FFR-guided PCI in patients with multivessel disease.	IIa	B	54
IVUS in selected patients to optimize stent implantation.	**IIa**	**B**	702,703,706
IVUS to assess severity and optimize treatment of unprotected left main lesions.	IIa	B	705
IVUS or OCT to assess mechanisms of stent failure.	IIa	C	
OCT in selected patients to optimize stent implantation.	**IIb**	**C**	

2018 ESC/EACTS Guidelines

UPGRADES

For PCI of bifurcation lesions, stent implantation in the main vessel only, followed by provisional balloon angioplasty with or without stenting of the side branch

Immediate coronary angiography and revascularization, if appropriate, in survivors of out-of-hospital cardiac arrest and an ECG consistent with STEMI

Assess all patients for the risk of contrast-induced nephropathy

OCT for stent optimization

Recommendations	Class[a]	Level[b]
IVUS or OCT should be considered in selected patients to optimize stent implantation.[603,612,651–653]	IIa	B
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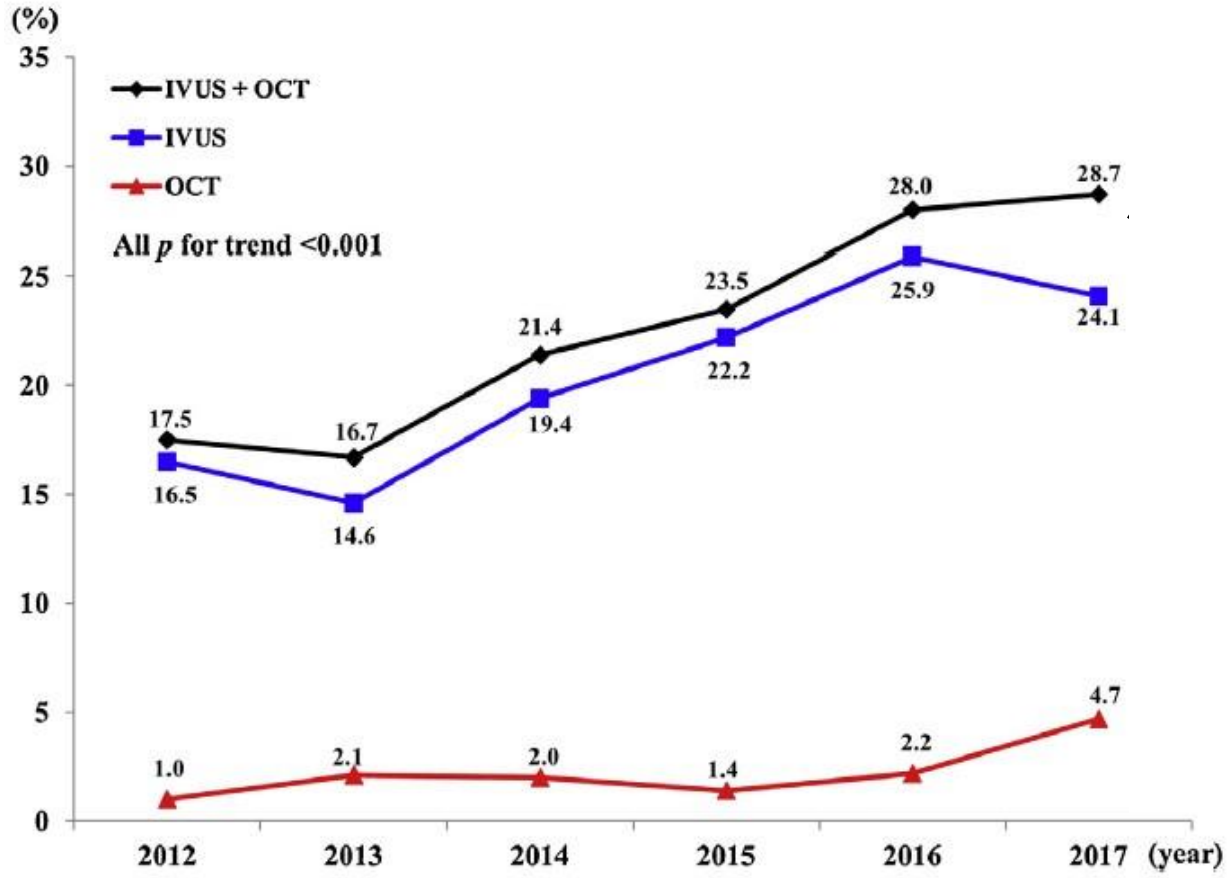
IVUS & OCT for procedural optimization should be considered

Review

The role of optical coherence tomography in the setting of acute myocardial infarction

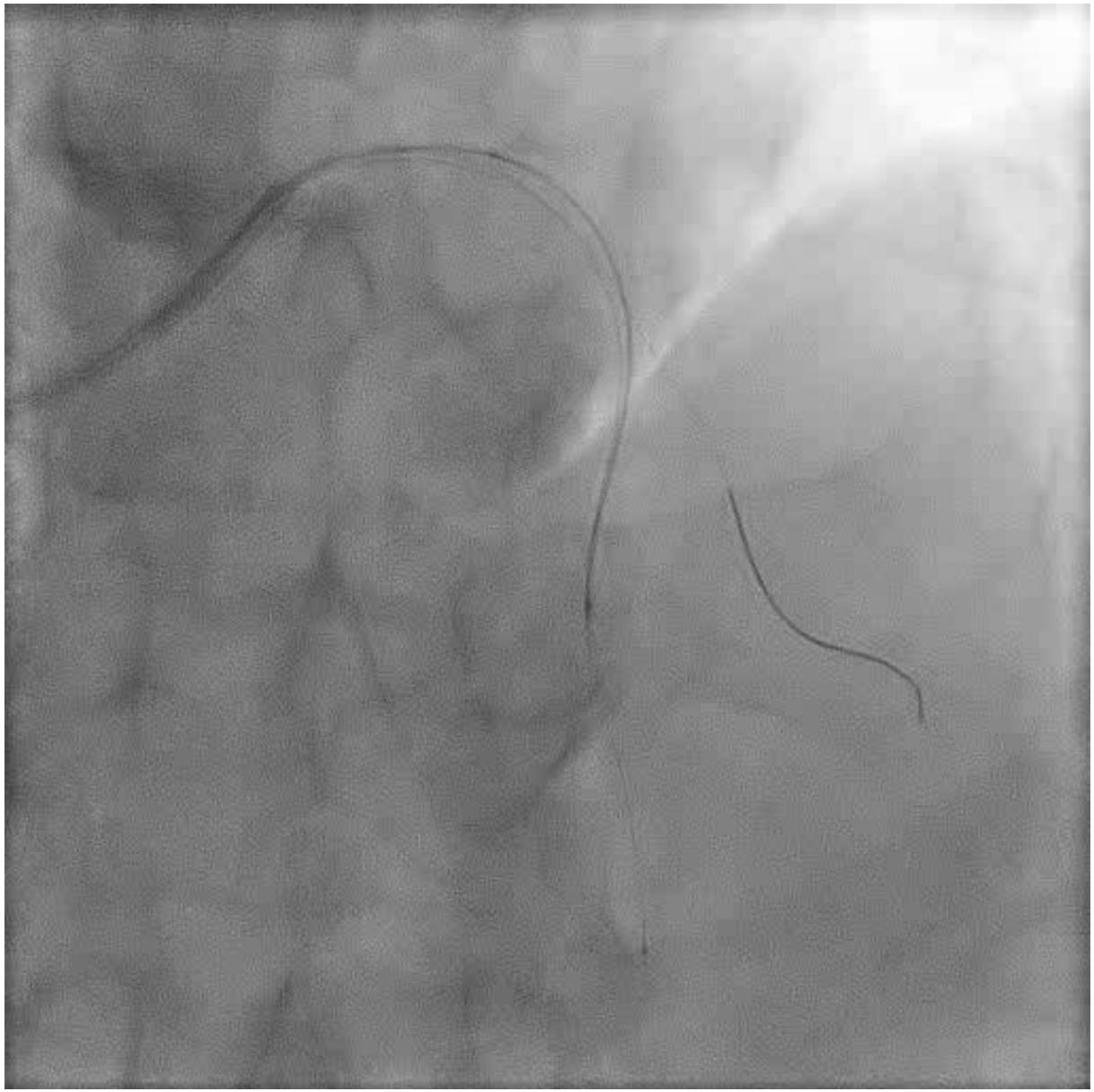
Yongcheol Kim (MD)[a], Thomas W. Johnson (MD)[b], Takashi Akasaka (MD)[c], Myung Ho Jeong (MD)[a,*]



Annual trend of image-guided PCI in patients with AMI (data from KAMIR)

J Cardiol 2018;72:186-192

The injection of contrast media is mandatory



Contrast media is……so What?!

As an intravascular imaging modality, concept of OCT is same as IVUS

In terms of technical aspect, concept of OCT is totally different from IVUS because of contrast media injection and?

IVUS vs. OCT (technical aspect)

IVUS

Press the pullback button

by Machine Handler

OCT

Press the

1) **Live button**
2) **Auto calibration button**
3) **Enable button**

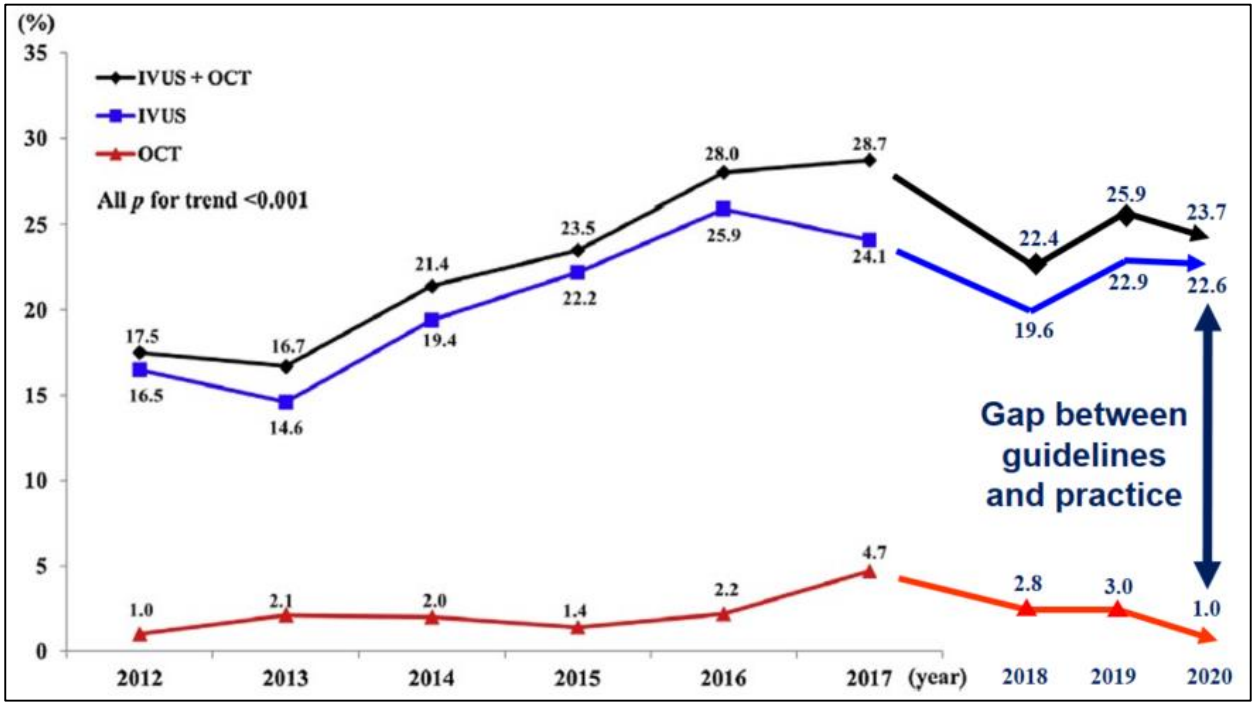
5) **Pullback button**

by Machine Handler

Who is dealing with all things of intravascular imaging modalities?

Machine Handler's burden

A difficulty of circumstance regarding OCT-guided PCI



What is the key to successful settle down OCT in cathlab?

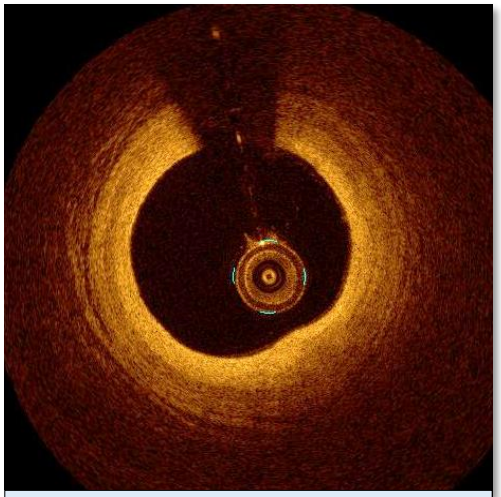
Team approach

Detailed and practical manual

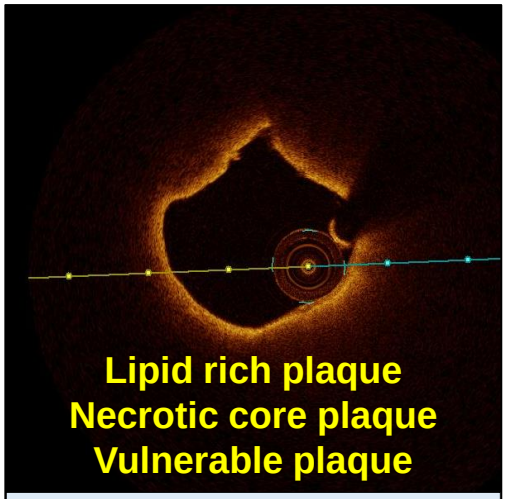
Normal circumstances during OCT pullback in our cathlab

Normal circumstances after OCT pullback in our cathlab

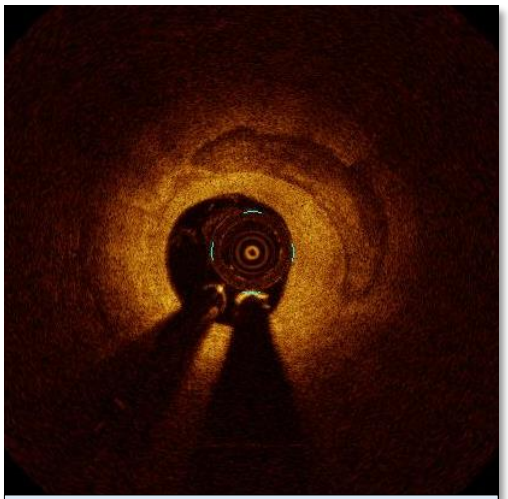
OCT imaging interpretation



Fibrous plaque

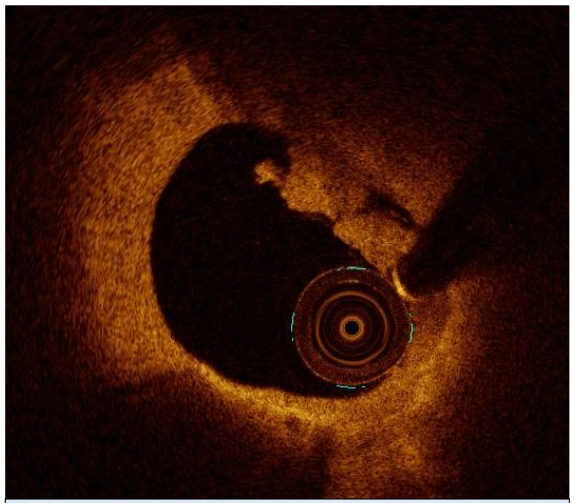


Fibroatheroma



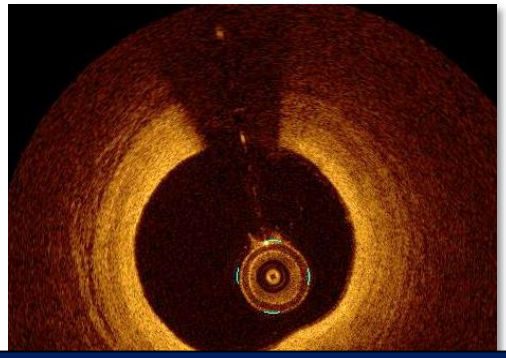
Calcified plaque

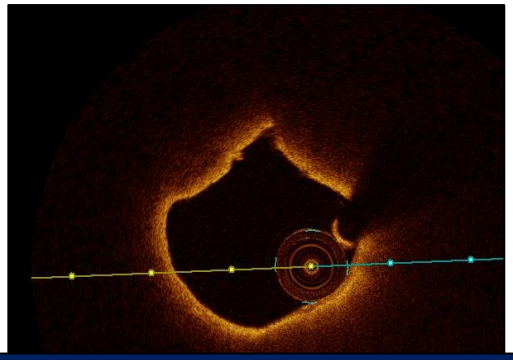
Red thrombus

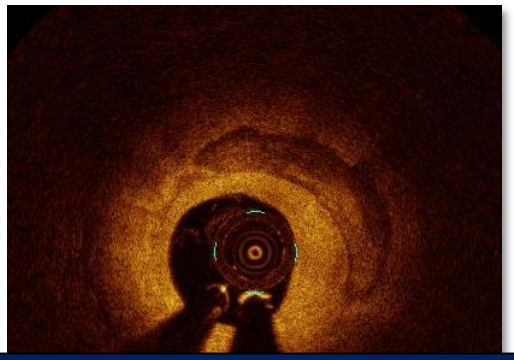


White thrombus

Visible too much information from OCT



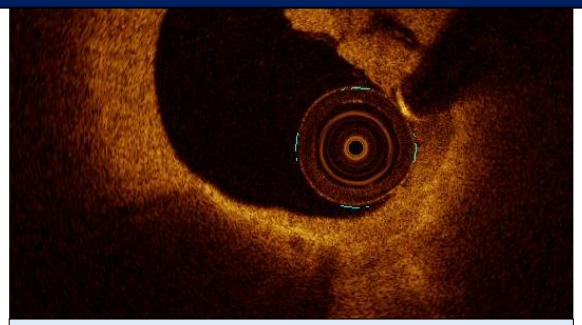




Talking about technical OCT BASIC

to enjoy fantastic OCT resolution,
which can make PCI optimization

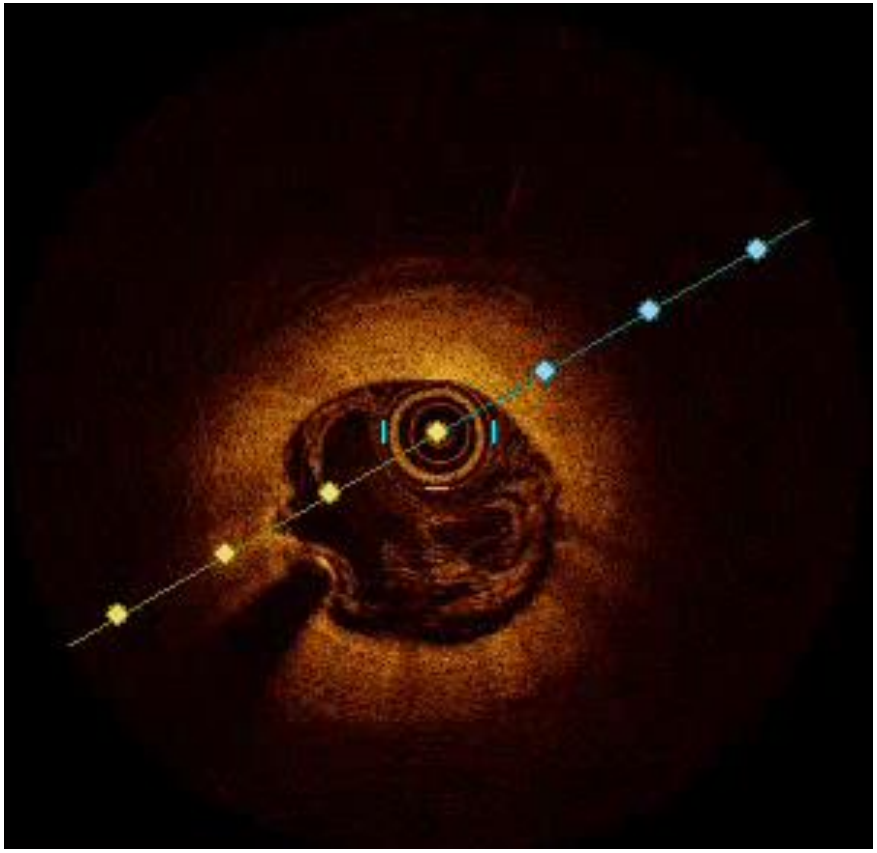
Red thrombus

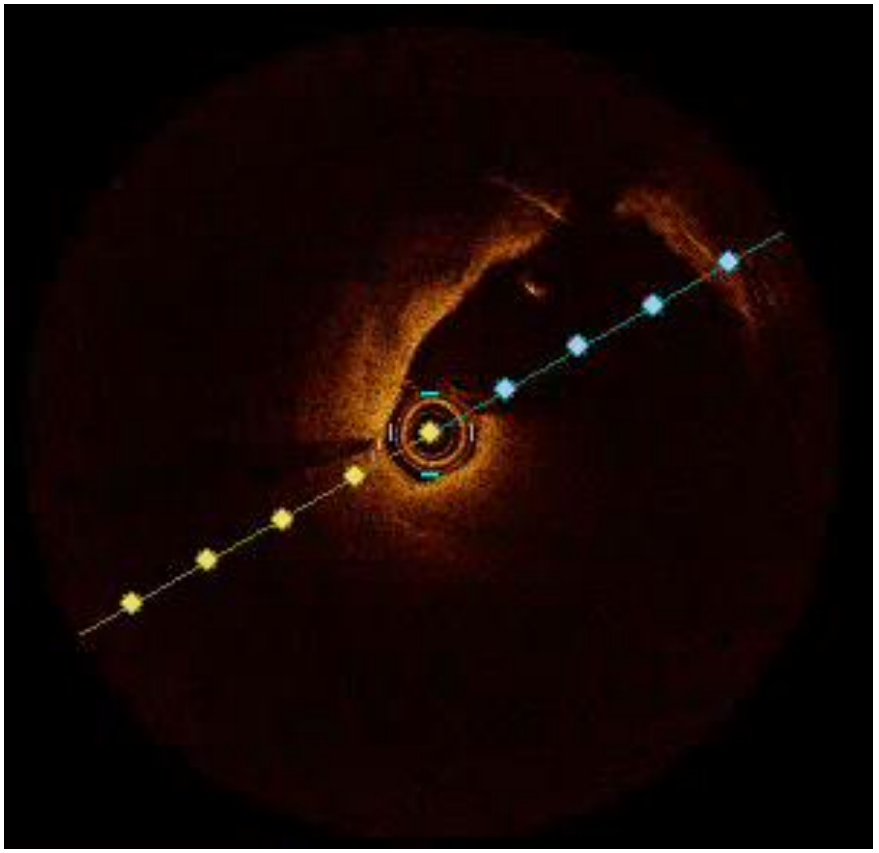


White thrombus

Blood clearing

(The most important step to start OCT-guided PCI well)





1) Guiding catheter selection
2) How to inject contrast media well

Guiding catheter selection

0) Any type of guiding catheter is OK, theoretically

- **LM (distal LM): JL**
- **LAD & LCx: EBU type > JL**
- **RCA: RCA EBU type (or short AL) > JR**

1) Guiding catheter size ≥ 6-Fr

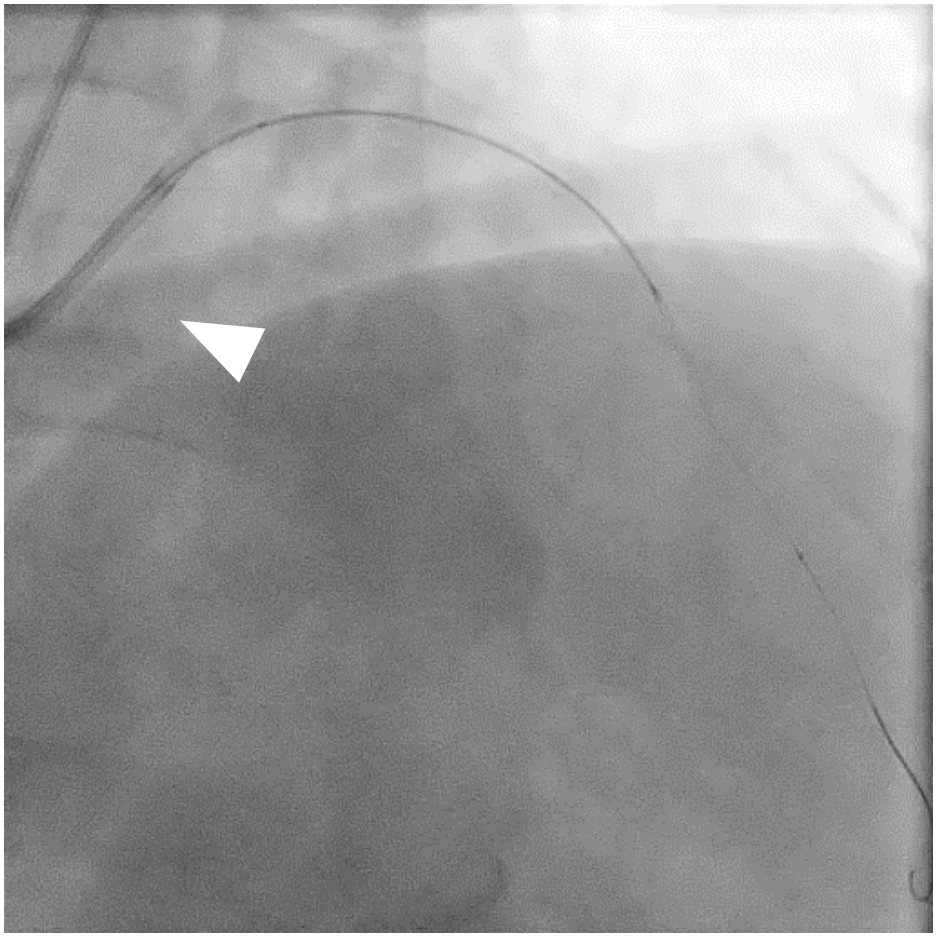
2) No SH (side hole)

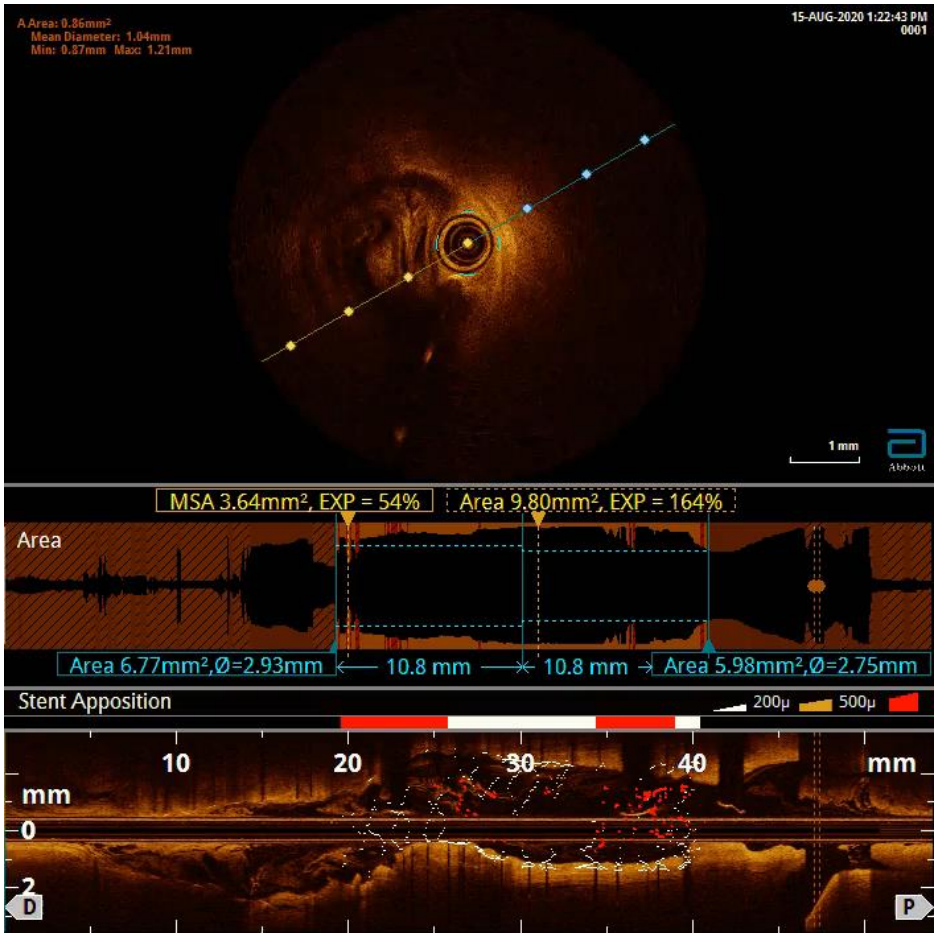
➔ **Don't have to use OCT if SH is necessary to perform PCI, such as LM-PCI(os or shaft) or RCA(os)-PCI**

3) Make sure to engage guiding catheter

➔ **Especially Judkins type**

55/M NSTEMI (culprit: LAD)





7-Fr EBU type with side hole GC

➔ Not enough contrast filling in the vessel

Guiding catheter selection

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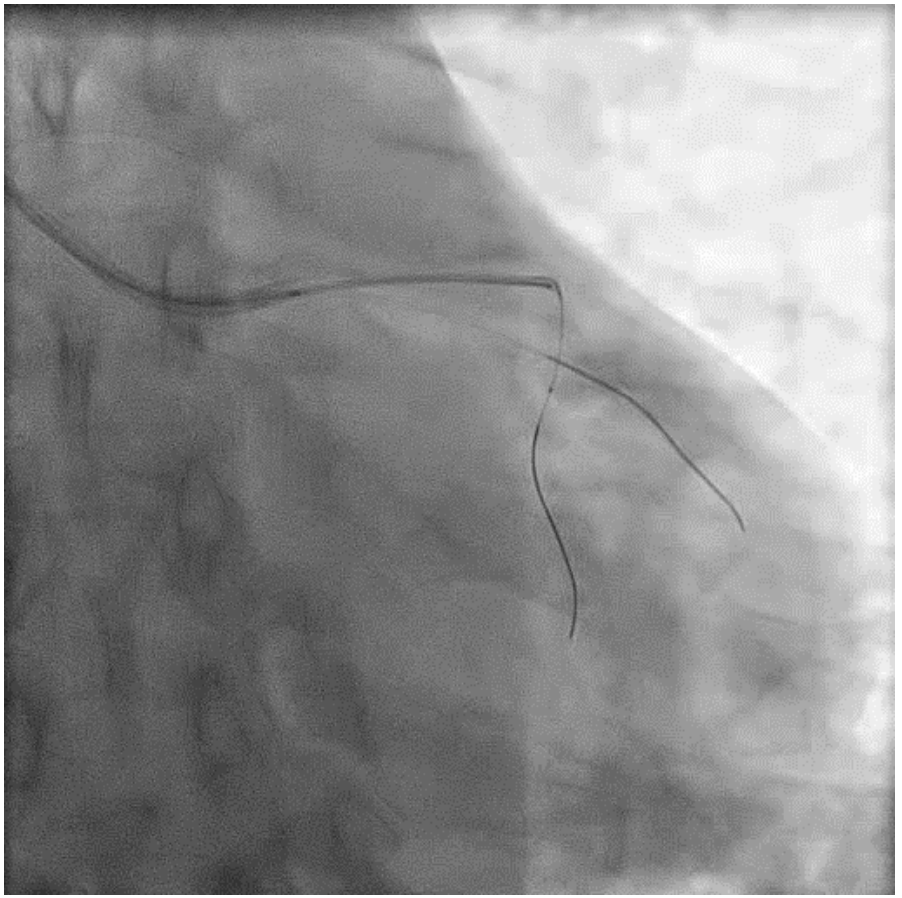
6-Fr JL3.5 guiding catheter



Before the contrast injection,
always check whether catheter engagement is well or not

How to inject contrast media well?

0) Always prefer auto-injector pump

OPTIS™ Mobile system Instruction Manual

OCT 절차 수행 5

개요

OCT 절차에는 무균 조작자와 비무균 조작자 두 명이 필요합니다. Dragonfly™ 촬영용 카테터나 무균 DOC 커버 외부를 만져야 하는 모든 과정은 무균 조작자가 수행해야 합니다. 무균 DOC 커버 내부에서 수행하거나 OPTIS™ 모바일 시스템을 직접 만져야 하는 모든 작업은 비무균 조작자가 수행해야 합니다.

Required equipment

- OPTIS™ 모바일 시스템
- Dragonfly™ Duo 촬영용 카테터 또는 Dragonfly™ OPTIS™ 촬영용 카테터
- 무균 DOC 커버
- 3mL 퍼징용 주사기
- 관상 동맥용, 퍼징용, 관류용 조영제(매번 계획된 실행마다 15mL)
- 0.014인치 가이드와이어(필요하면 토크 조절 장치 포함)
- 유도 카테터(6 French, 0.068인치 ID 이상, 측면 구멍 없음)
- 안내 도관(유도 카테터에 맞춤)
- 지혈용 Y형 어댑터/커넥터
- 헤파린이 첨가된 생리 식염수(친수성 카테터 준비용)
- 관상 동맥 조영술을 위한 전동식 주입 펌프 또는 수동식 주사기(초당 4.0mL, 3.5초 동안 총 14mL 주사)

Auto-injector pump or ~~manual syringe~~ (4.0ml/s X 3.5s: total 14ml injection)

How to inject contrast media well?

1) Do not exceed 300 PSI (pound per square inch)

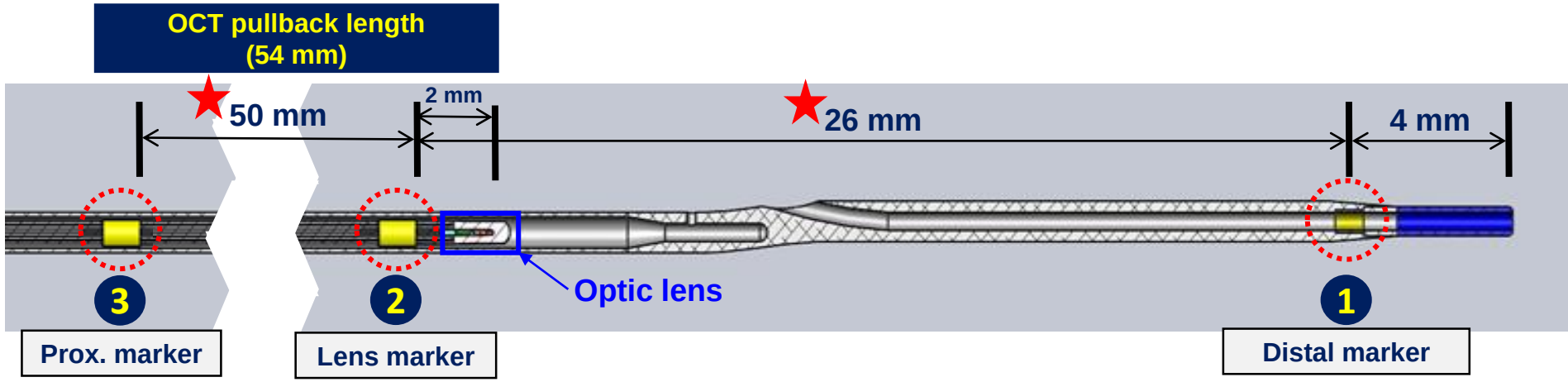
- **pre-OCT & post OCT 250 PSI**

High PSI does not guarantee optimal blood clearing. Rather, a wash out of contrast medial into aorta occurs as the guiding is push back due to immediately pressure up. Thus, **blood clearing is not well done**, and a good OCT image cannot be obtained.

2) Contrast volume

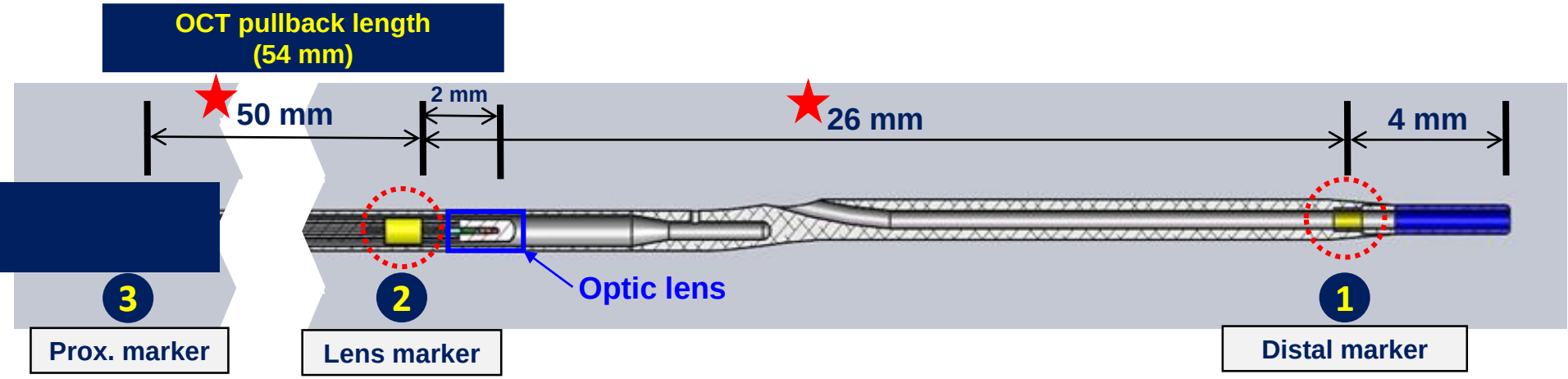
- **LAD, LCx, and RCA: 4cc/s * 4 sec = 16 cc (BASIC)**
- **LM: 4cc/s * 5 sec = 20 cc**

OCT catheter structure



Understanding of OCT catheter structure is important to perform successful OCT-guided PCI

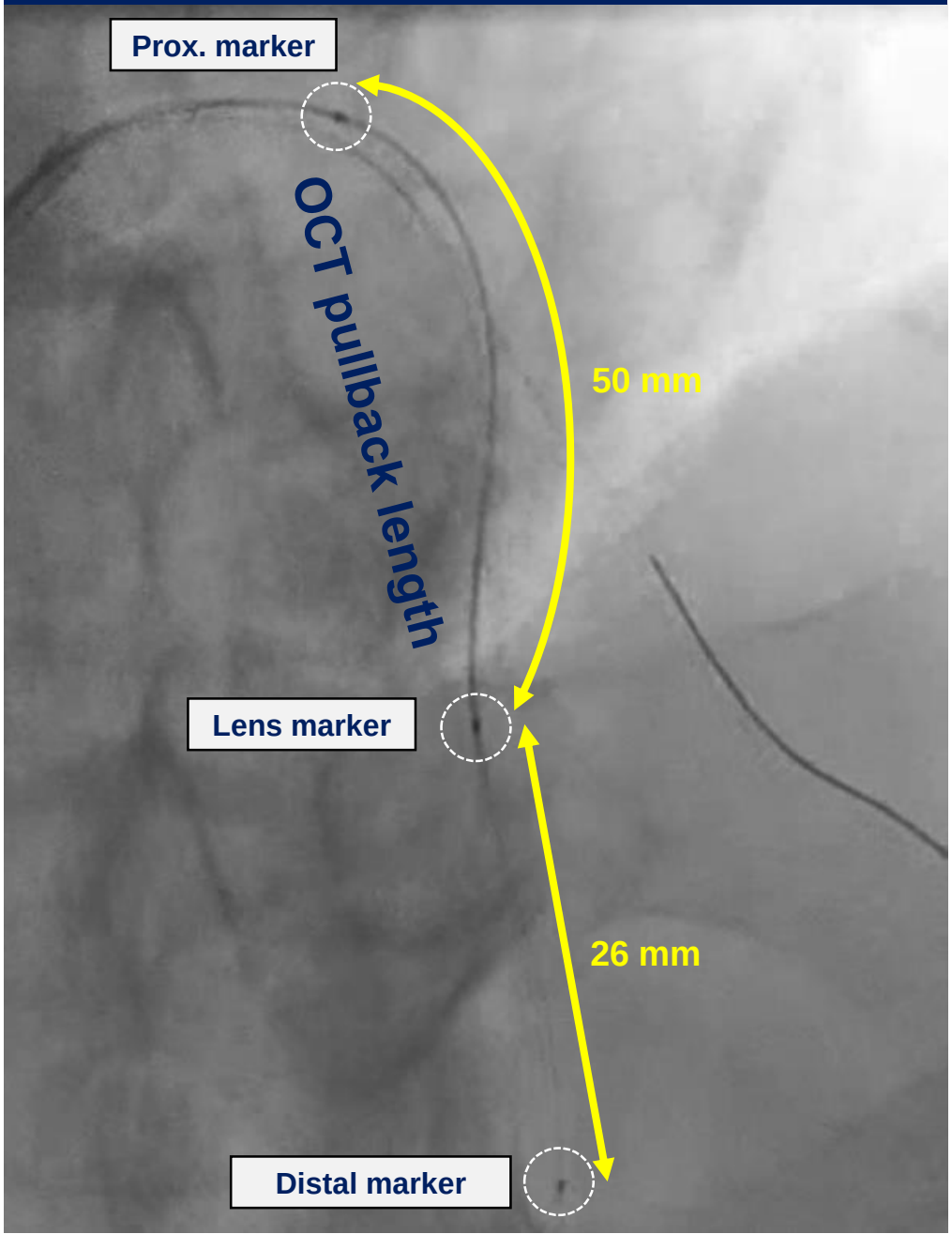
OCT catheter structure



Understanding of OCT catheter structure is important to perform successful OCT-guided PCI

- Especially, when proximal marker is in the guiding catheter during proximal lesion evaluation, operator could not realize the proximal marker.
- More concentration should be taken when you perform OCT in the far distal lesion, especially LCx because **OCT pullback always need further 26 mm between distal and lens marker.**

MAKE SURE 3 MARKERS



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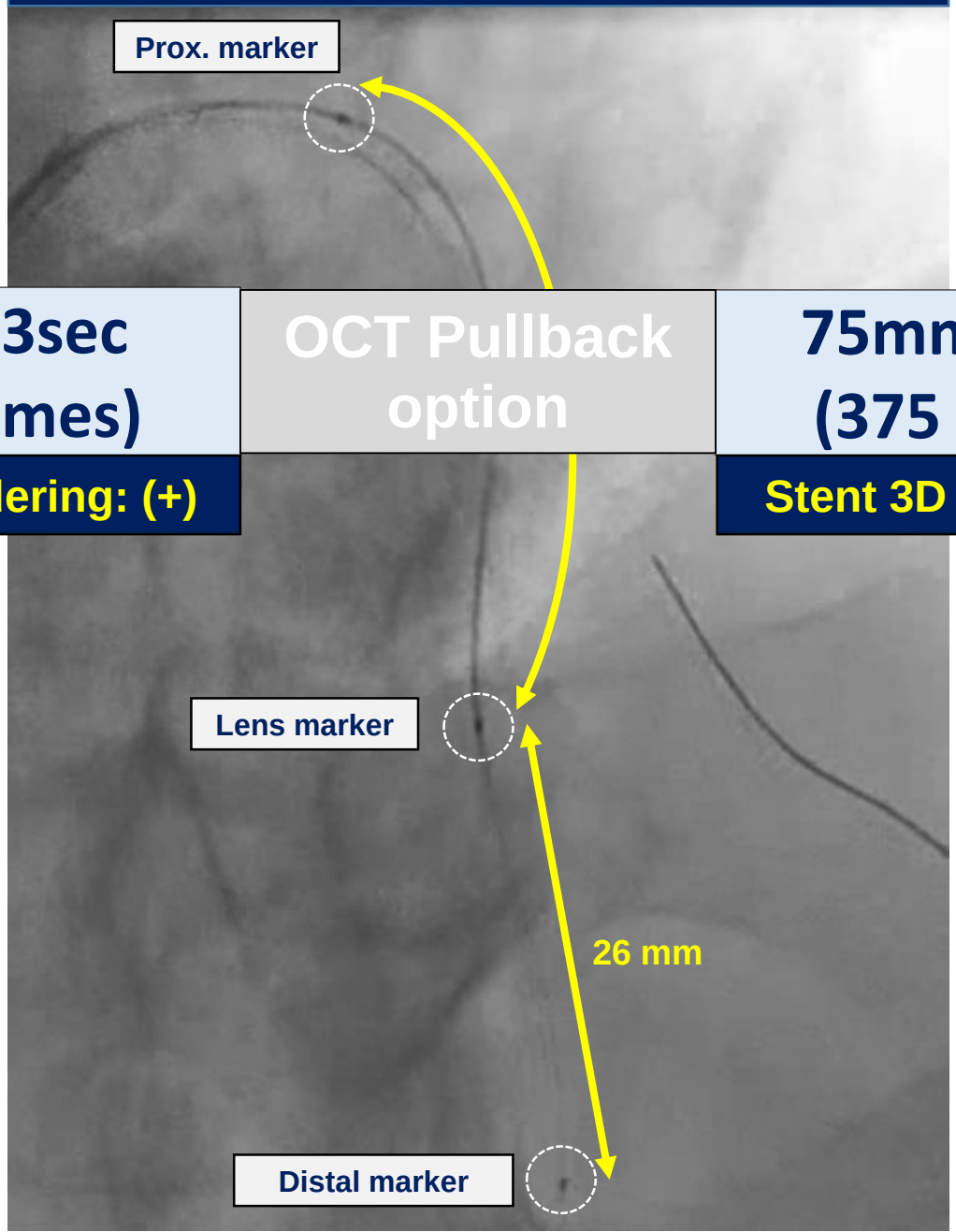


54mm: 3sec (540 Frames)

Stent 3D rendering: (+)

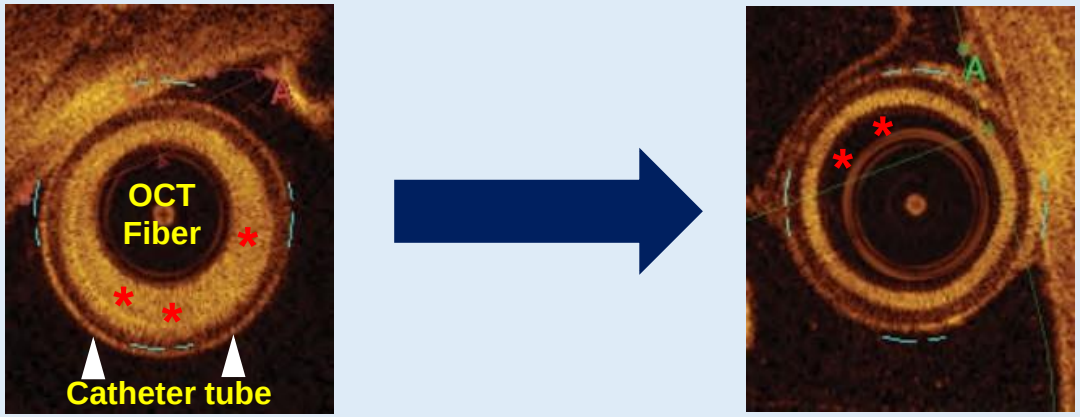
OCT Pullback option

75mm: 2.1sec (375 Frames)

Stent 3D rendering: (-)

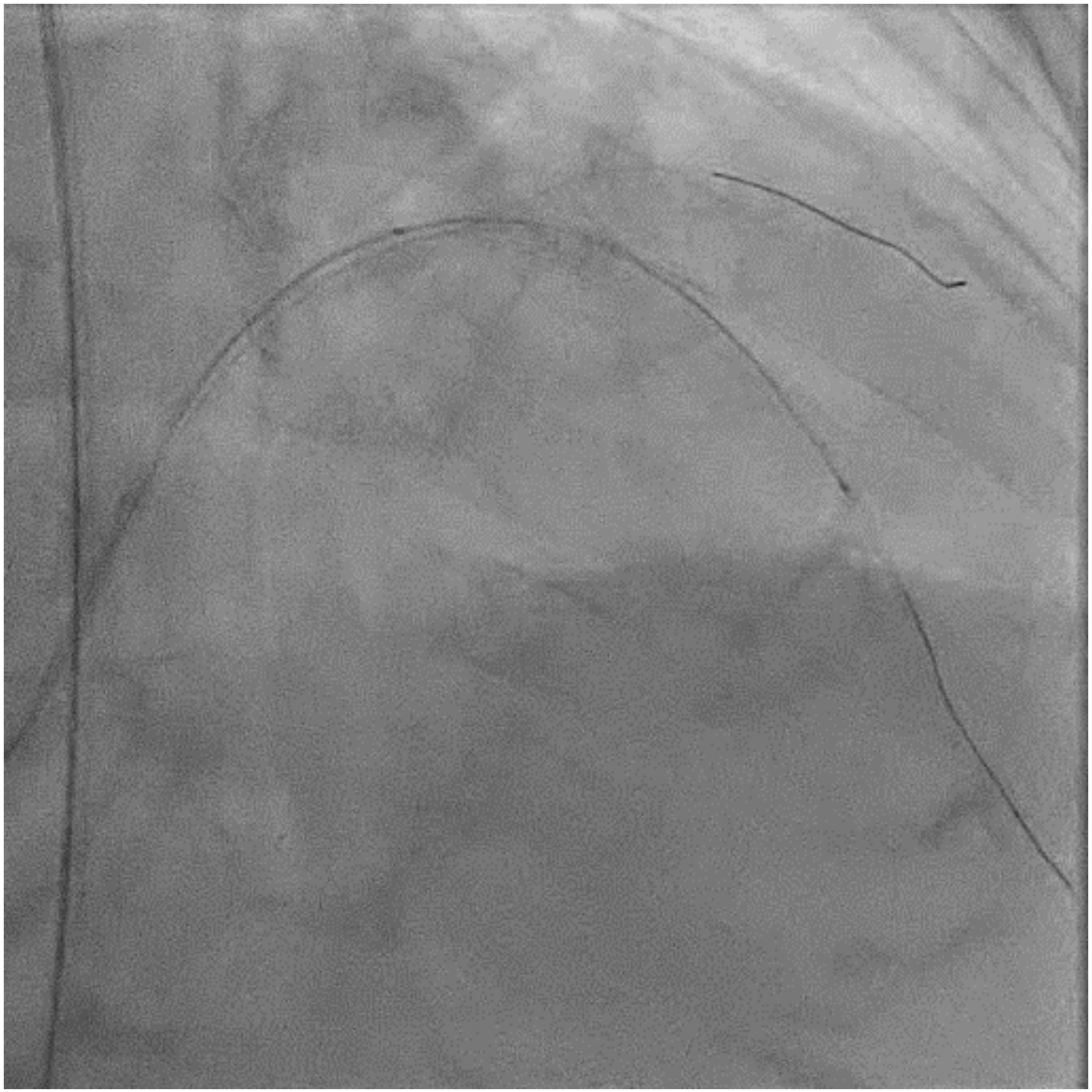
Tip on achieving good OCT imaging

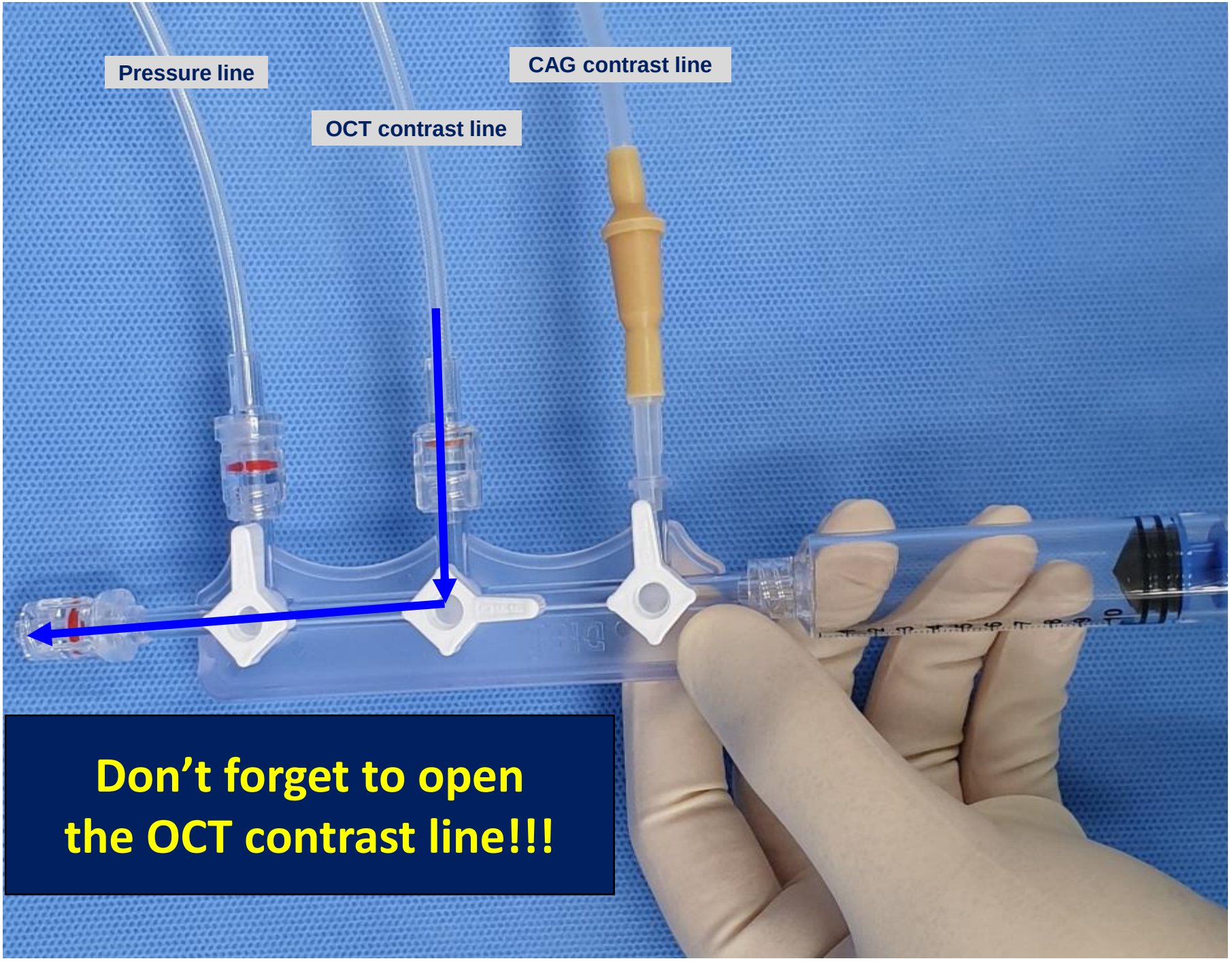
1) Don’t forget to IC injection of NTG or nicorandil before OCT to prevent from vasospasm
2) Catheter flushing is mandatory (by contrast, not saline)



3) Click auto calibration after catheter flushing
4) Re-check the GC engagement before OCT pullback

Where is my contrast?!




Pressure line
CAG contrast line
OCT contrast line
Don’t forget to open
the OCT contrast line!!!

Who deal with OCT pullback?

Team approach by OPERATOR

: Start 1

: Auto Calibration 2

: Enable (15 sec) 3

(Contrast injection time)

: Catheter pullback 4

Operator

STEP 1

OCT handler

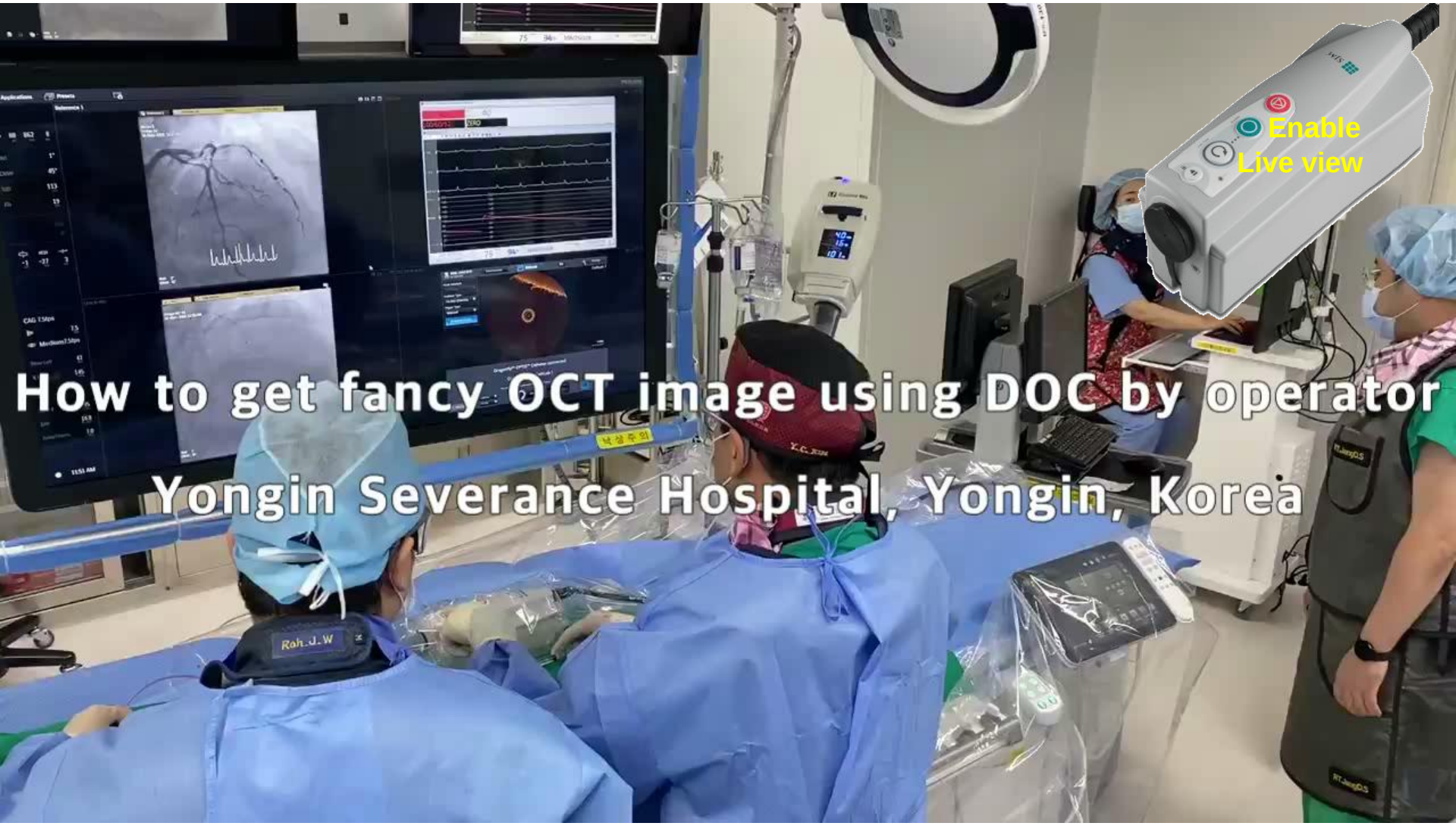
Contrast Injection

STEP 2

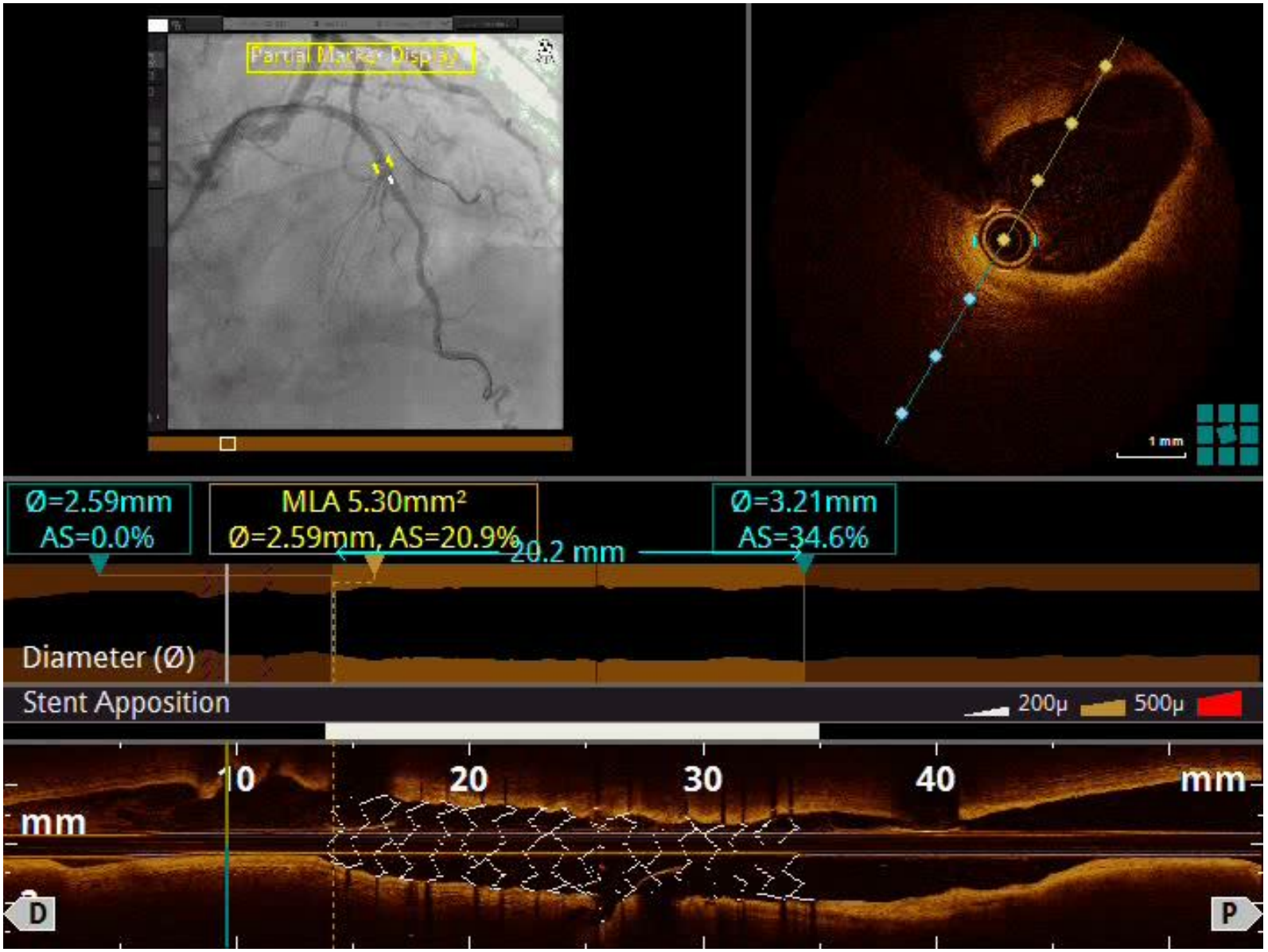
Operator

STEP 3

How to get fancy OCT image by operator




OCT pullback by Operator
Yongin Severance Hospital, Yongin, Korea



Enjoy fantastic OCT images and stent optimization

by OCT guidance

Technical step-by-step for OCT guidance

- Suitable guiding catheter (No side-hole, 6-Fr or 7-Fr)
- Always prefer auto-injector pump (250 PSI, 4x4=16cc)
- OCT catheter 3 markers and length between markers
- IC NTG or nicorandil before OCT pullback
- Catheter flushing (using contrast media)
- Check the guiding engagement
- One click () and Three clicks () on DOC

➔OCT machine handler can feel free from the pressure

Team approach by operator

Thank you for your attention