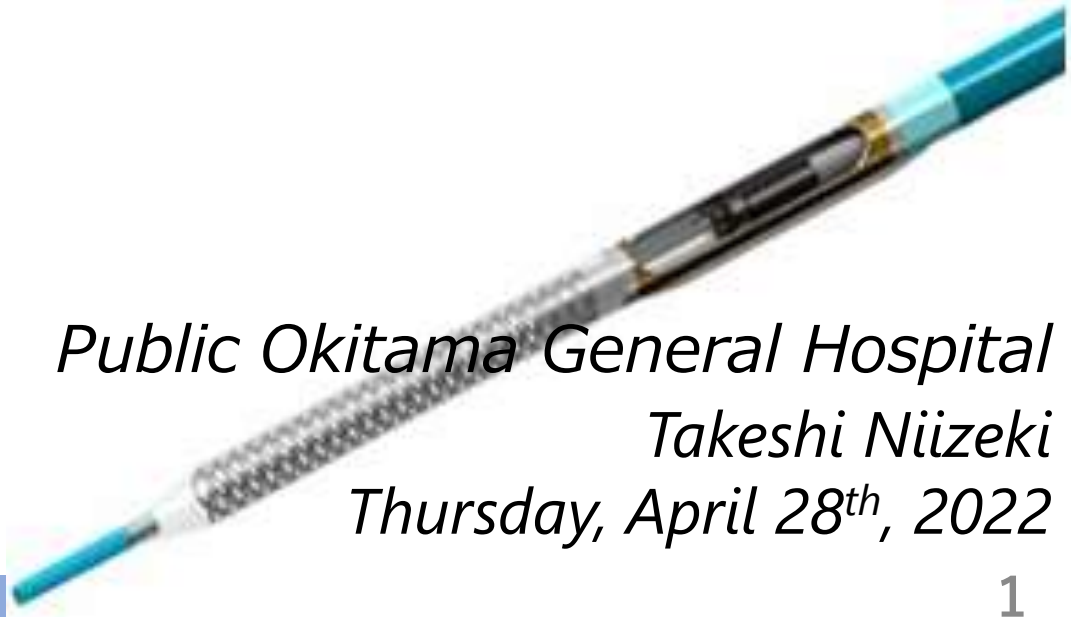
TCTAP 2022

The New Transradial 8 French approach to CTO/DCA



Public Okitama General Hospital
Takeshi Niizeki
Thursday, April 28th, 2022

COI Disclosure

Name of First Author : Takeshi NIIZEKI

・The authors have no financial conflicts of interest to disclose concerning the presentation.

DCA Revived Since 2014

One of the obstacle for DCA Treatment: 「8Fr femoral approach」

① DCA (AtheroCut) is 7 French compatible.

・Difficult to monitor blood pressure

・Impossible to contrast

☞ Double Guiding is one of the countermeasures

② Restriction of manipulation when using 7 French GC

☞ 8 French is preferable for 「Safe and Reliable」 for DCA

③ Brachial approach

☞ Rate of puncture site complications is high

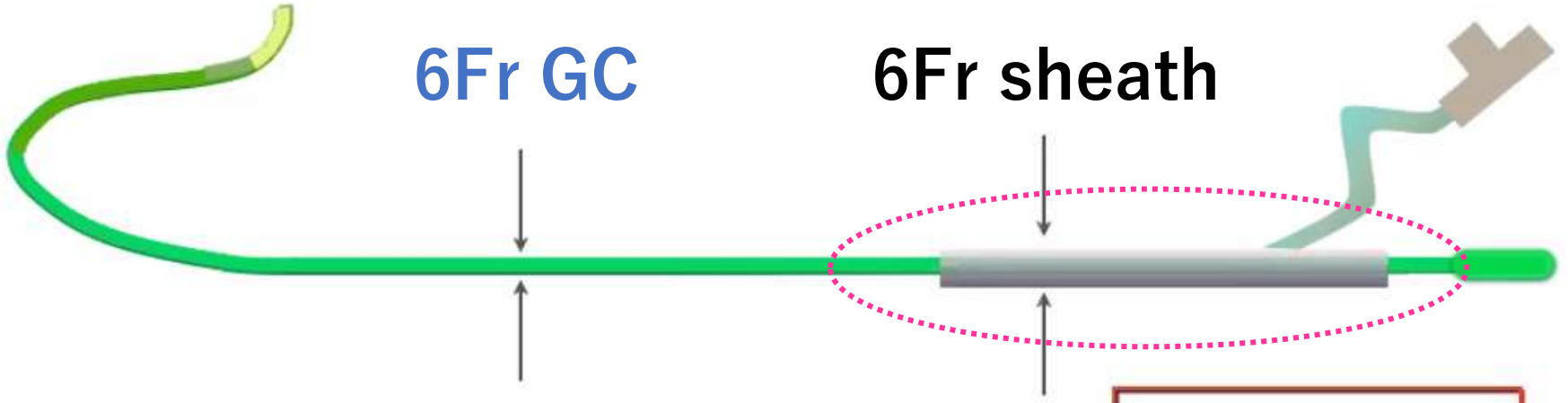
④ Current main access route: Radial Artery

How can we adapt to DCA?

☞ 8Fr sheathless GC system may be effective !

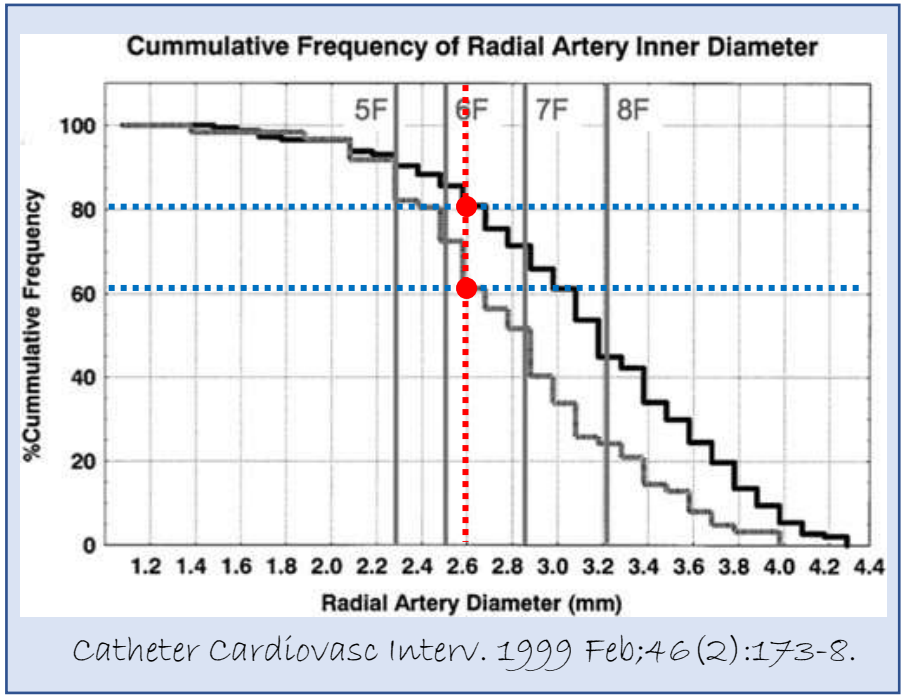
・ Transradial 8Fr sheathless GC approach may be one option to avoid bleeding complication in DCA treatment.

Sheathless system can be downsized by 2Fr !



sheath size ≒ GC size +2Fr

Tips



Catheter Cardiovasc Interv. 1999 Feb;46(2):173-8.

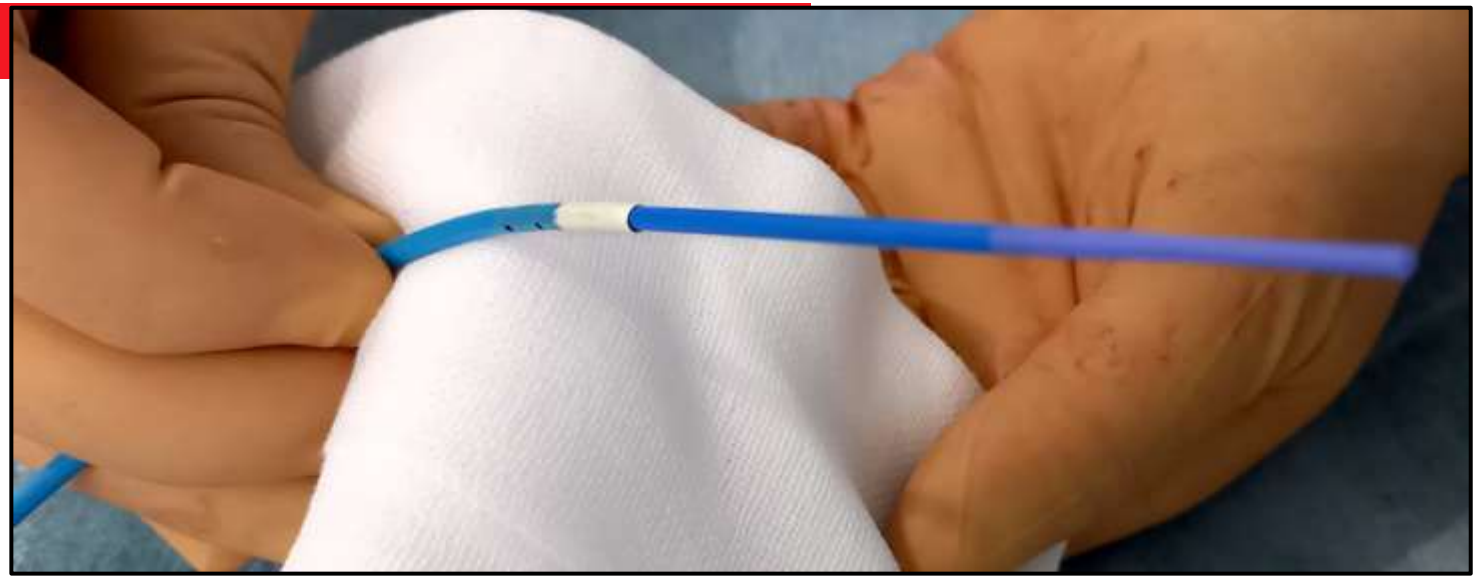
1. Check the diameter of Radial Artery by echo
2. Prevention of spasm with Nicorandil

・**GC/Artery ratio = 1.0**

【8Fr GC outer diameter】 Roadmaster **2.71** mm、Hyperion **2.70** mm、Mach1 **2.70** mm

【Basic System】

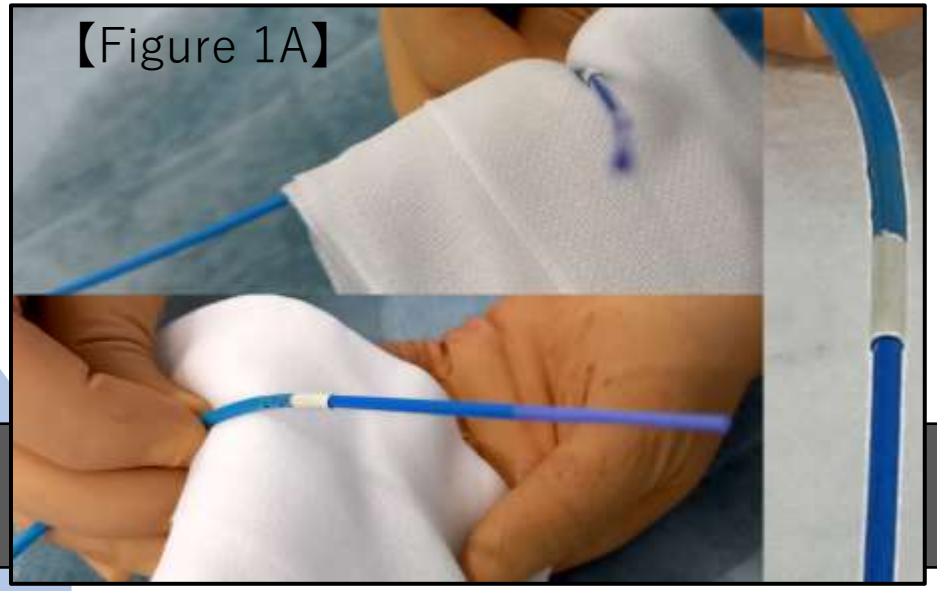
125 cm 6.5Fr inner catheter (STA, MEDKIT Co.Ltd., Tokyo, Japan)
100 cm 8Fr CL3.5SH (RoadMaster, GOODMAN Co.Ltd., Aichi, Japan)



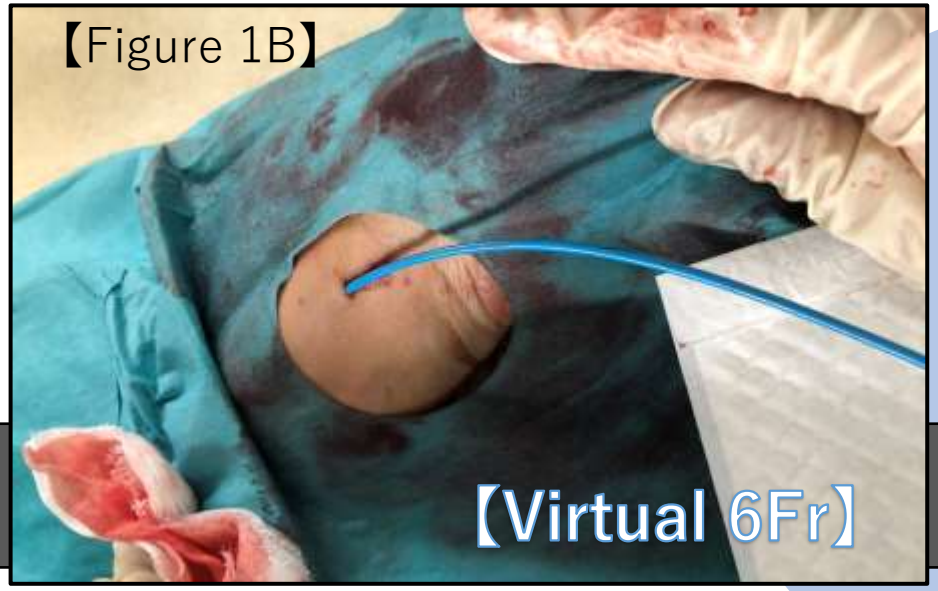
☑ Inner Catheter is useful to reduce the gap between 8Fr GC and 0.035 GW.

☑ Inner Catheter is useful for delivery of GC.

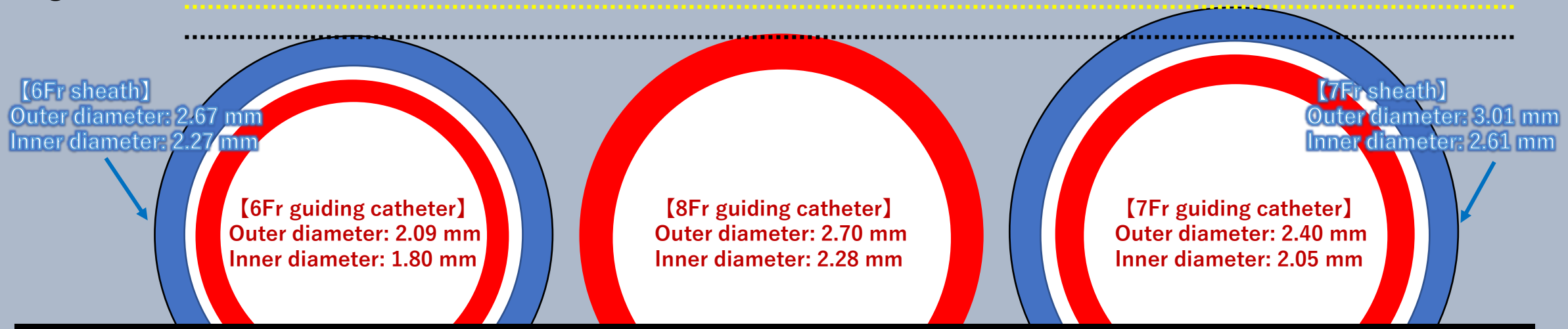
【Figure 1A】



【Figure 1B】



【Figure 1C】



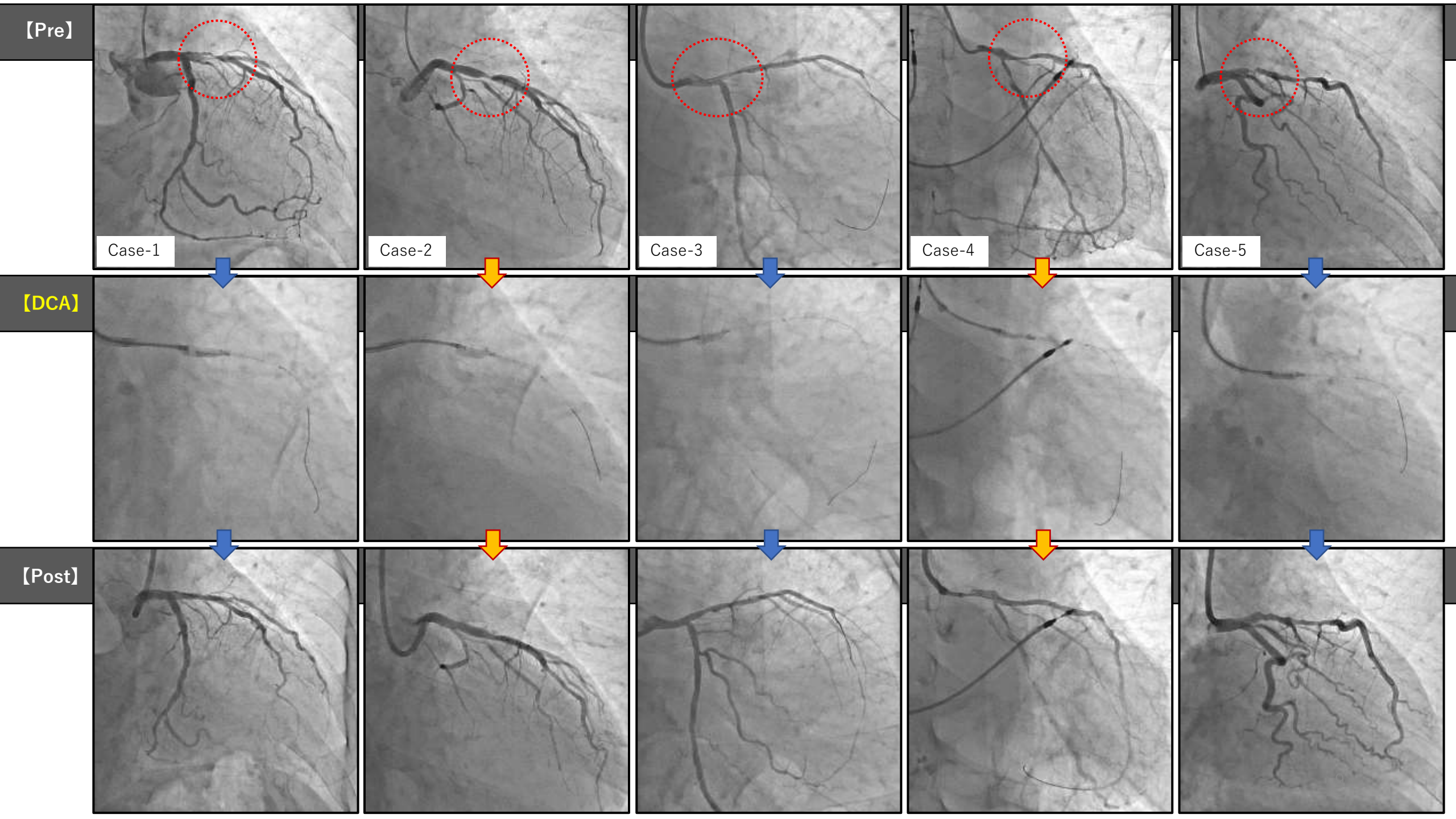
・If 6Fr Sheath can be inserted without any resistance, 8Fr GC is considered to be insertable.

☑ DCA started since 2016 in our hospital (68 cases)

☑ DCA by TRA in our hospital: 2020.9.30 ～ (12 cases)

No.	Date	Age	Gender	Lesion	Stent/DCB
1	2020.9.30	72	F	#6	DCB
2	2021.2.18	72	M	#7	DCB
3	2021.4.6	66	M	#6	DCB
4	2021.6.30	76	M	#6	DCB
5	2021.8.10	62	F	#6	DCB
6	2021.10.21	75	M	#6	DCB
7	2021.11.2	70	M	#7	DCB
8	2021.11.16	73	M	#6	DCB
9	2021.12.21	66	M	#6	DCB
10	2021.12.23	62	M	#6	Stent
11	2021.12.24	75	M	#6	DCB
12	2021.12.28	71	M	#5	DCB

＊ I try to do DCA by TRA as much as possible.


【Pre】
Case-1
Case-2
Case-3
Case-4
Case-5
【DCA】
【Post】

Case : Male, 75 y.o.

【Chief Complain】 Dyspnea

【Past History】 Hypertension, Dyslipidemia, Diabetes

【Drug】 ARB, Statin

【Smoke】 40 cigarettes a day (18 y.o. ～ 50 y.o.)

【Present History】

He had showed orthopnea for few days. He was admitted to our hospital with heart failure complicated pneumonia.

【Condition at the time of visit】

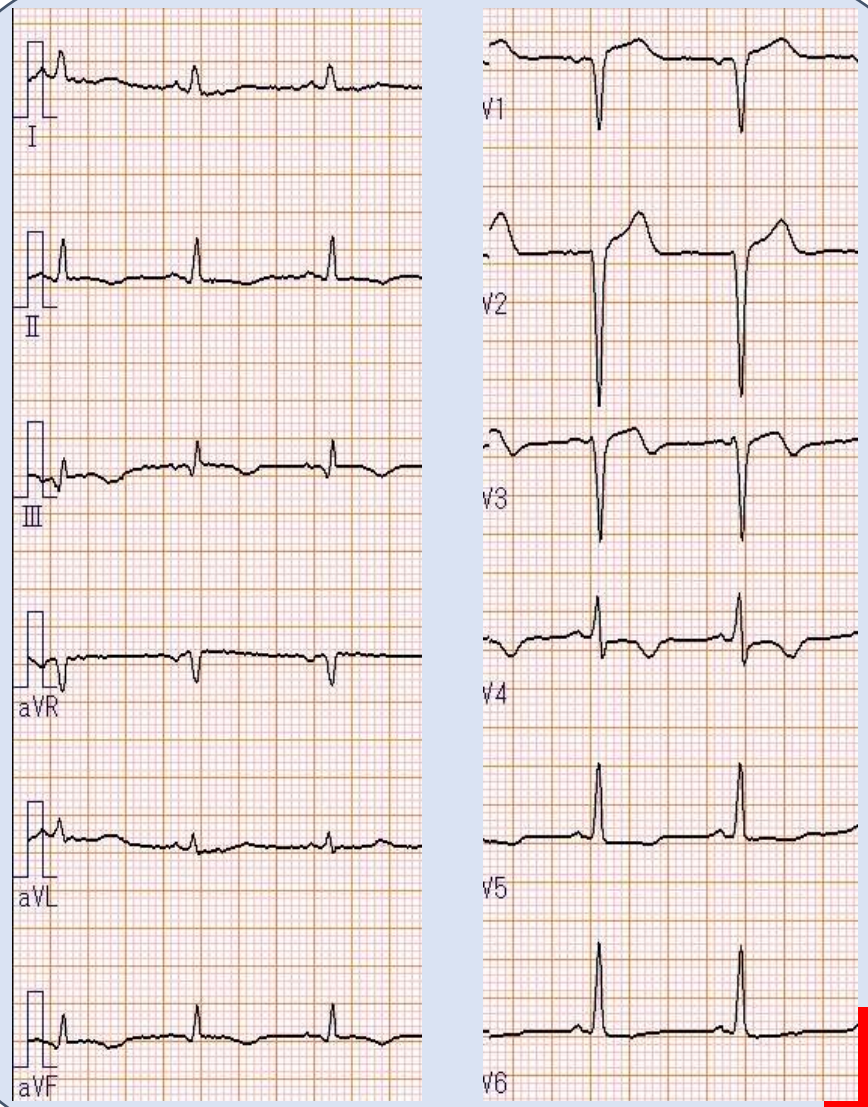
Height 171 cm , Body Weight 60 kg

BP 140/90 mmHg

HR 100 bpm

SpO_2 94% (2L NC)

【Electrocardiogram】



Sinus, QS in V1-3

【Chest X-ray】

Right pneumonia, congestion, bilateral pleural effusion

【Laboratory Data】

TP	6.5	g/dL
Alb	3.9	g/dL
T.Bil	0.53	mg/dL
AST	94	U/L
ALT	40	U/L
LDH	541	U/L
ALP	109	U/L
γ-GTP	37	U/L
BUN	34.9	mg/dL
Cre	0.91	mg/dL
UA	8.1	mg/dL
Na	144	mEq/L
K	4.3	mEq/L
Cl	107	mEq/L
CRP	3.60	mg/dL
CK	1224	U/L
hs-Trop-I	8347	pg/mL
BNP	530	pg/mL

T-Cho	133	mg/dL
TG	72	mg/dL
HDL-C	31	mg/dL
LDL-C	87	mg/dL
WBC	6700	/μL
RBC	444万	/μL
Hb	12.9	g/dL
Ht	40.2	%
Plat	23.5万	/μL
PT-INR	1.08	
APTT	25.4	秒
D-dimer	0.5	μg/mL
HbA1c	6.5	%
Glu	132	mg/dL

【TTE】

AoD 35 mm, LAD 37 mm.

Wall motion : severe hypokinesis in mid-apical septum/anteroseptum/anterior.

Akinesis in apical segment.

LVEDD 50 mm, ESD 41 mm, EF 34%.

AS -, AR I, MR II, E/A 2.13, E/E' 14.1.

TR II, TR-PG 52 mmHg.

IVC 11/20 collapse(-).

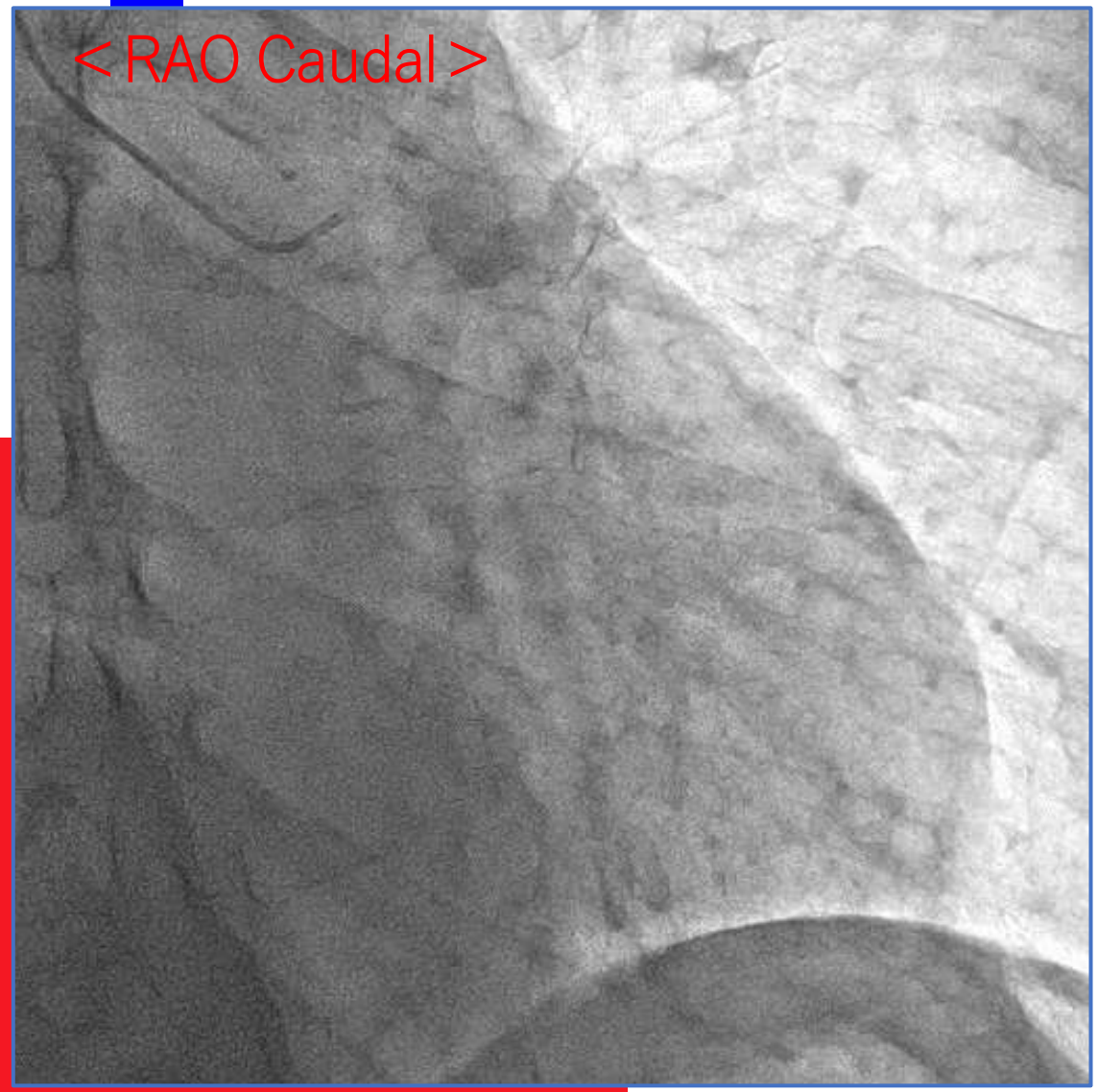
Pericardial effusion(-).

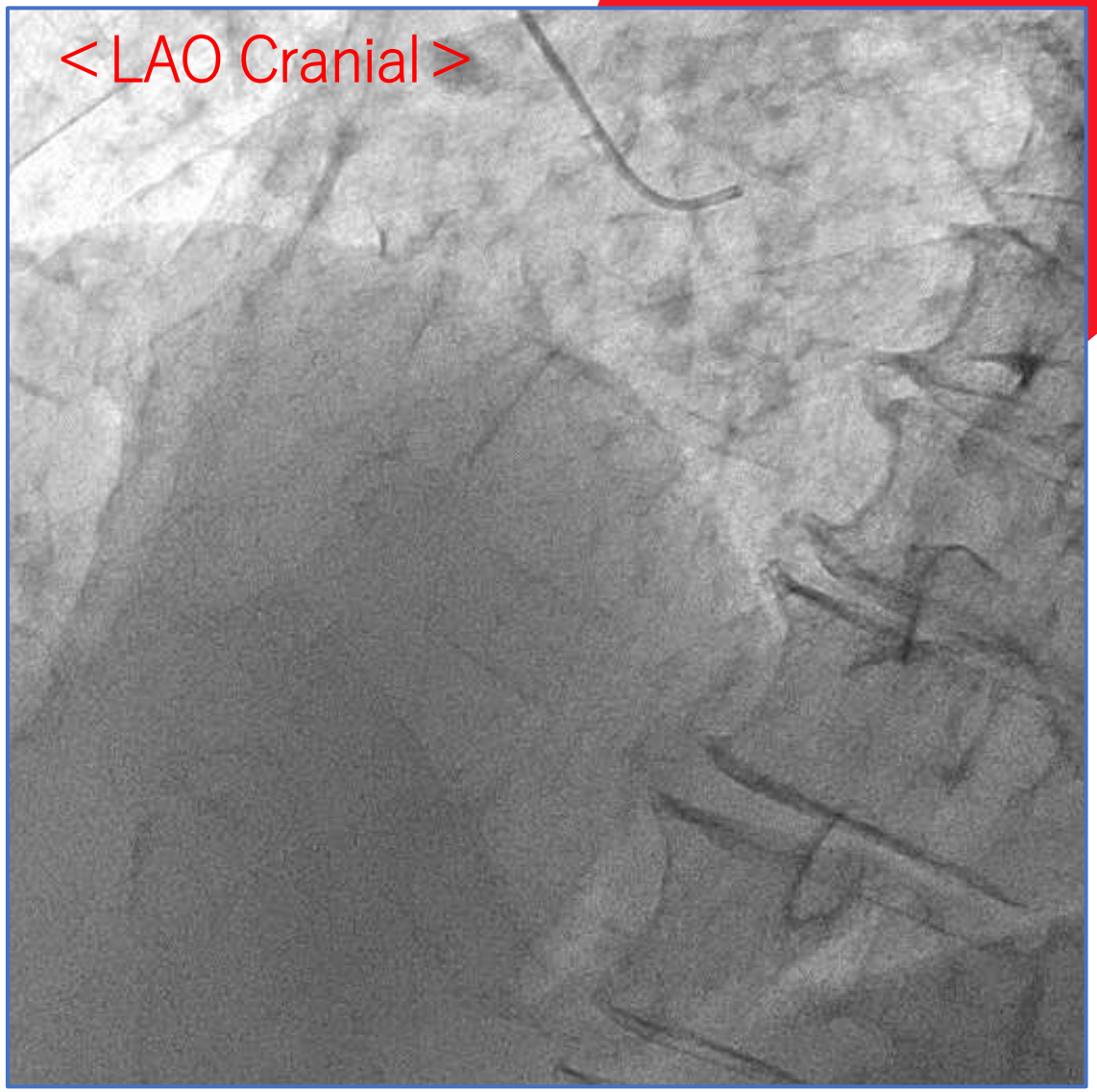
Course after Admission

・The patient's general condition **improved** with intravenous infusion and medication for **heart failure and pneumonia.**

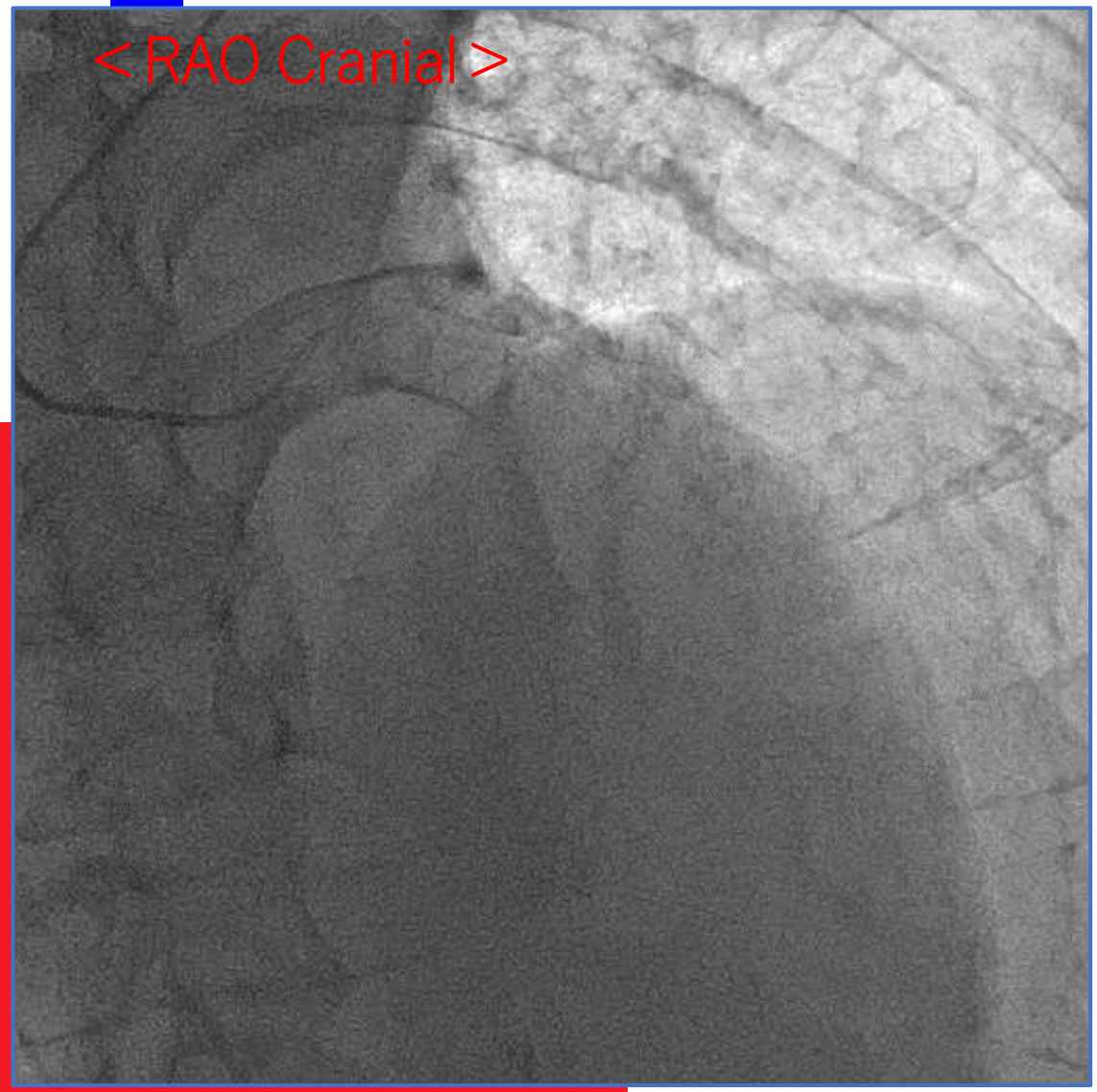
・Because **RI** showed ischemia of the anterior area, we decided to examine the coronary artery. We performed **coronary angiography** on the 20th day after the heart failure improved.

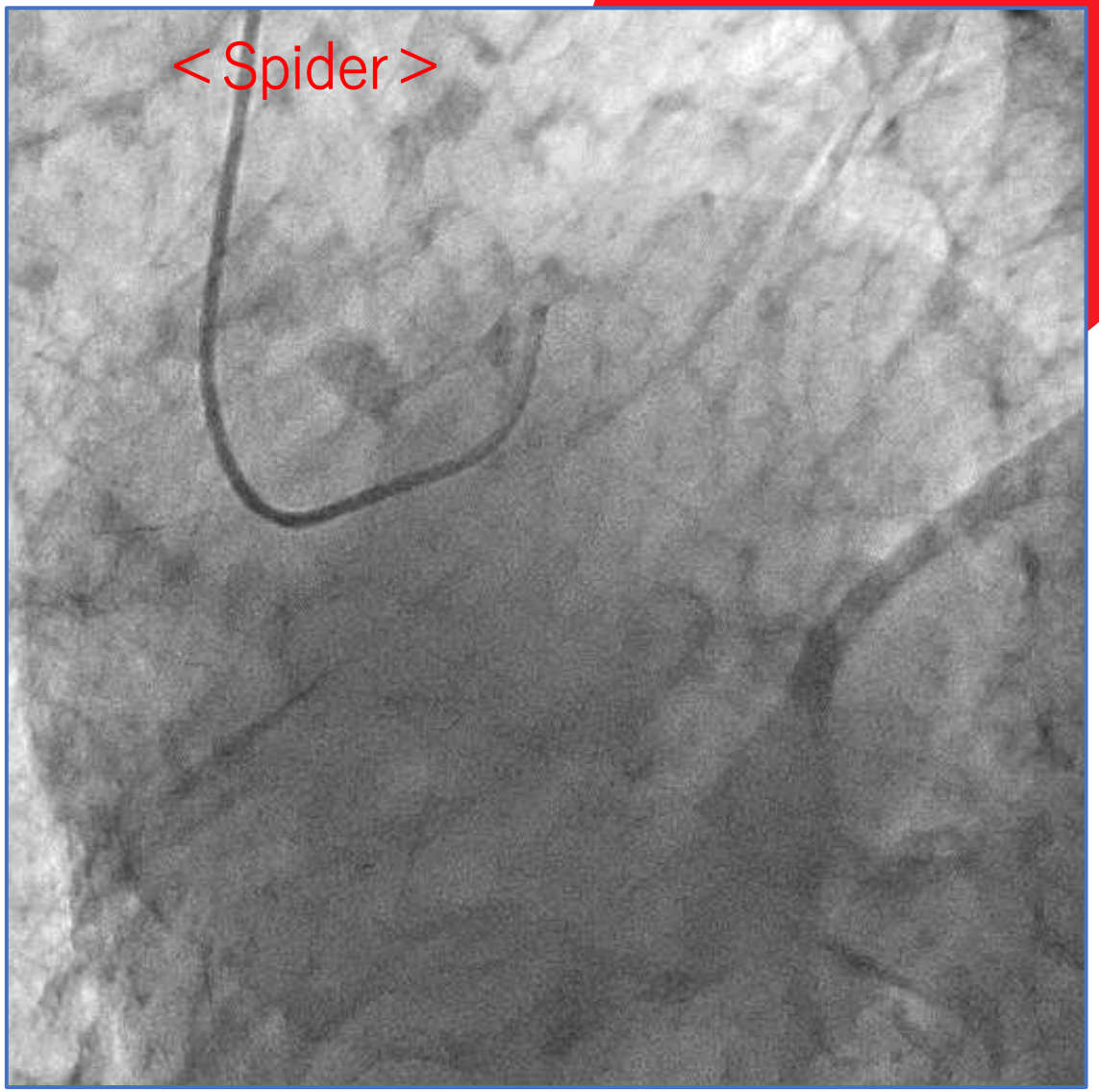
CAG (LCA): Lt. Radial Approach, 4Fr.JL4



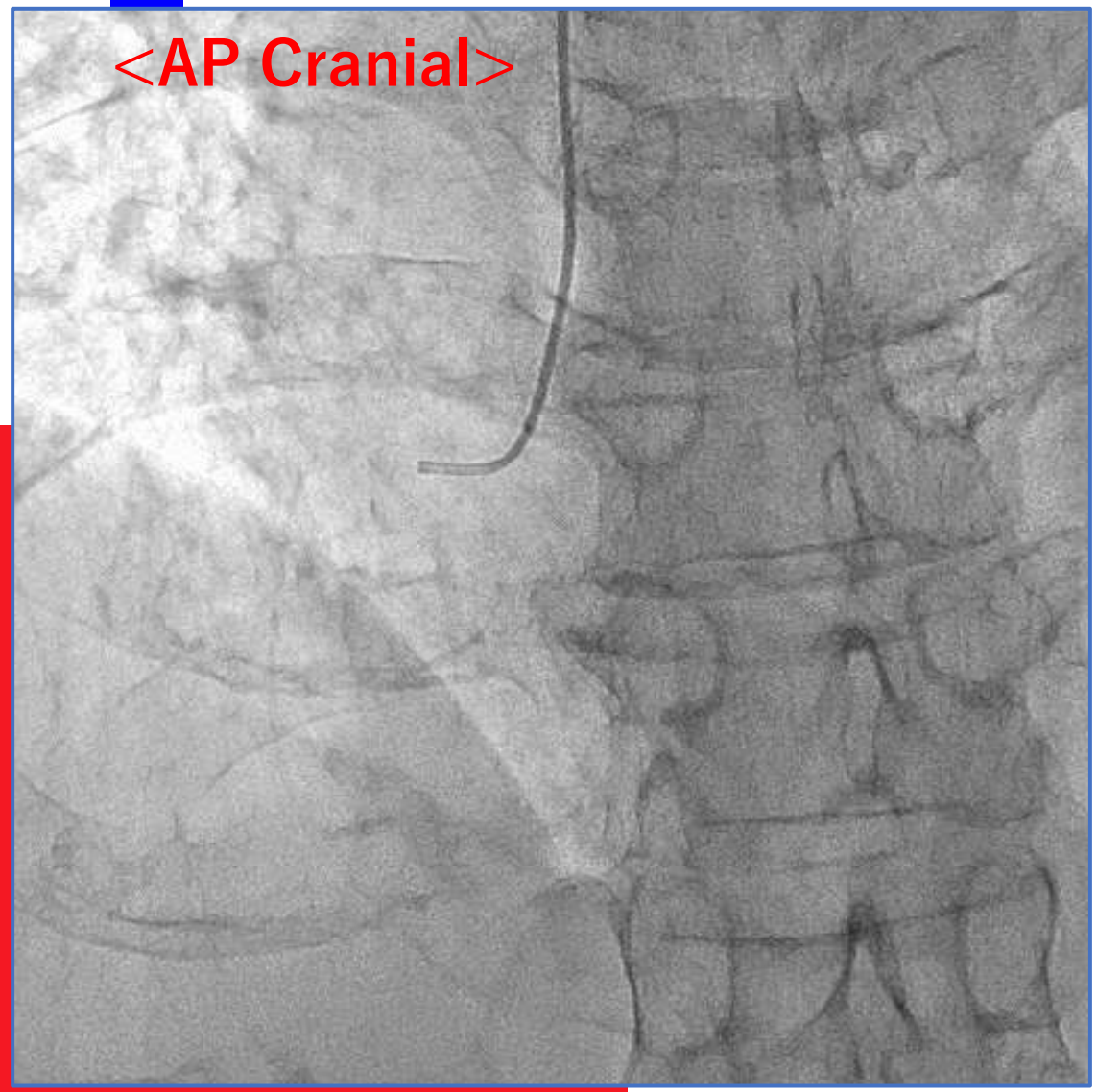


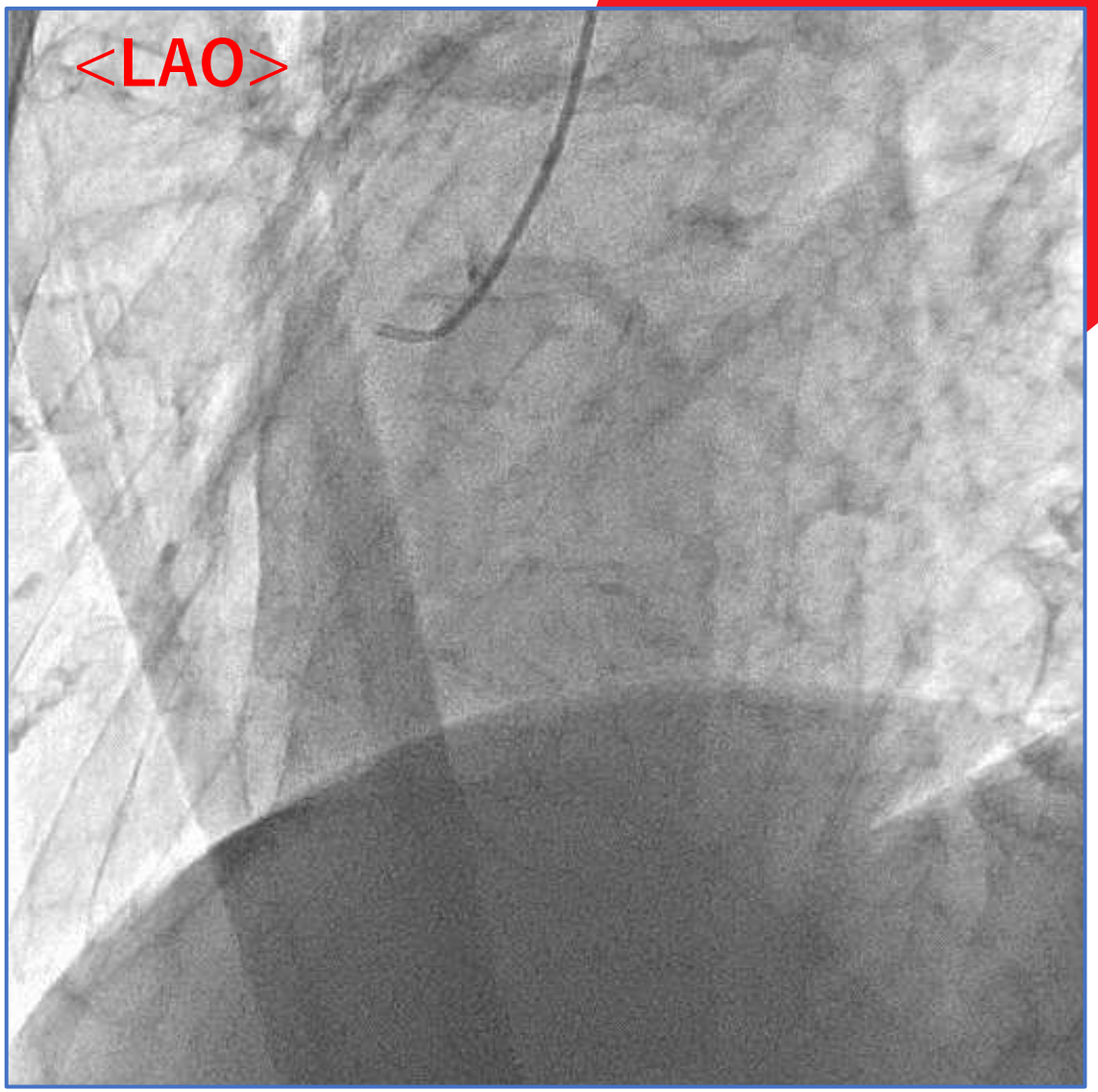
CAG (LCA): Lt. Radial Approach, 4Fr.JL4





CAG (RCA): Lt. Radial Approach, 4Fr.JR4

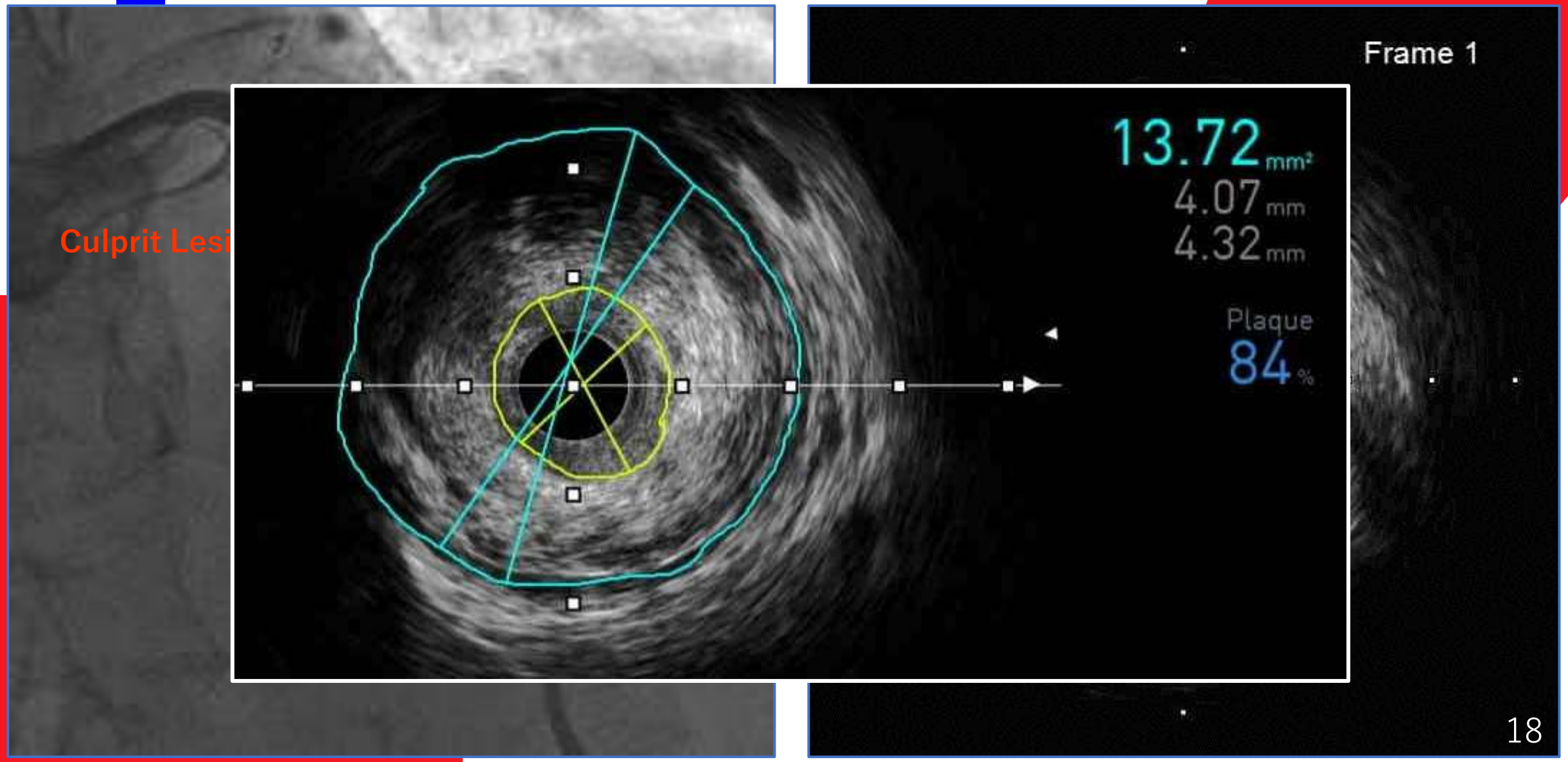




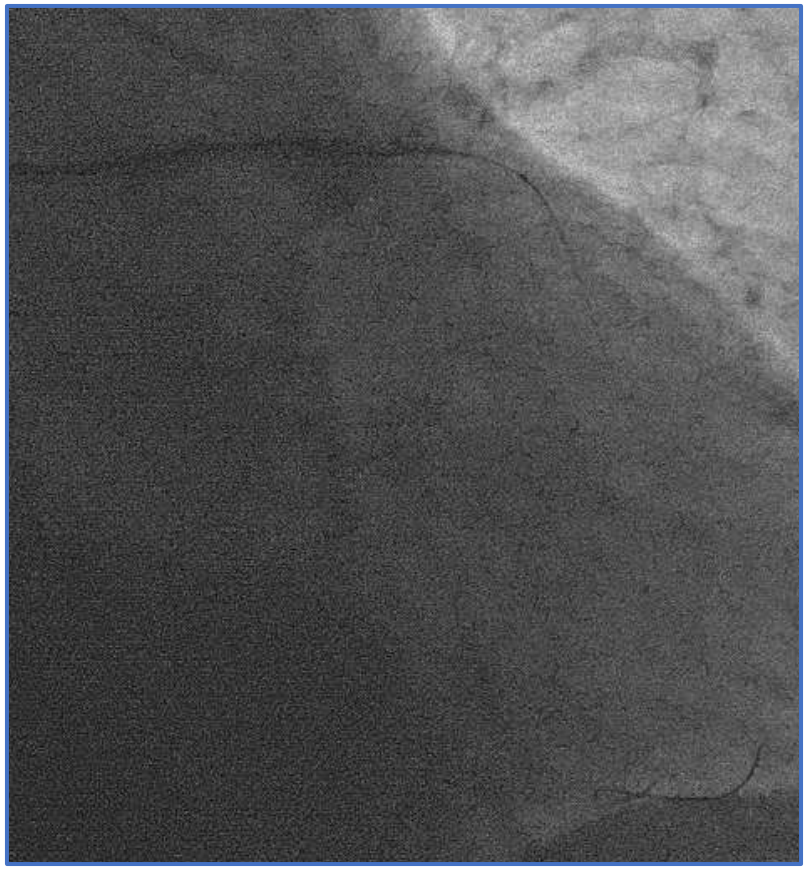
PCI system

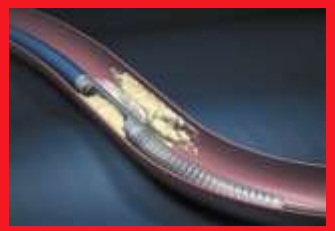
- Approach: Left radial (8Fr GC sheathless).
- GC: CLS3.5SH (RoadMaster), 8Fr
- GW: Amati, Grand Slam.
- Balloon : SeQuent Please NEO 3.0/20.
- Others: ATHEROCUT(L), Zizai.

IVUS (Pre)

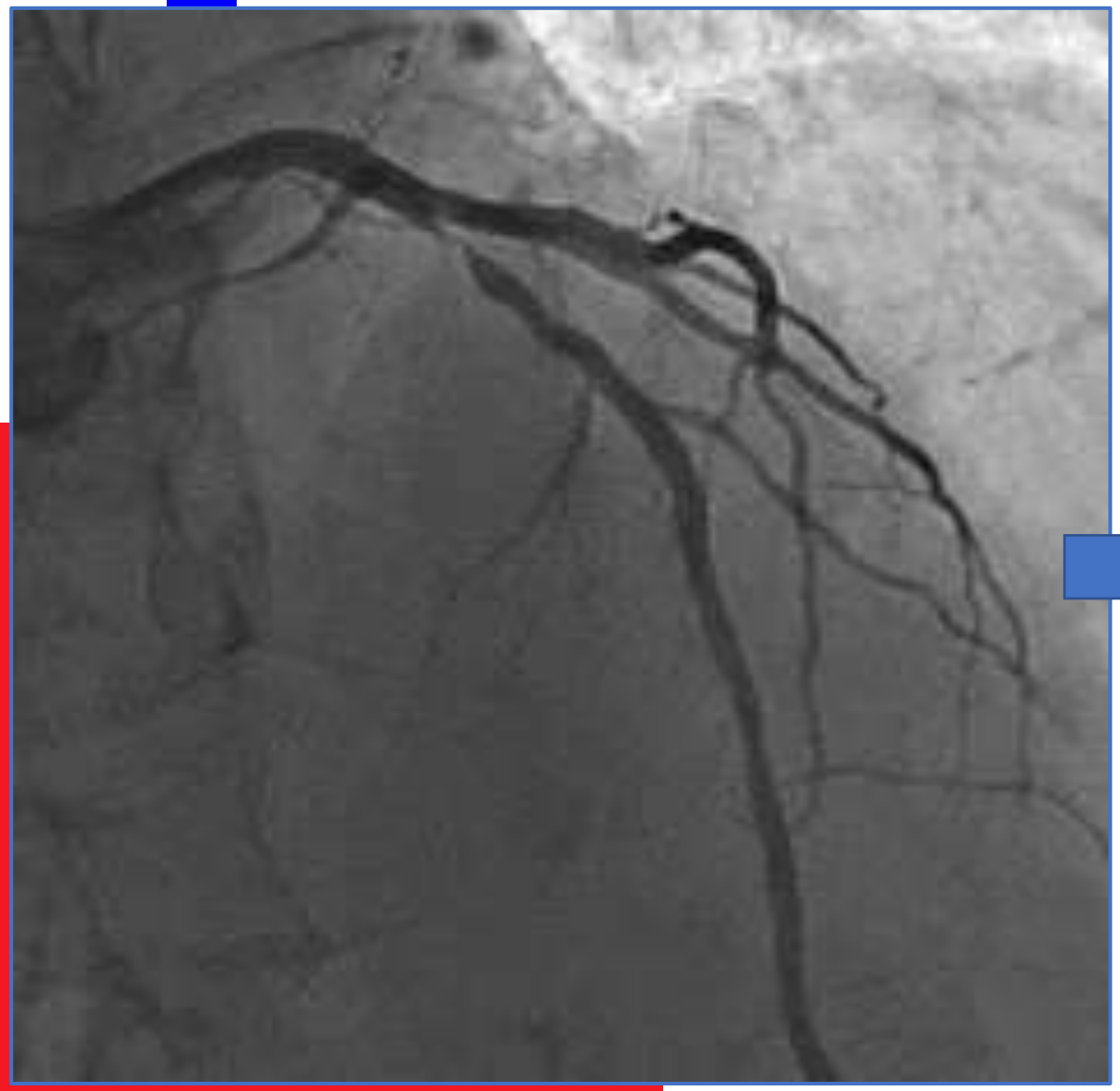


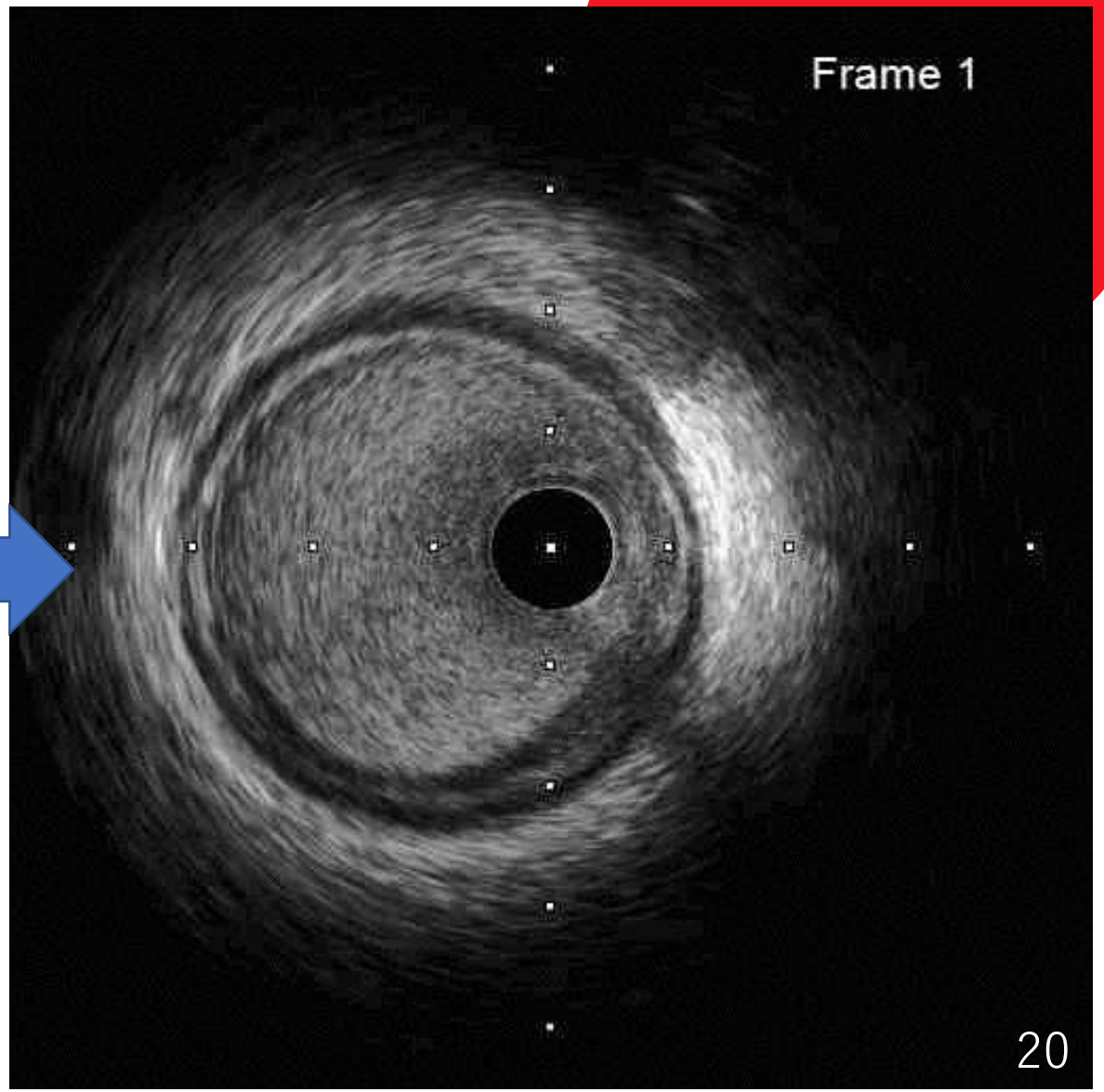
DCA





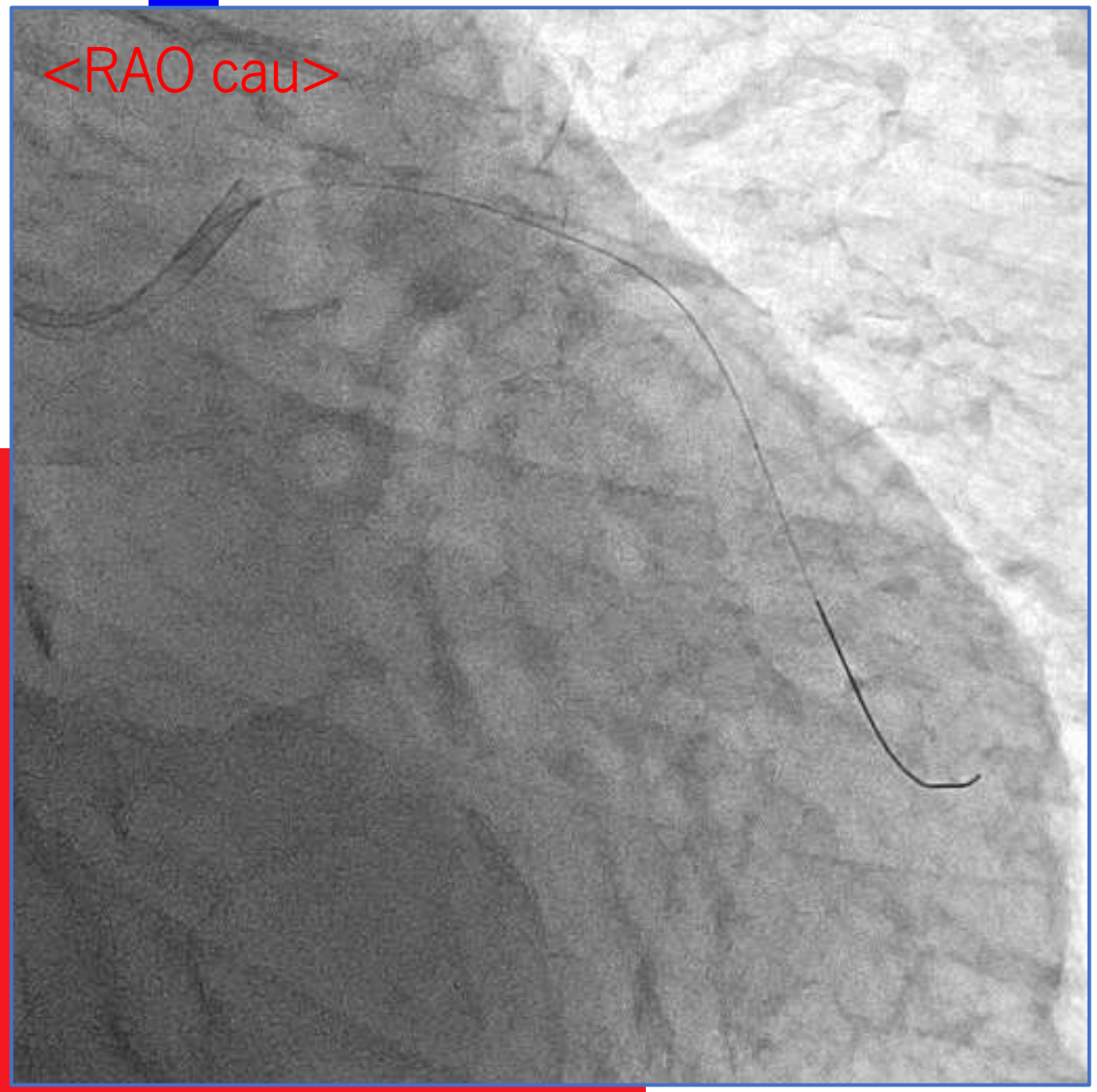
IVUS (Post-DCA)

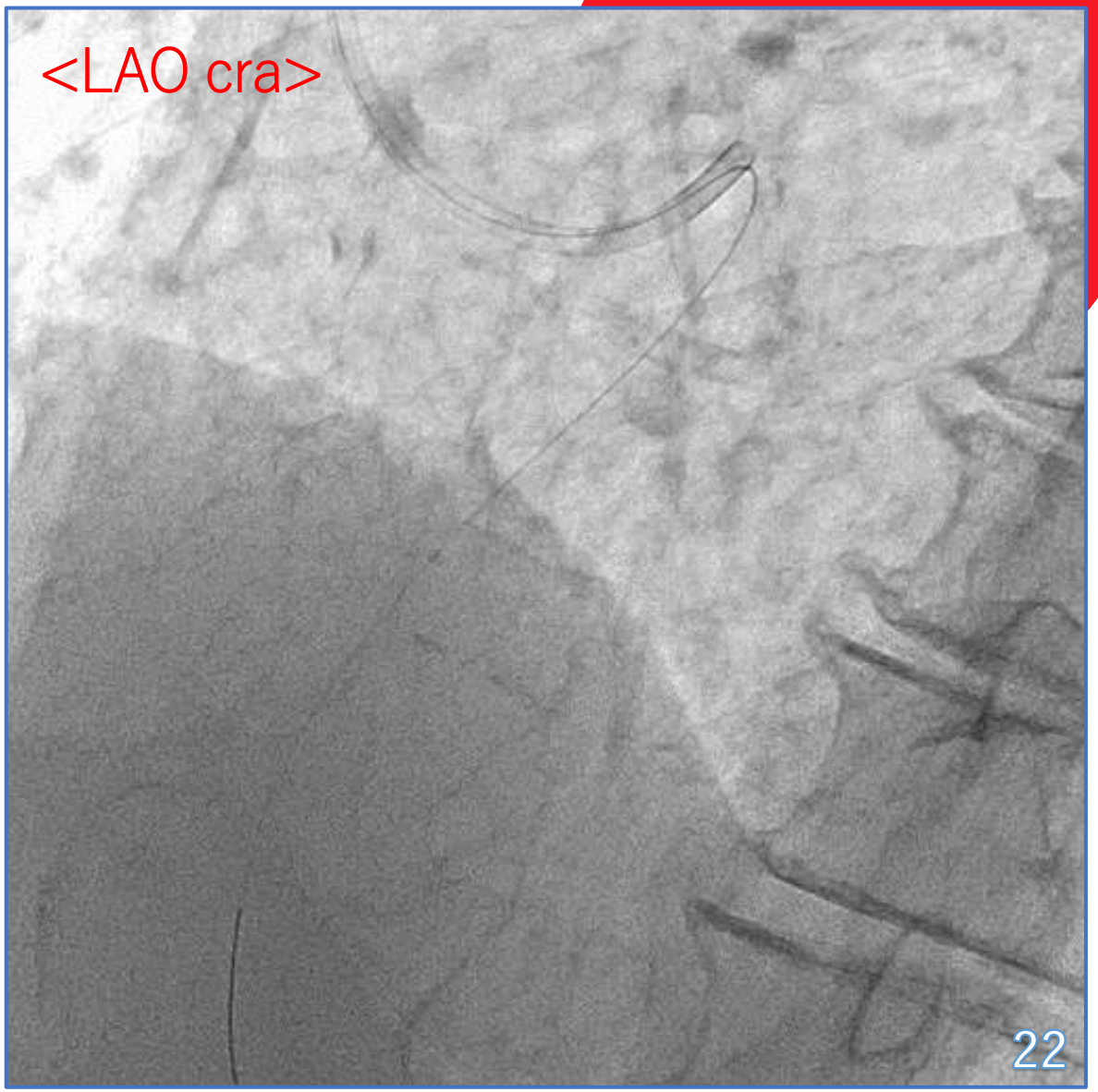


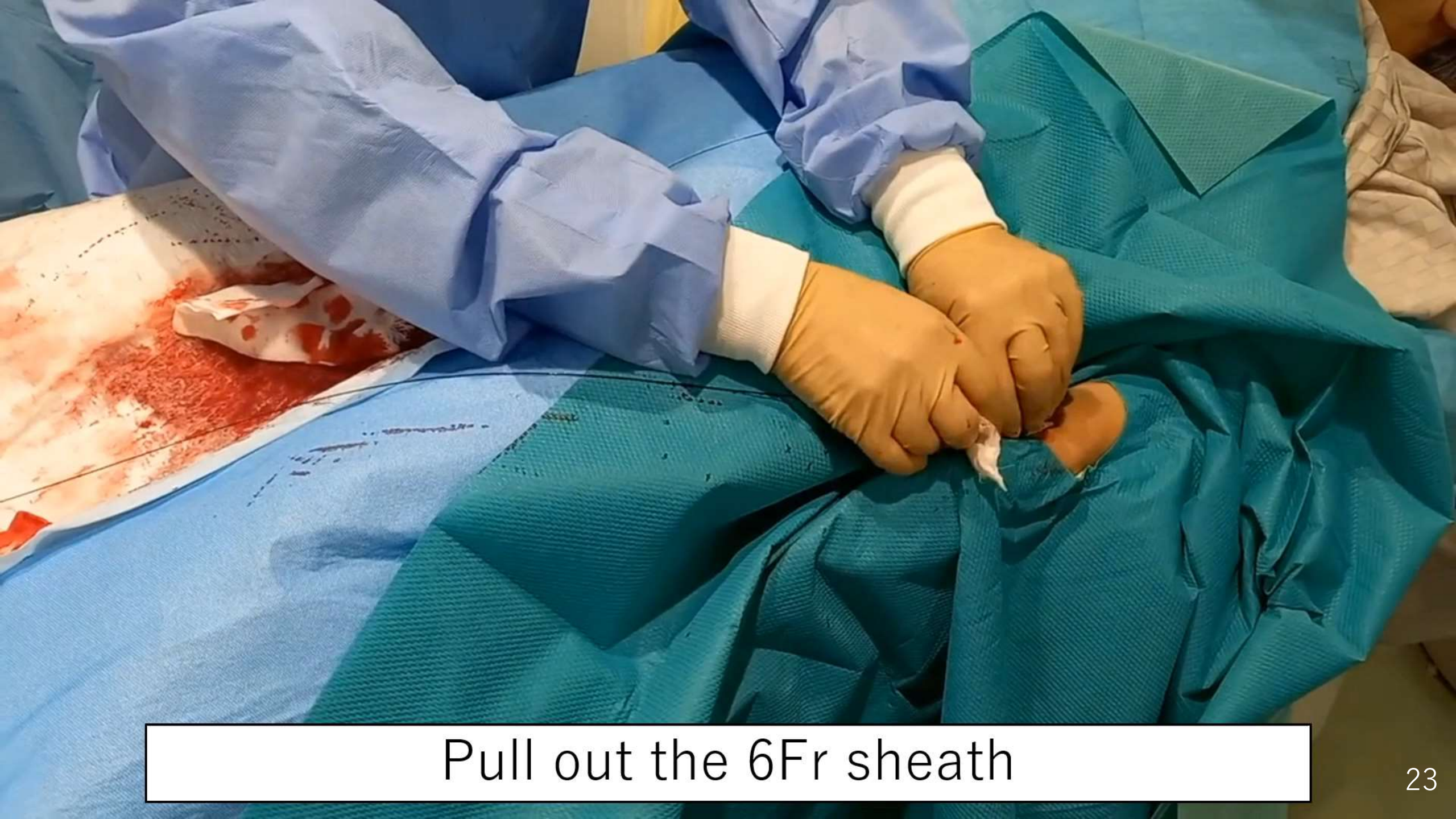


DCB (SeQuent Please NEO 3.0×20 mm)

Final Angiography







Pull out the 6Fr sheath

PCI-DCA/PCI-CTO by TRA may be Possible

TRA can be done in some CTO cases

Radial approach for percutaneous coronary interventions on chronic total occlusions: technical issues and data review

Francesco Burzotta [1], Maria De Vita, Thierry Lefevre, Antonella Tommasino, Yves Louvard, Carlo Trani

Catheter Cardiovasc Interv. 2014; 83: 47-57.

・3,501 patients who underwent CTO by TRA: **Puncture site complications < 1%**
・5Fr, Sheathless 6.5Fr, 6Fr, Sheathless 7.5Fr, 8Fr
【Conclusion】
・The transradial PCI was useful for CTO lesions.

Complex transradial percutaneous coronary intervention using a sheathless guide catheter

Scott A Harding [1], Nadim Shah, Natalie Briggs, Alexander Sasse, Peter D Larsen

Heart Lung Circ. 2013; 22: 188-92.

TRA is a common approach instead of the TFA.
120 patients treated by 6-7 French sheathless GC (ACS: 87 cases). CTO cases: 5%.
☞ Complication rate in TRA is significantly lower than TFA.
(Peri-procedural radial artery occlusion: 2.3%、Hematoma (larger than 5 cm): 2 patients)
☞ TRA improve patient **comfort and reduce mortality.**

The Effectiveness and Safety in PCI to LMT

Usefulness of sheathless guide catheter for the percutaneous coronary intervention of left main disease by radial approach

Sergio García-Blas [1], Julio Núñez [2], Pilar Carrillo [3], Alberto Cordero [3], Gema Miñana [2], Araceli Frutos [3], Ernesto Valero [2], Ingrid Cardells [2], Juan Sanchis [2], Ramón López-Palop [3]

Int J Cardiol. 2016; 211: 49-52.

LMT lesion by TRA

2009-2015: 109 consecutive patients.

7.5Fr sheathless GC (Eaucath^{R}: ASAHI Intecc)

- Provisional stenting: 45 patients (41%)
- Crush stenting: 2 patients (2%)
- T stenting: 37 patients (34%)
- Cullote stenting: 25 patients (23%)

Success: 104 patients (96%)

☑ No vascular complications or major bleeding were observed.

☑ **2-mm burr of RA** is feasible
(maintaining adequate pressure waveform and contrast injections)

The Effectiveness and Safety in PCI to CTO

Effectiveness and Safety of the Transradial 8Fr Sheathless Approach for Revascularization of Chronic Total Occlusions

Rustem Dautov [1], Henrique Barbosa Ribeiro [2], Omar Abdul-Jawad Altisent [2], Luis Nombela-Franco [2], Claire Gibrat [2], Can Manh Nguyen [2], Stéphane Rinfret [3]

Am J Cardiol. 2016; 118: 785-89.

Sheathless 8Fr GC system
2013～
119 CTO (Sheathless 8Fr GC) vs. 122 CTO (TFA)

【Results】
Technical success rate: **93% in both groups**.
There were no major vascular or bleeding complications in the Sheathless 8Fr GC group.
The STT did not result in any increase in procedure time, contrast use, or radiation dose.
Radial Doppler follow-up in 28 patients revealed 2 occlusions (7.1%) in the Sheathless 8Fr GC group.
【Conclusion】
Sheathless 8Fr GC system for CTO PCI is feasible, safe, and associated with low complication rate.

The Effectiveness and Safety in PCI to CTO by TRA than TFA

The efficacy and safety of transradial and transfemoral approach in treatment of coronary chronic total occlusion: a systematic review and meta-analysis

Mohamad Soud [1], Ziad SayedAhmad [2], Marvin Kajy [3], Fares Alahdab [4], Fahed Darmoch [5], Yasser Al-Khadra [6], Homam Moussa Pacha [7], Yasar Sattar [8], Waqas Ullah [9], Fred King [1], Ali Bani Saad [3], Ghaith Alhatemi [3], Zaher Hakim [3], Omar E Ali [3], James J Glazier [3], M Chadi Alraies [3]

Expert Rev Cardiovasc Ther. 2020; 18: 809-817.

Twelve studies with 19,309 patients were included.

【Background】 The clinical efficacy and safety of transradial (TR) percutaneous coronary intervention (PCI) in comparison to transfemoral (TF) for chronic total occlusion (CTO) is not well studied in literature.

【Results】

significant lower access complication rates [odds ratio (OR): 0.33; $p < 0.0001$].

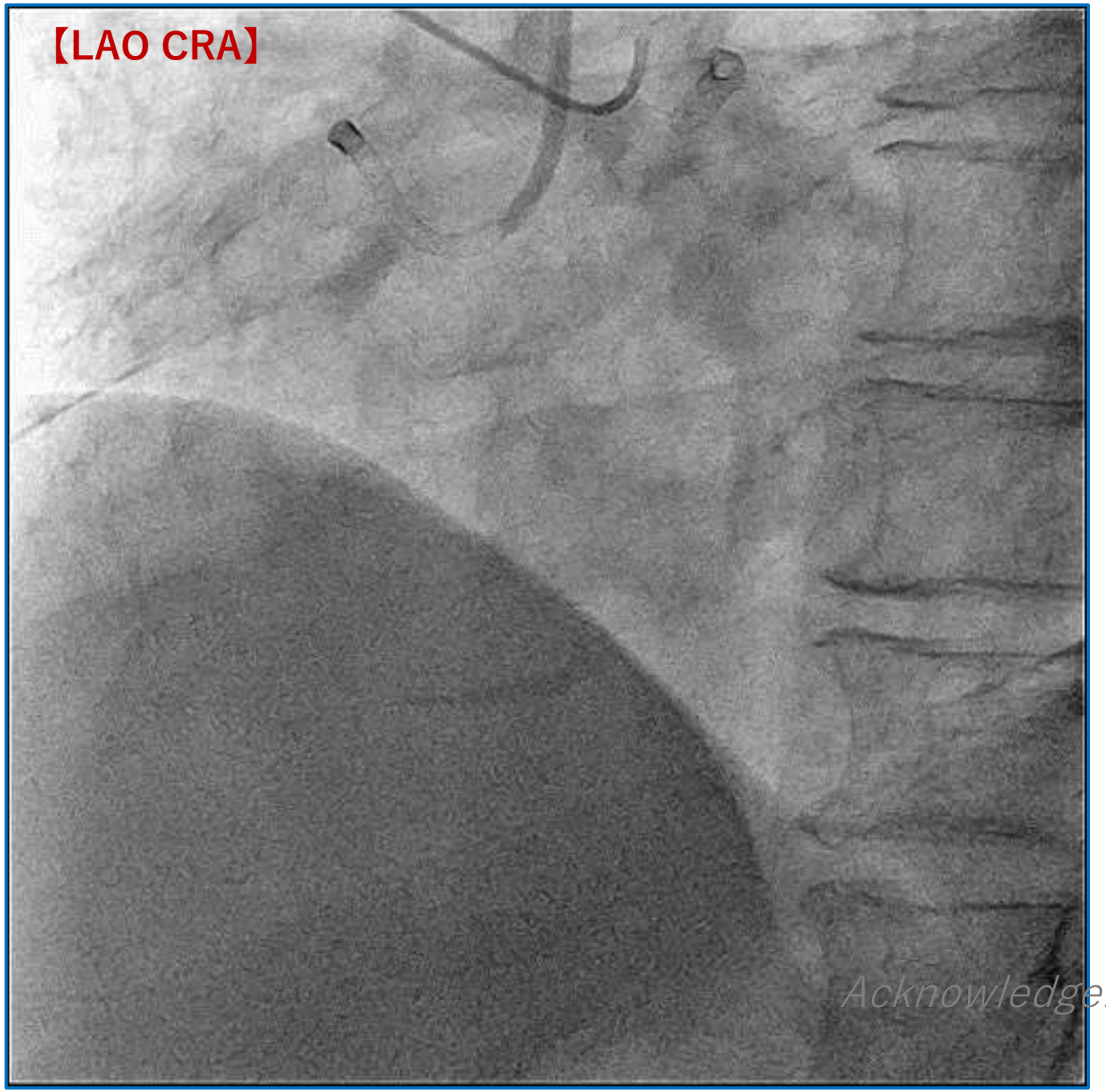
The procedural success was in the favor of TR method.

【Conclusion】

When compared with TF access interventions in CTO PCI; the TR approach appears to be associated with far **less access-site complications, higher procedural success.**

A case of RCA CTO treated by transradial 8Fr GC @ Toyohashi Heart Center

Acknowledgement to Dr. Tsuchikane and Dr. Koshida !



【Simultaneous Angiography】

・RCA (#3) CTO

[System]

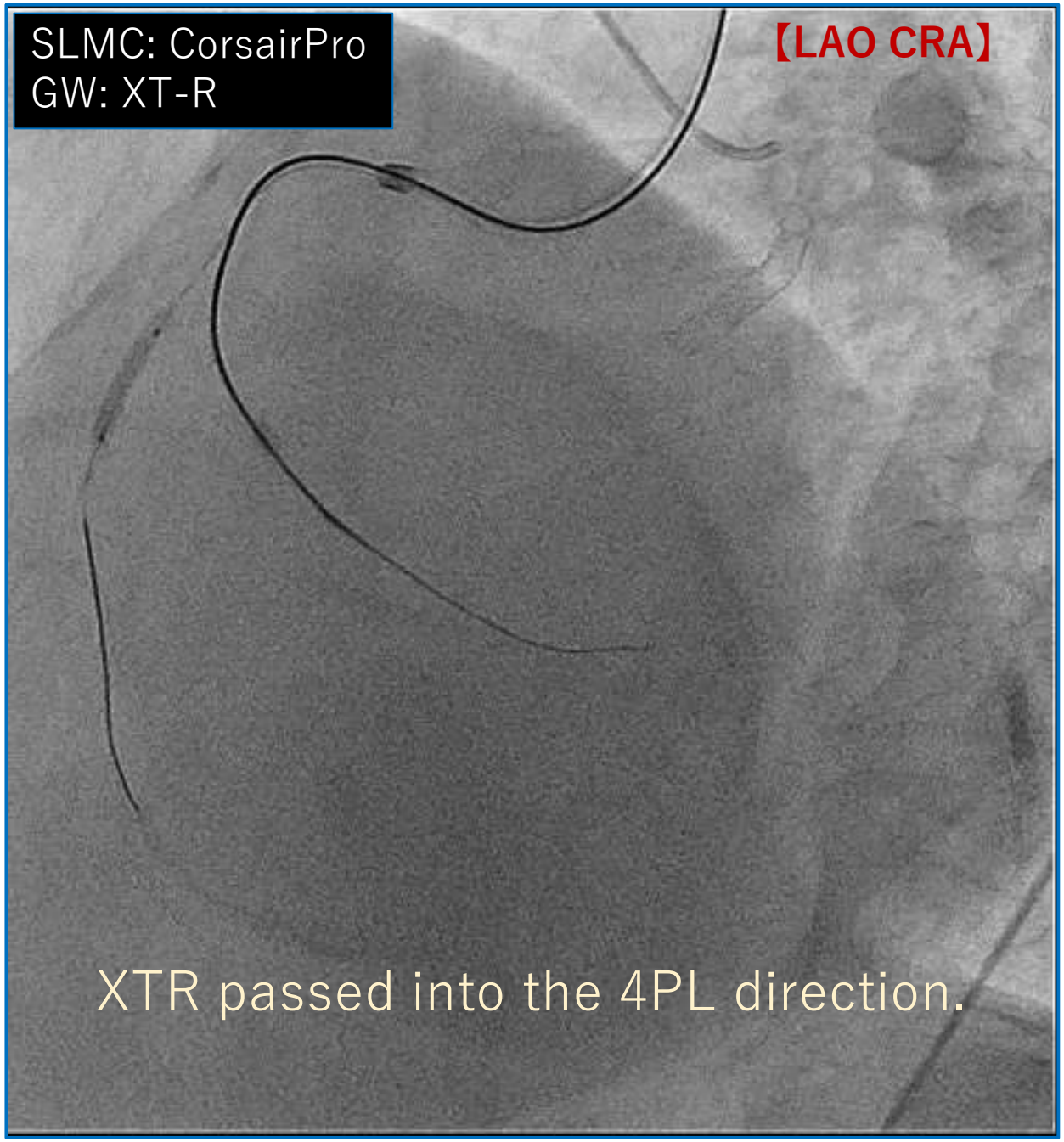
Lt.radial artery: 8Fr. GC sheathless

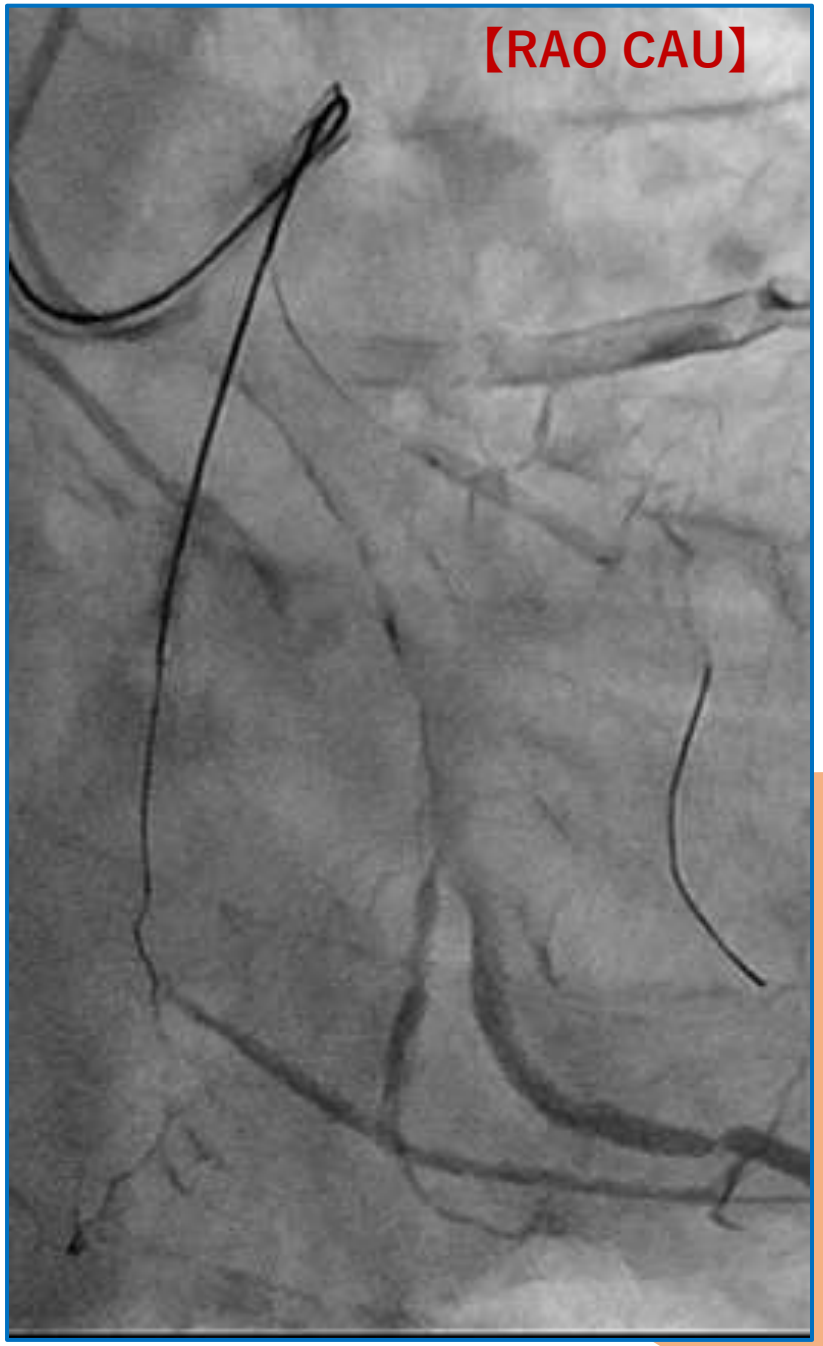
Rt.radial artery: 4Fr.sheath

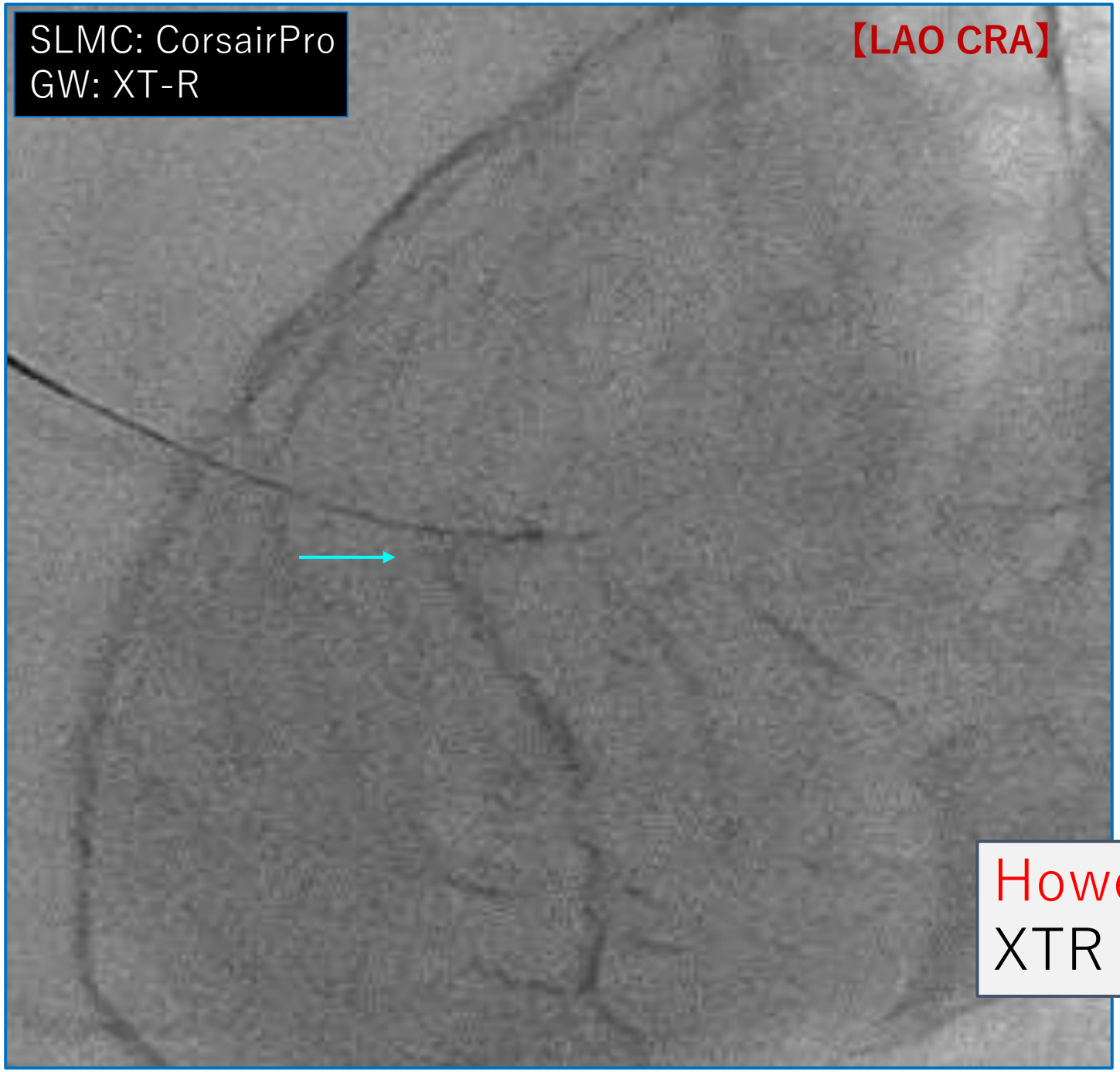
・**Ante-GC: 8Fr. Short AL1**

・Retro-GC: Diagnostic catheter

Acknowledgement to Dr. Tsuchikane and Dr. Koshida !

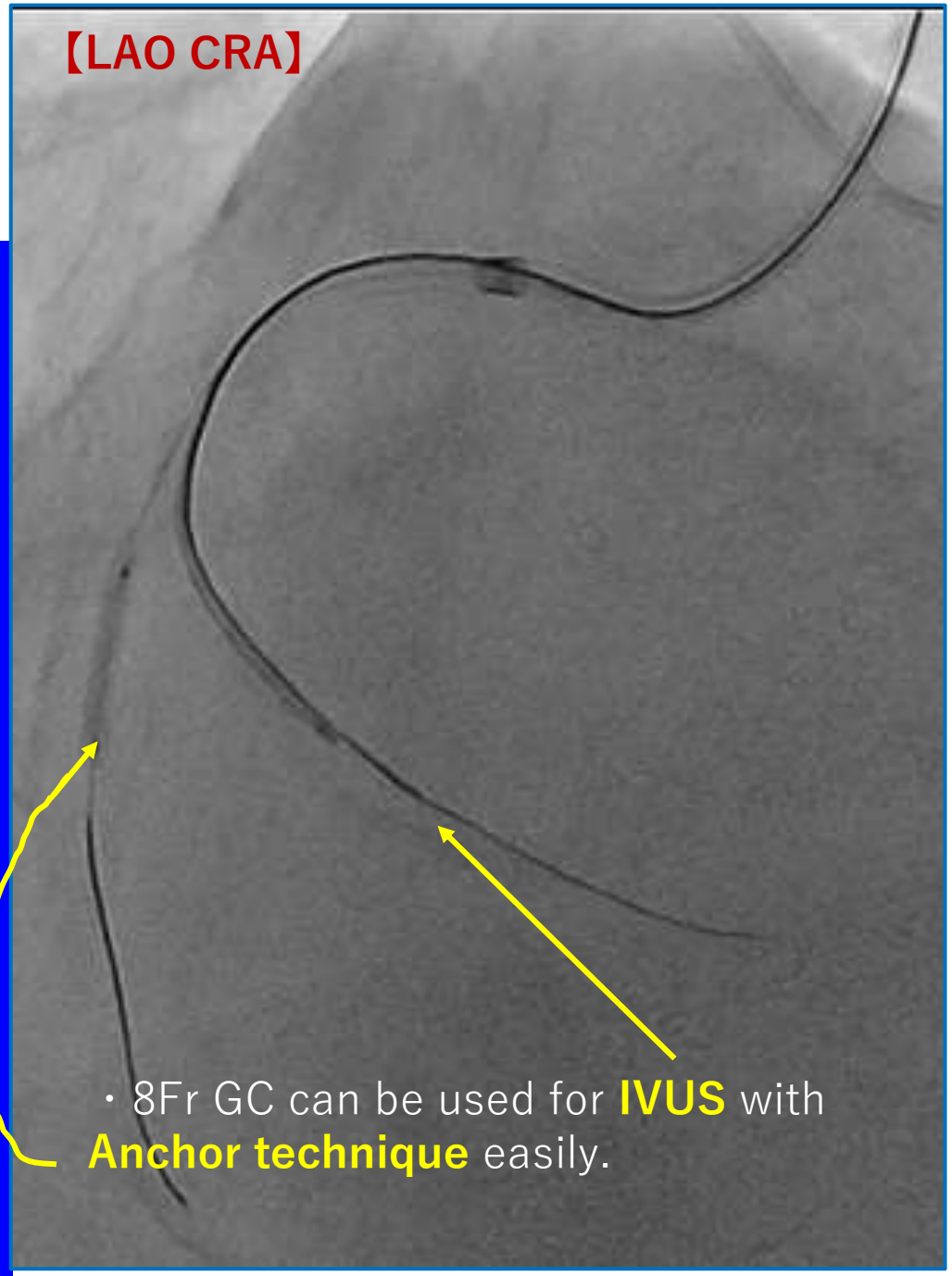

SLMC: CorsairPro
GW: XT-R
【LAO CRA】
XTR passed into the 4PL direction.


【RAO CAU】



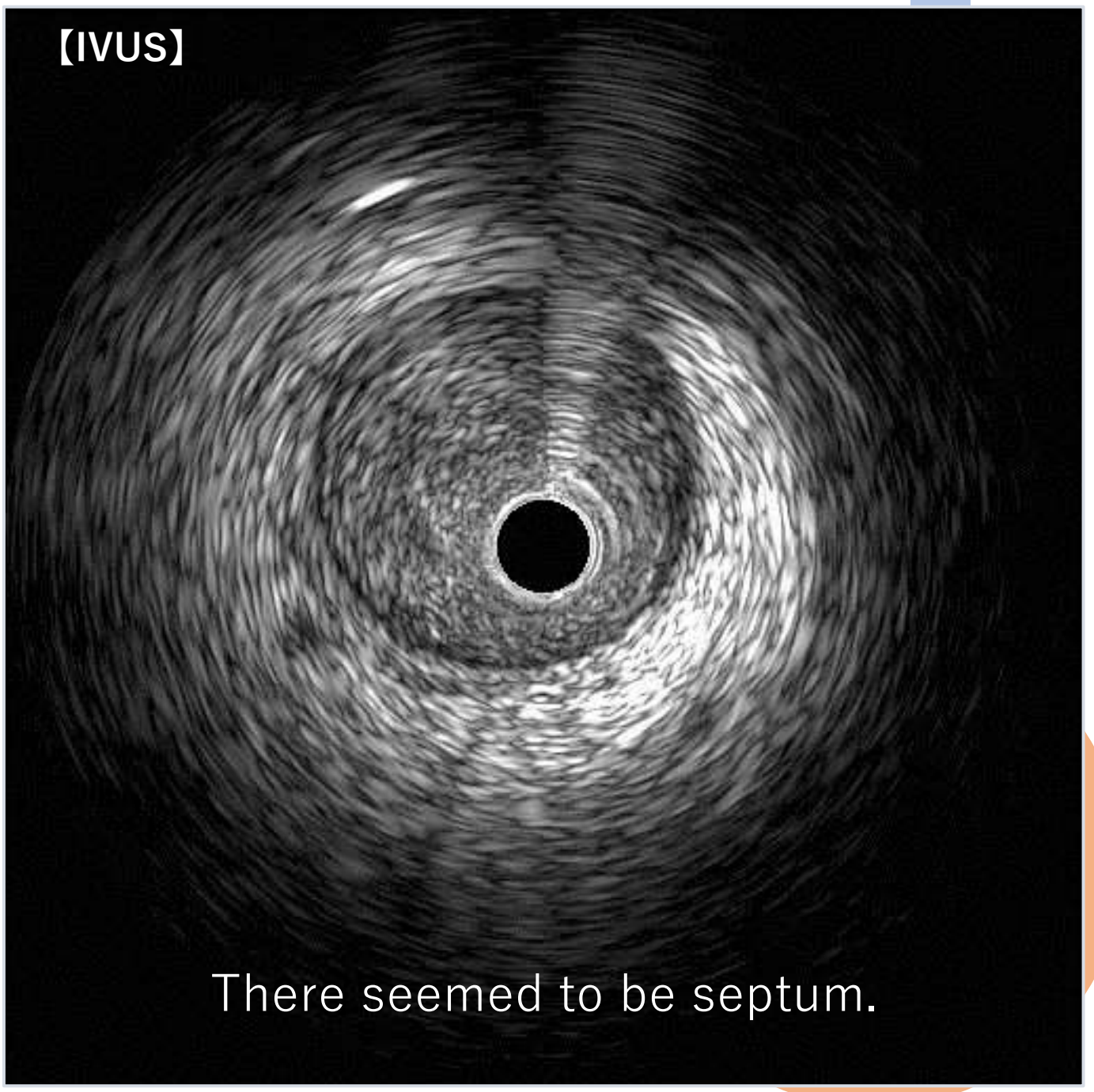
However,
XTR seemed to take shortcuts?

【LAO CRA】



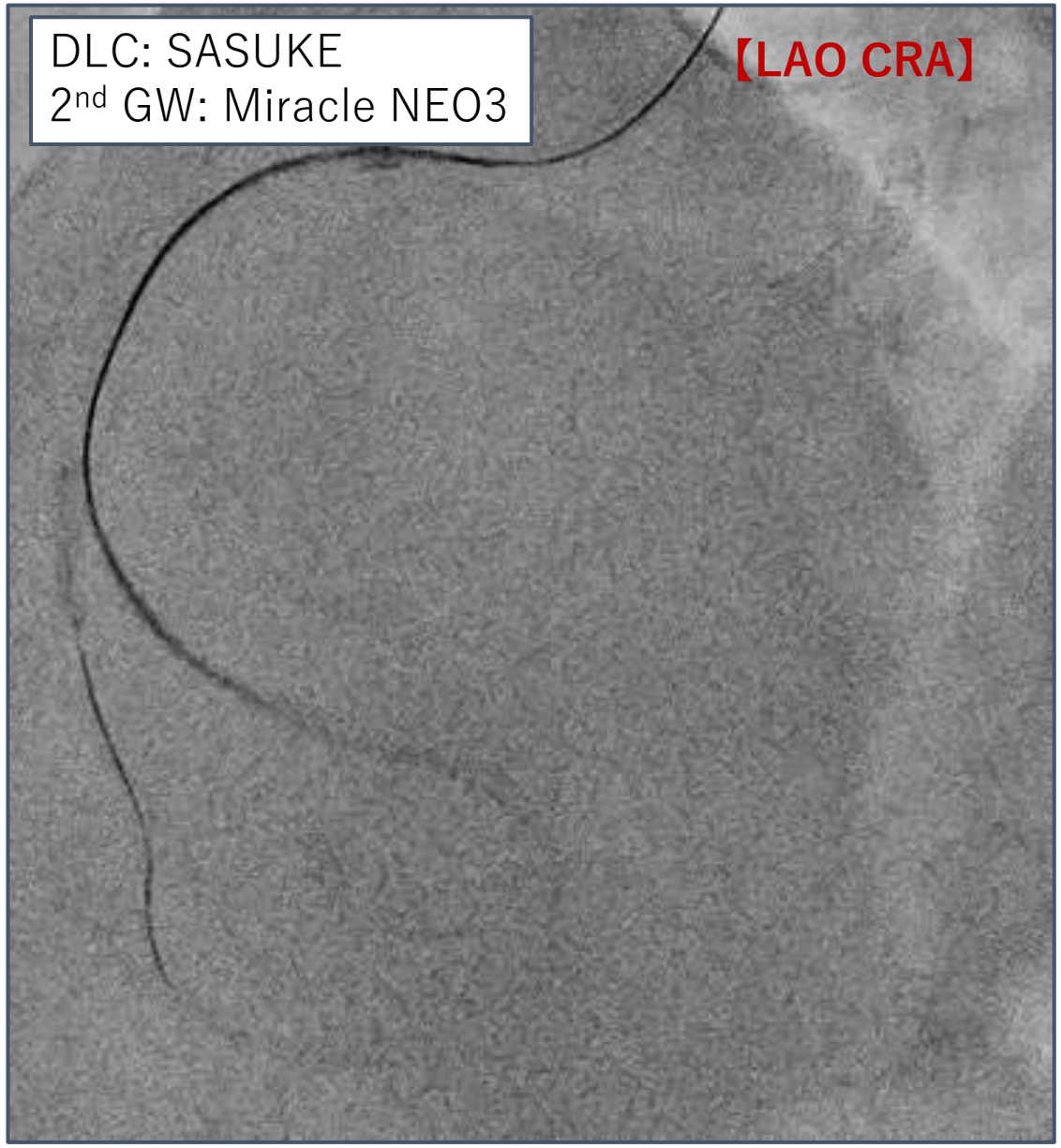
・8Fr GC can be used for **IVUS** with **Anchor technique** easily.

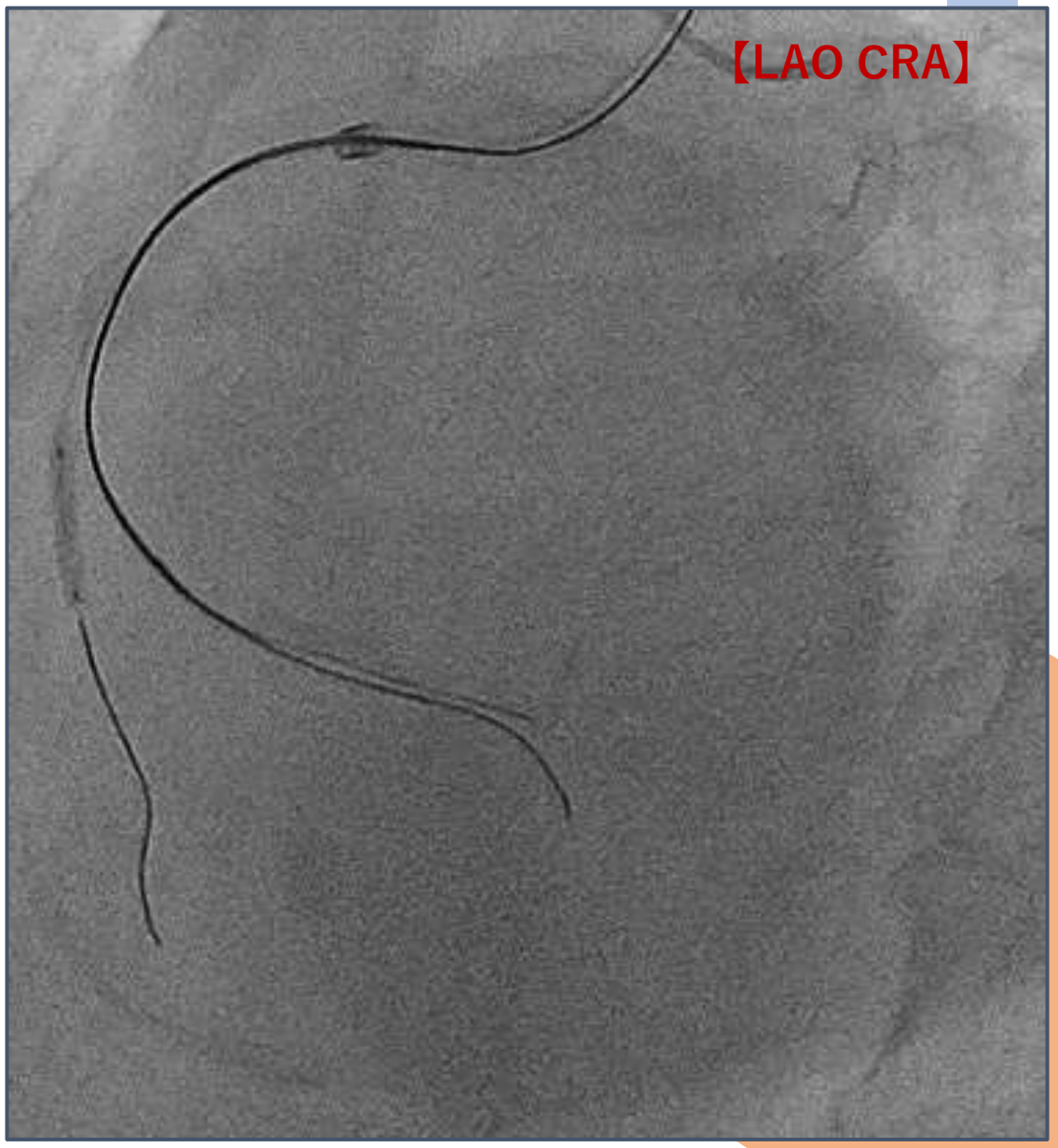
【IVUS】



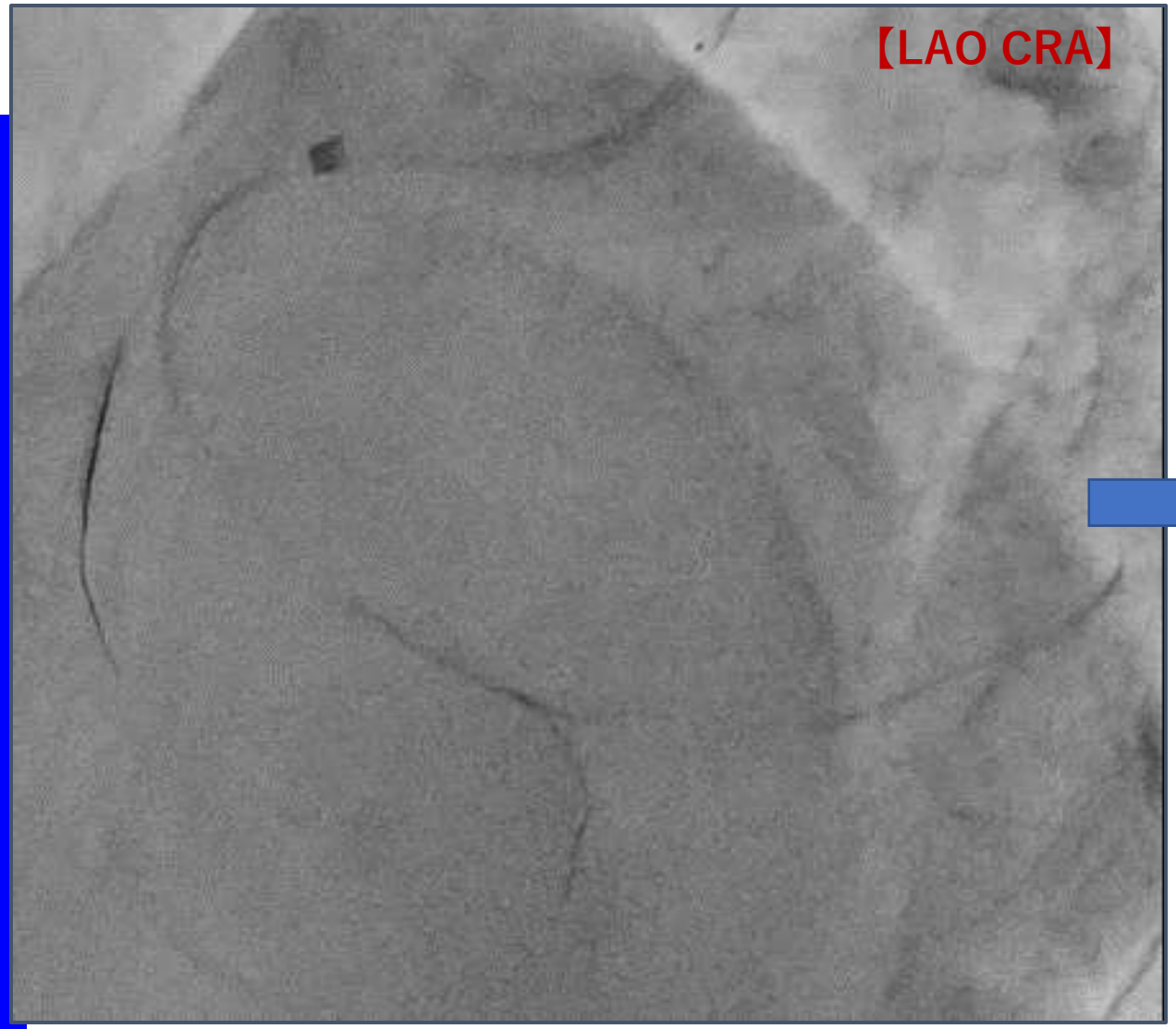
There seemed to be septum.

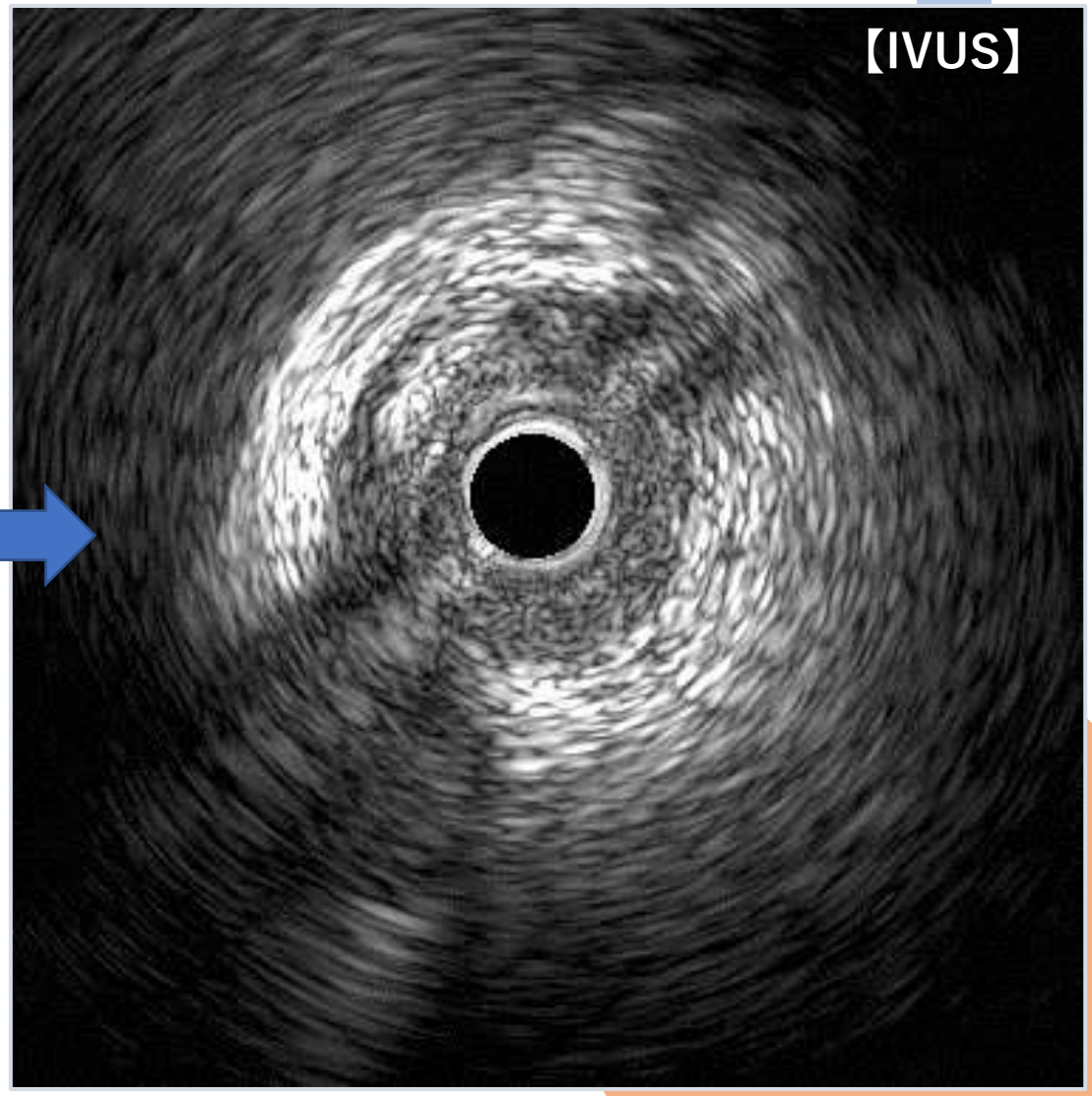
Wiring using DLC





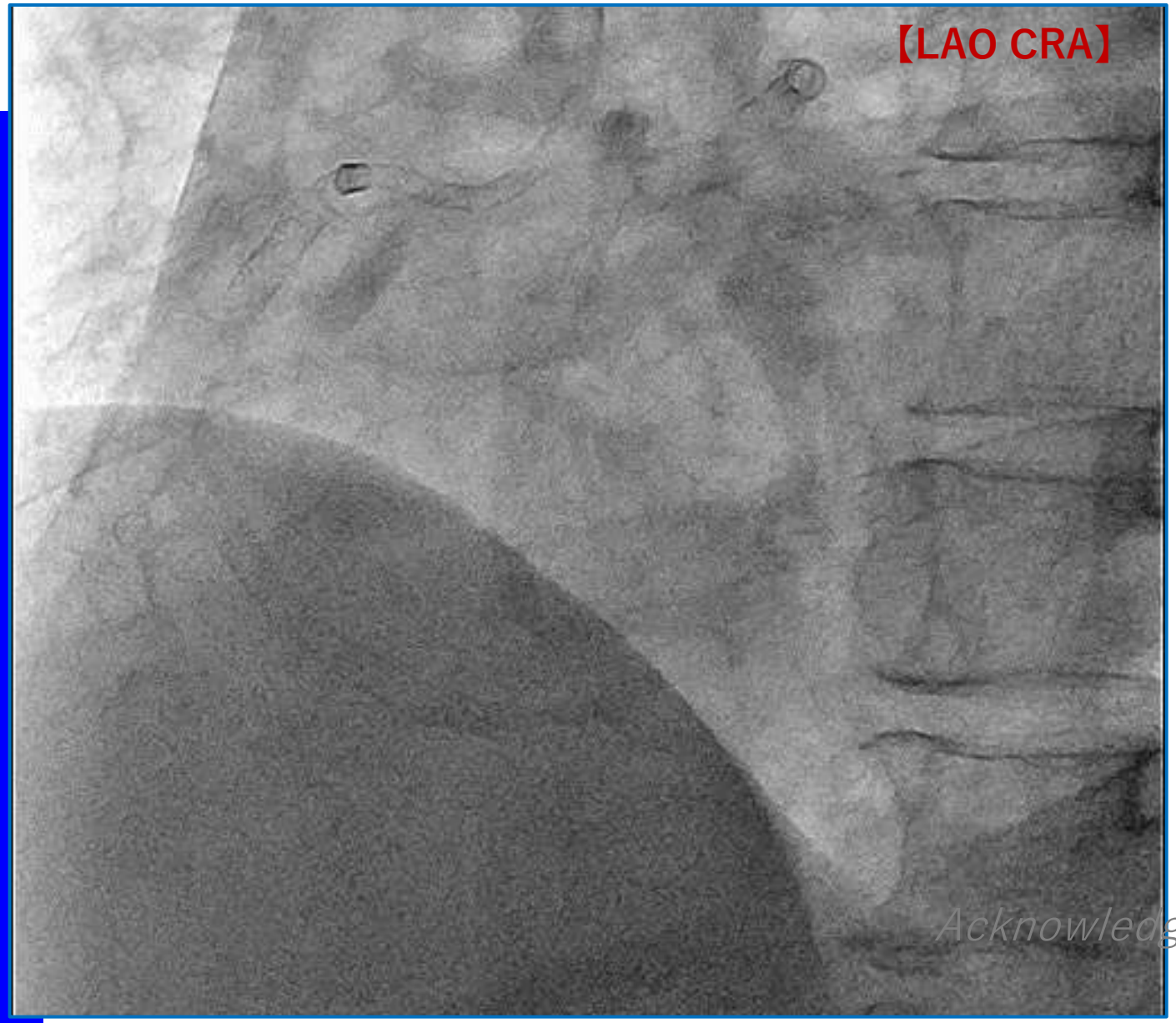
【Protecting Side Branch】





Acknowledgement to Dr. Tsuchikane and Dr. Koshida !

【Final Angiography】



【Summary】

・CTO-PCI using 8Fr GC sheathless system could be performed in the same was as TFI.

・8Fr GC is better when doing IVUS guide or ADR.

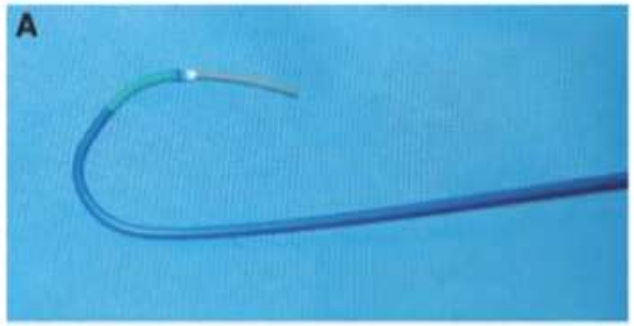
⇒ 8Fr GC sheathless system may be useful.

Acknowledgement to Dr. Tsuchikane and Dr. Koshida !

5F 125cm Flexor sheath (Cook Mecal, IN) inserted inside a 7F GC

Follow-up Data of Radial Artery Occlusion

	Number (%) [$n = 116$]
Radial artery spasm during procedure	2 (1.7)
Any RAO detected	6 (5.2)
Immediate post procedure	1 (0.8)
At follow up (mean of 12d)	5 (4.3)
Patients with return of pulse	3 (50)
Overall RAO at 37-74d	3 (2.5)

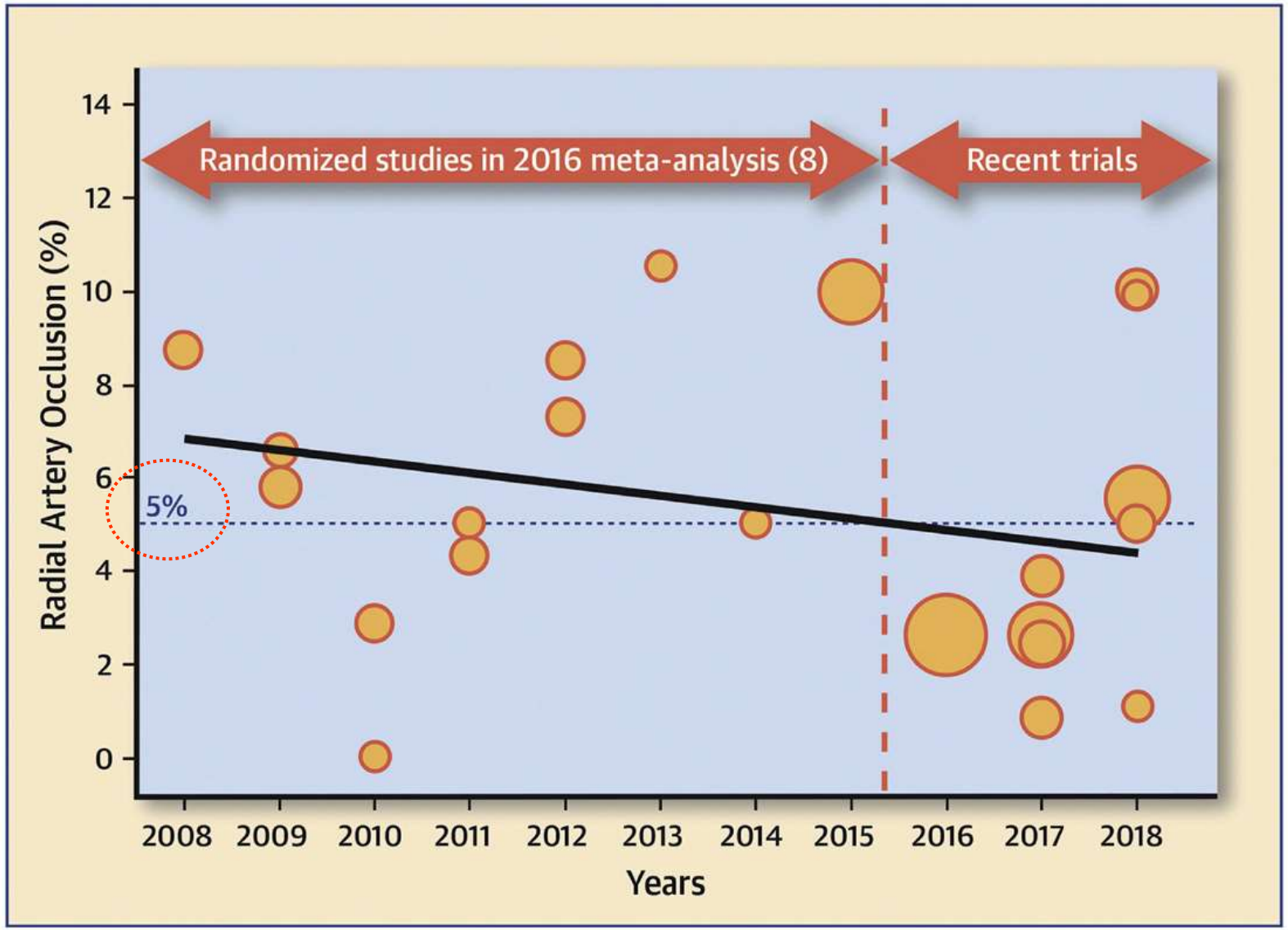


Feasibility and safety of 7F sheathless guiding catheter during transradial coronary intervention †

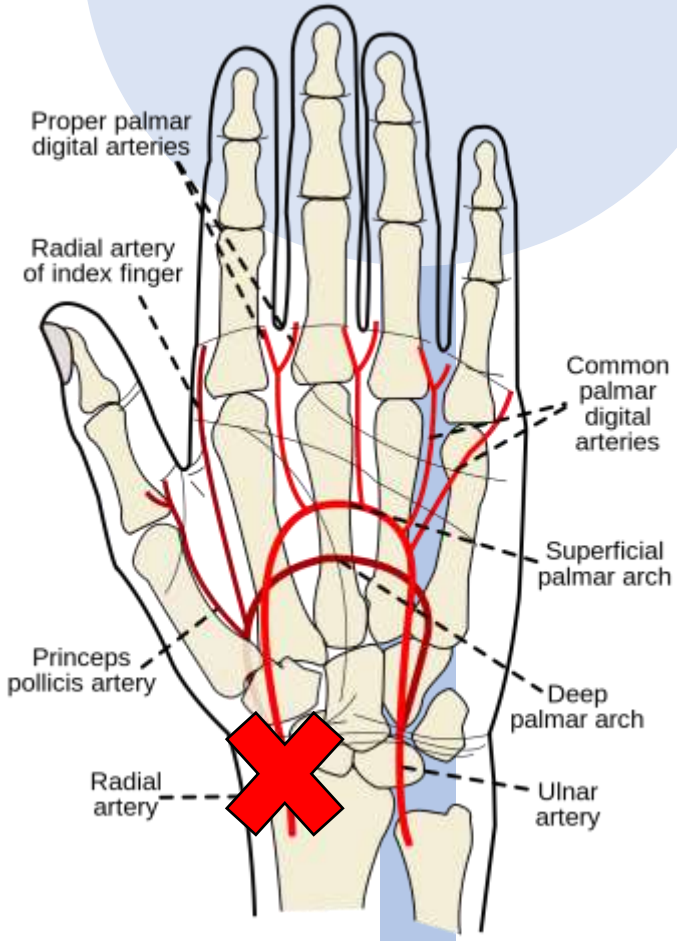
Tak W. Kwan MD, FSCAI ✉, Sanjay Cherukuri MD, Yili Huang MD, Samir Pancholy MD, FSCAI, Ramesh Daggubati MD, FSCAI, Michael Liou MD, FSCAI, John Coppola MD, FSCAI, Shigeru Saito MD, FSCAI

Catheter Cardiovasc Interv. 2012; 1: 274-280.

Meta-regression Analysis of RAO From 2008 to 2018



☑ The analysis shows a decrease in early RAO rates **below 5%.**



Bernat I et al. J Am Coll Cardiol Intv. 2019; 12: 2235-46.

【Risk Factors for RAO】

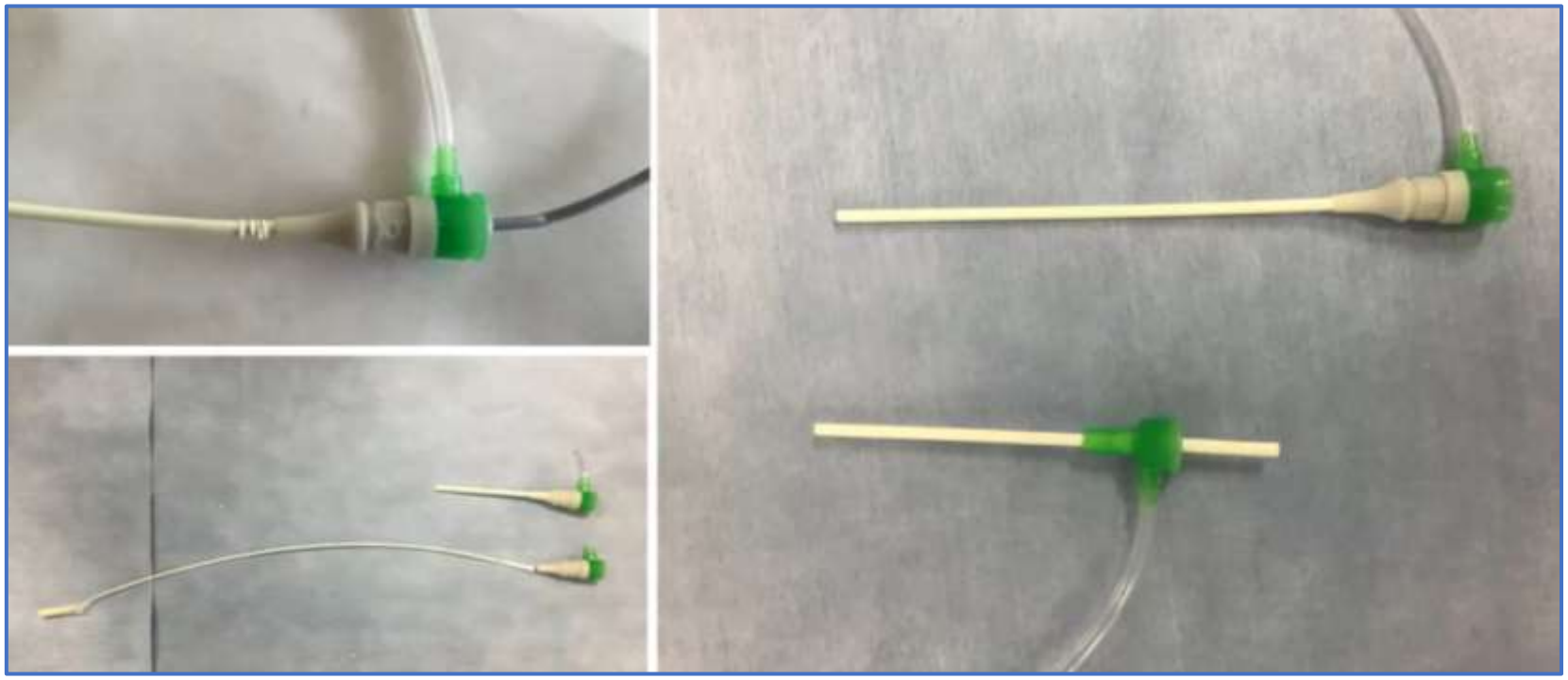
Pre-Procedural	Female Low BMI Age Diabetes Previous radial artery access Ethnicity
Procedural	Insufficient anticoagulation Sheath-to-artery ratio > 1 Repeated radial punctures Spasm Aspirin
Post-Procedural	Occlusive hemostasis Prolonged hemostasis Spasm

Bernat I et al. J Am Coll Cardiol Intv. 2019; 12: 2235-46.

Advantages and Problems of Sheathless

【Merits】

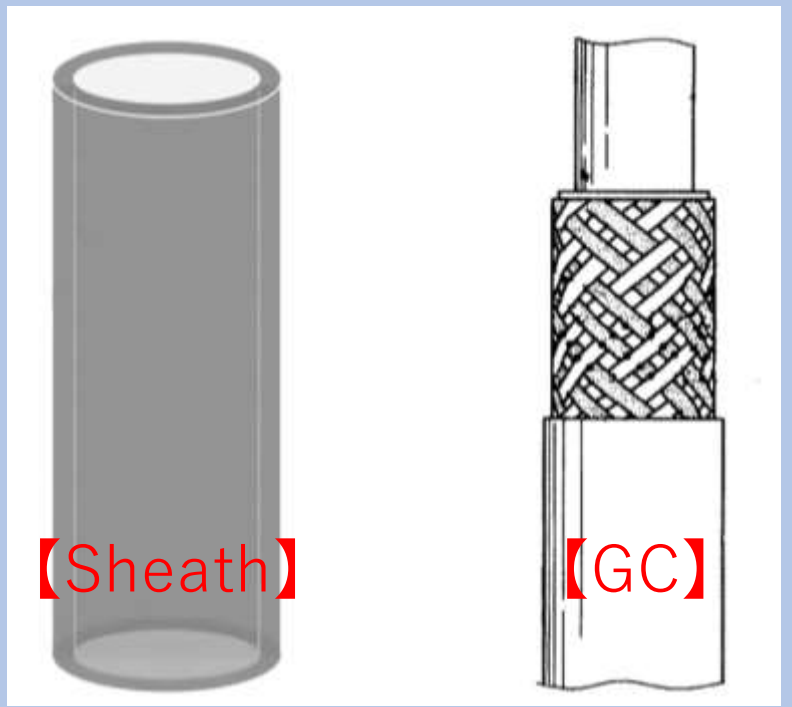
- Less Invasive?
- Larger GCs can be used



Advantages and Problems of Sheathless

【Demerits】

- Difficult to exchange GC (risk of hematoma)
- Is GC shape limited?
- The manipulation and supportability of GC will be reduced.



8Fr Sheathless GC TRI in Japan

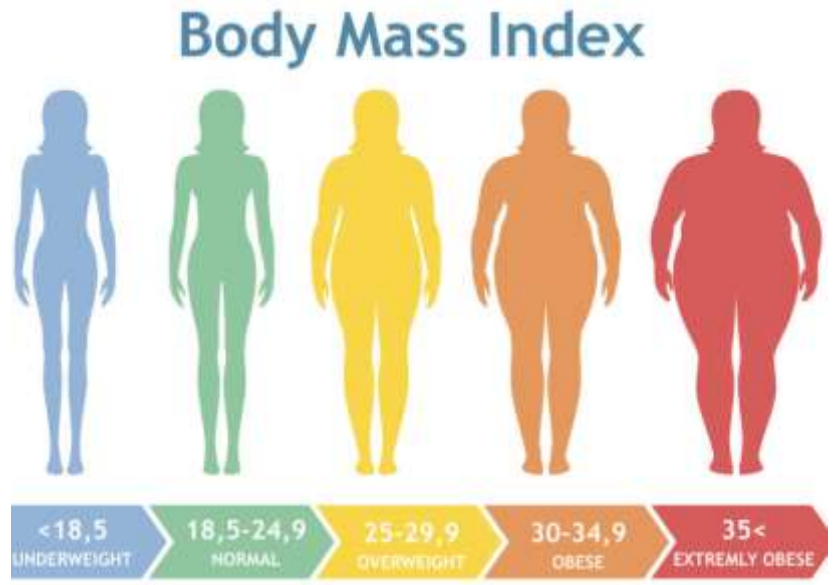
Ongoing Clinical Trial: 8 Fr Sheathless GC TRI in Japan

【Purpose】

Examine the safety and usefulness of 8 Fr Sheathless GC TRI for complex PCI (CTO, DCA, Rota, etc.)

【Inclusion Criteria】

1. BMI $\geq$ 21.5以上
2. 20 $\leq$ BMI $<$ 21.5 and Height $\geq$ 159cm: Male
3. 20 $\leq$ BMI $<$ 21.5 and Height $\geq$ 147cm以上: Female



Ongoing Clinical Trial: 8 Fr Sheathless GC TRI in Japan

【Exclusion Criteria】

1. Dialysis Patient
2. Anatomical Abnormality of RA
3. Weak Pulsation of RA

【Primary Endpoint】

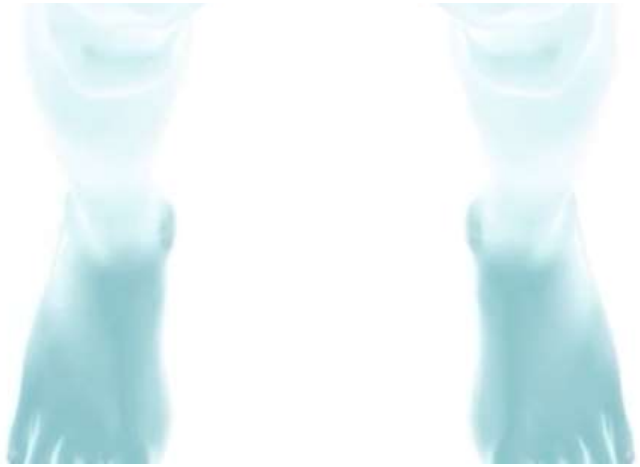
Effectiveness and Safety of 8Fr SLGC
Availability of 8Fr SLGC and Relation to RA diameter

【Secondary Endpoint】

1. Effectiveness of Nicorandil
2. Patency of RA
3. Relationship between RAO and pain during procedure

Ongoing Clinical Trial: 8 Fr Sheathless GC TRI in Japan

The Results will be soon !



Summary of Results

・The transradial 8Fr sheathless GC approach may be useful method in DCA/CTO to reduce complication when the size of radial artery is appropriate.

THANK YOU
FOR YOUR ATTENTION