

Radial Approach for Complex LM Lesions

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**Tsukuba Heart Center
Tsukuba Memorial Hospital**

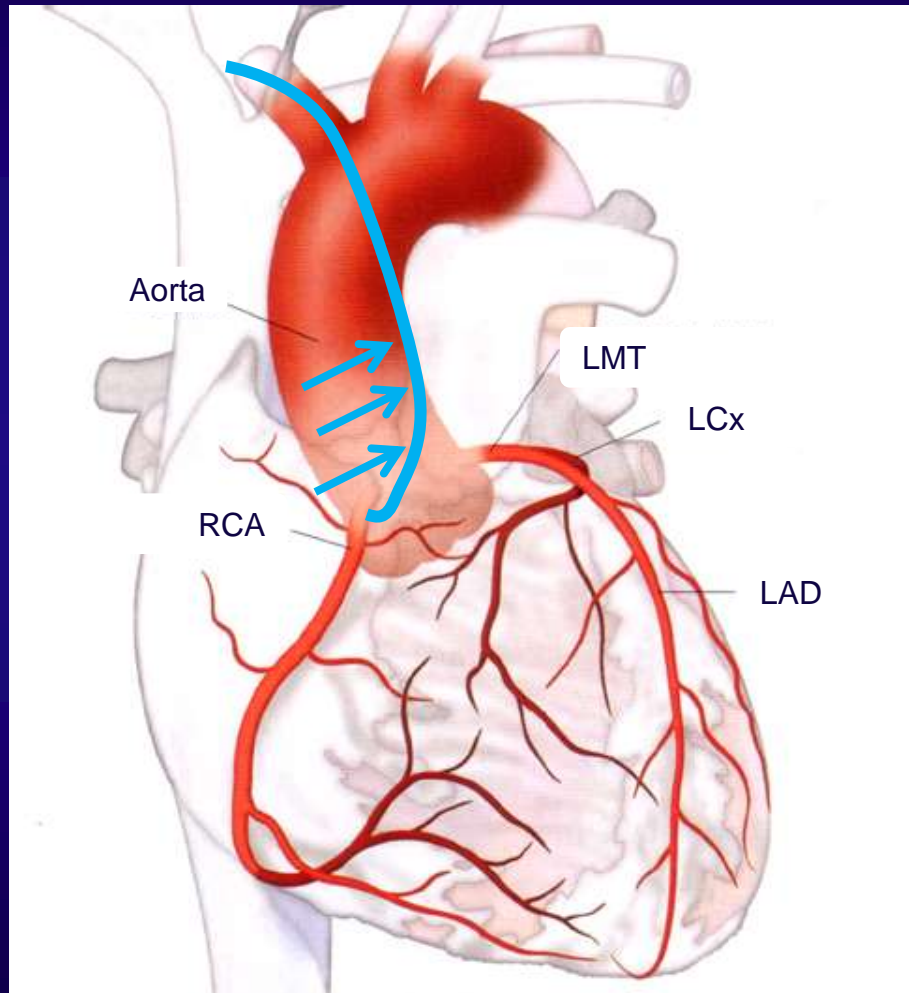
Disclosure Statement of Financial Interest

I, Kenji Wagatsuma DO NOT have a financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation

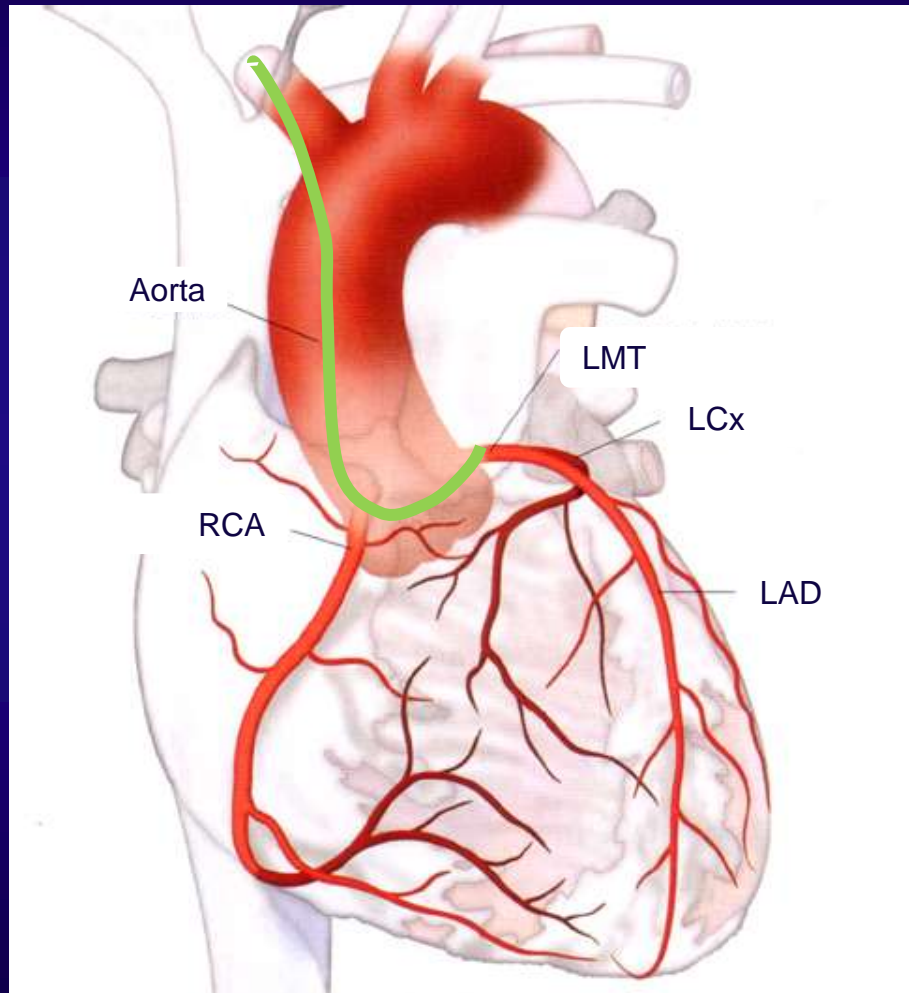
Possible technical issues of TRI in LM PCI

- Less back up support ?
Heavily calcified lesion
Angulated LCx
- Use 6Fr. guiding catheter mainly
Bifurcation treatment

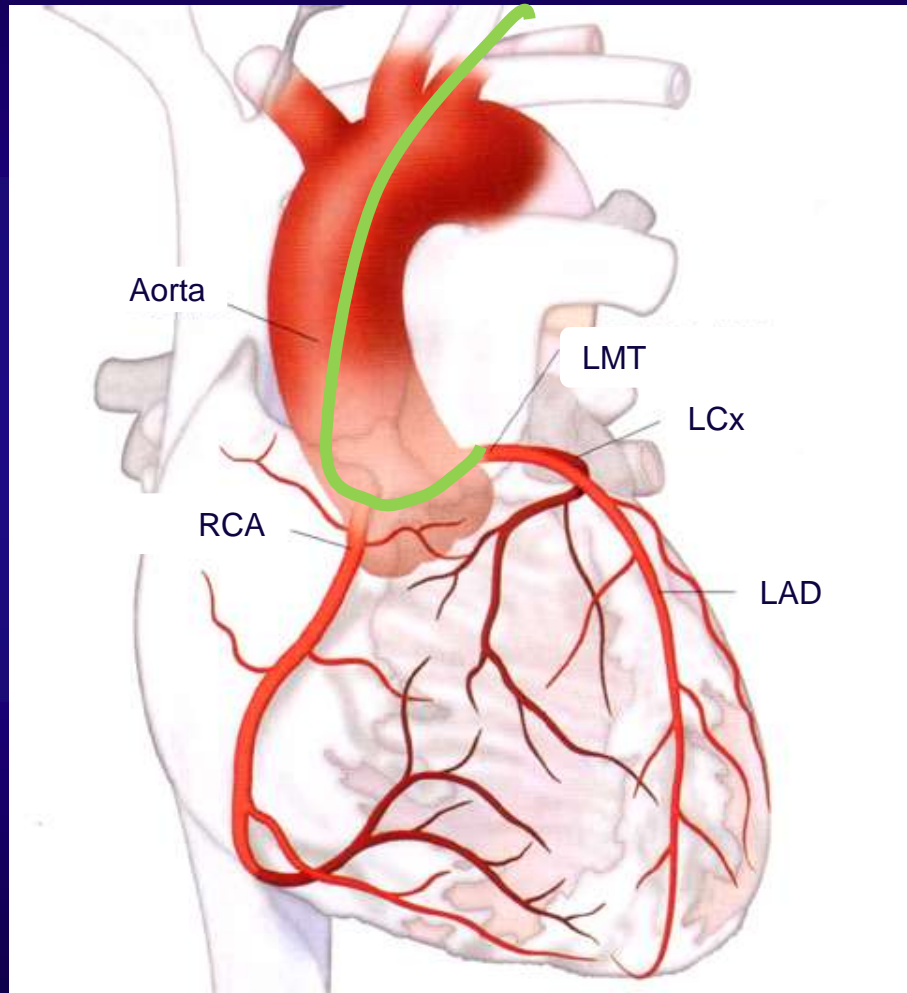
TRI for LM lesions: Guide back-up support is insufficient?



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Possible technical issues of TRI in LM PCI

- Less back up support ?
Heavily calcified lesion
Angulated LCx

**We need to learn the key techniques which
provide us the strong back up support**

Balloon Anchoring Technique

Mother Child Catheter Technique

Possible technical issues of TRI in LM PCI

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Heavily calcified lesion

Angulated LCx

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Balloon Anchoring Technique

Mother Child Catheter Technique

Balloon Anchoring Technique in TRI

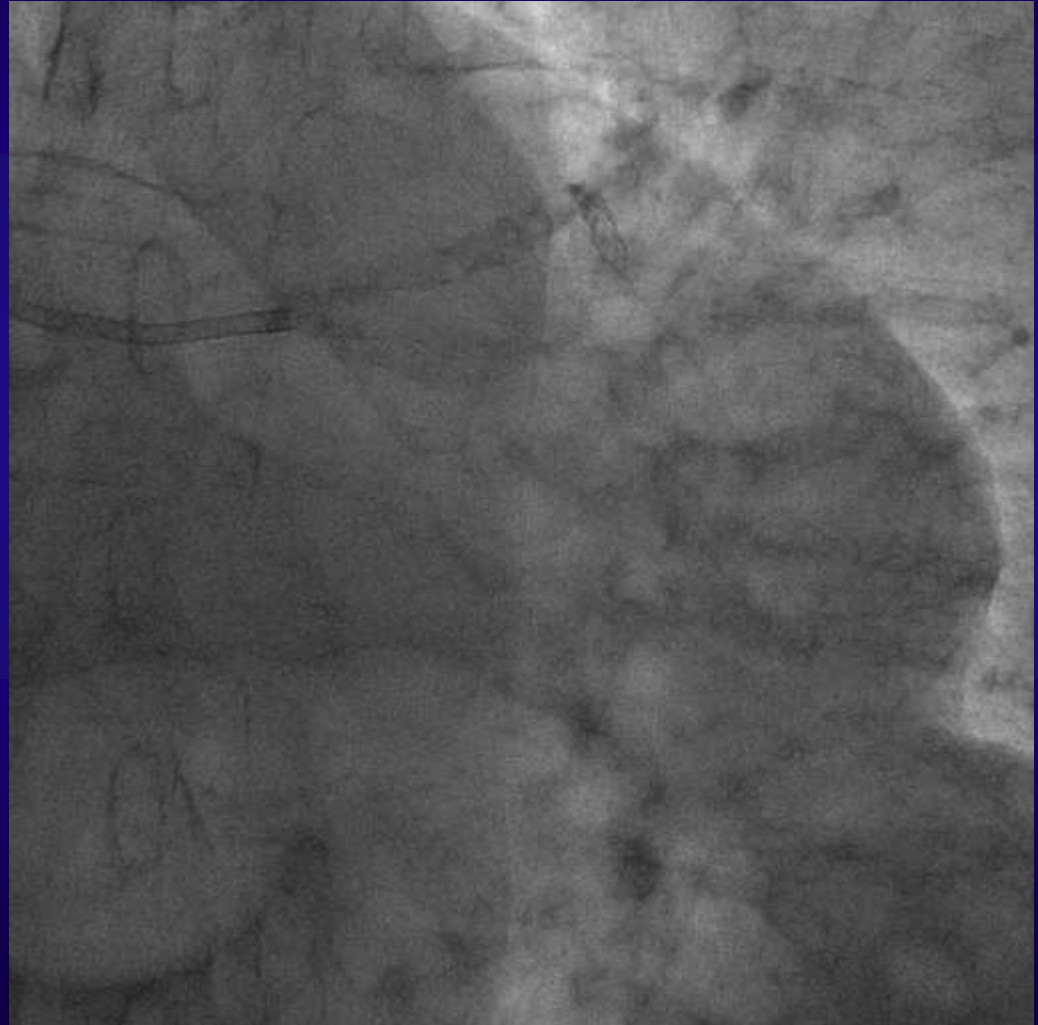
Case

AP, 81 y.o. Male

Lt. radial approach

GC: 6Fr. VL3.5 SH

(Mach 1 BSC)



Balloon Anchoring Technique in TRI

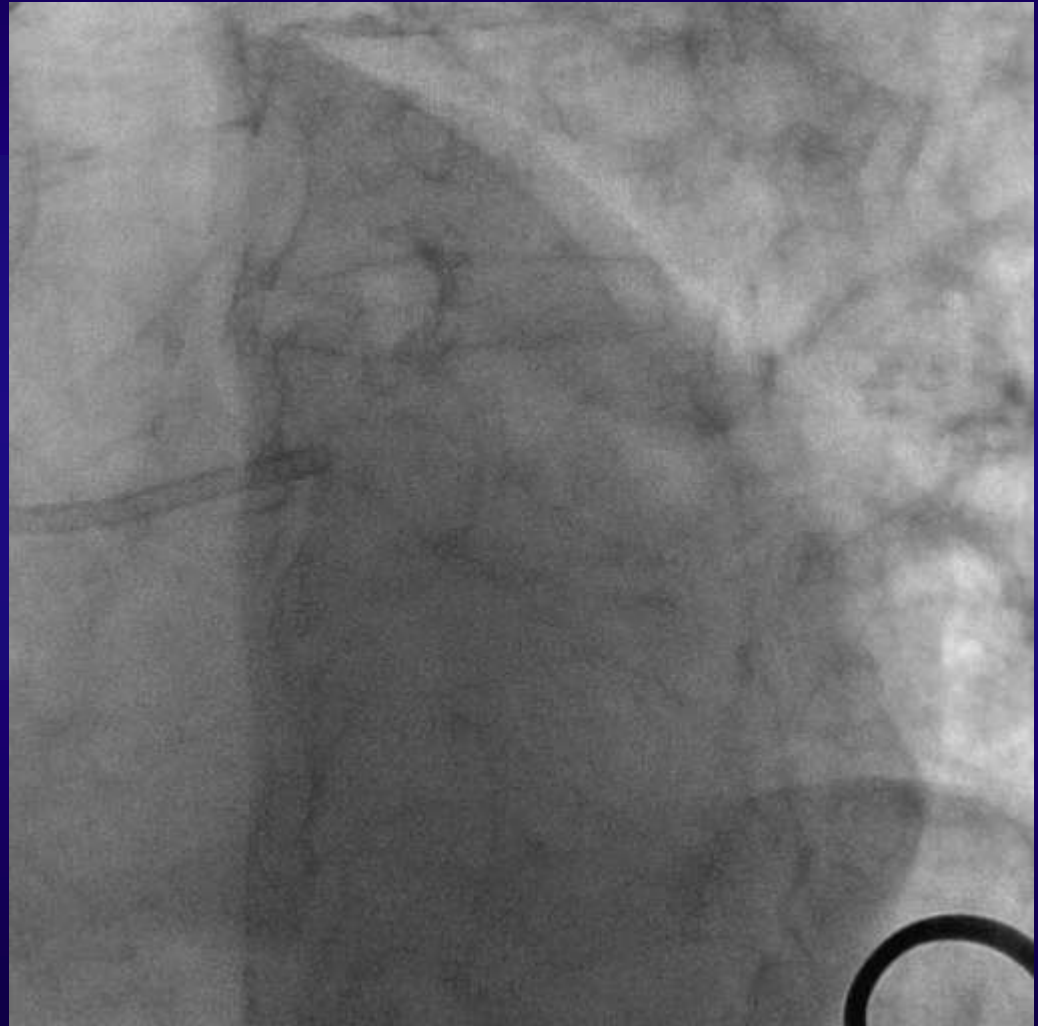
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Balloon Anchoring Technique in TRI

Case

AP, 81 y.o. Male

Lt. radial approach

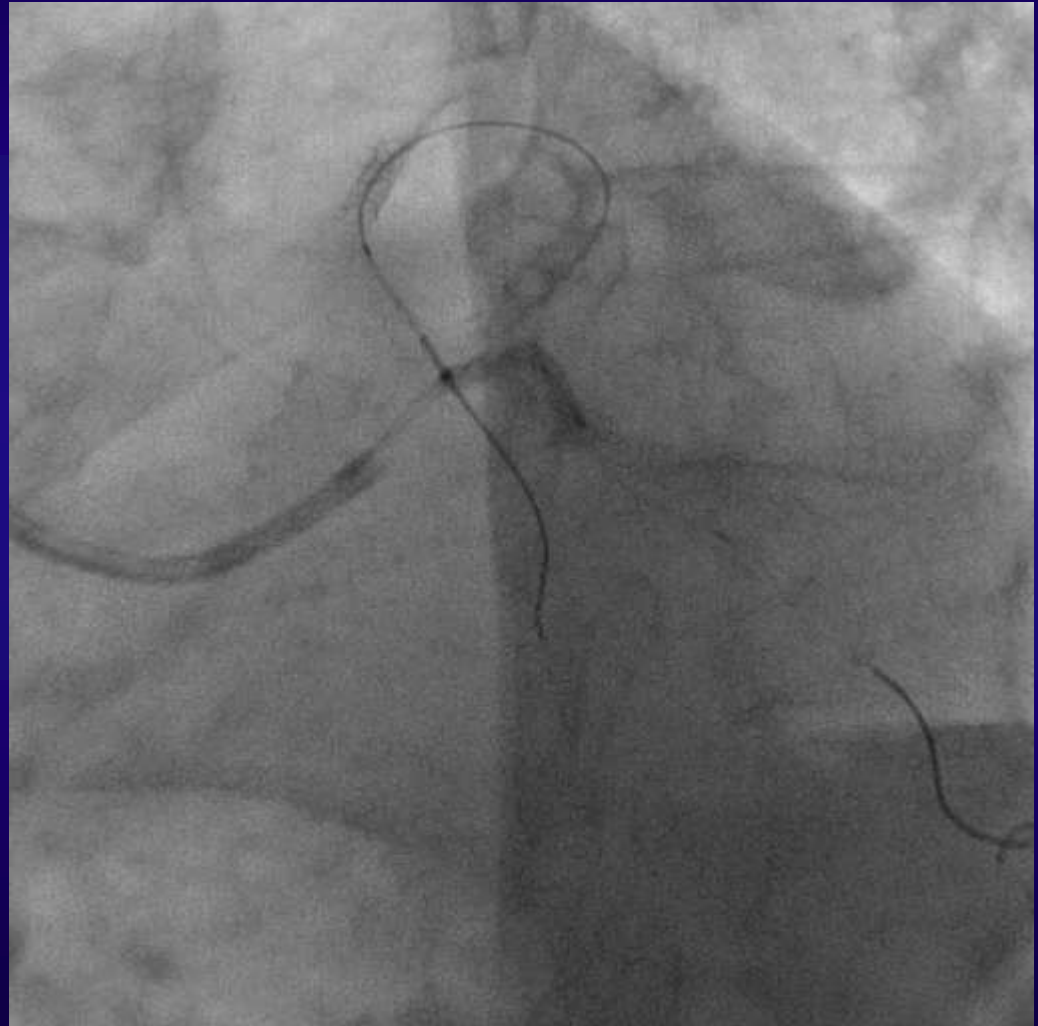
GC: 6Fr. VL3.5 SH

(Mach 1 BSC)

**GW: BMW universal II x2
(Abbott Vascular)**

Balloon: 2.25/15 mm

Hiryu (Terumo)



Balloon Anchoring Technique in TRI

Case

AP, 81 y.o. Male

Lt. radial approach

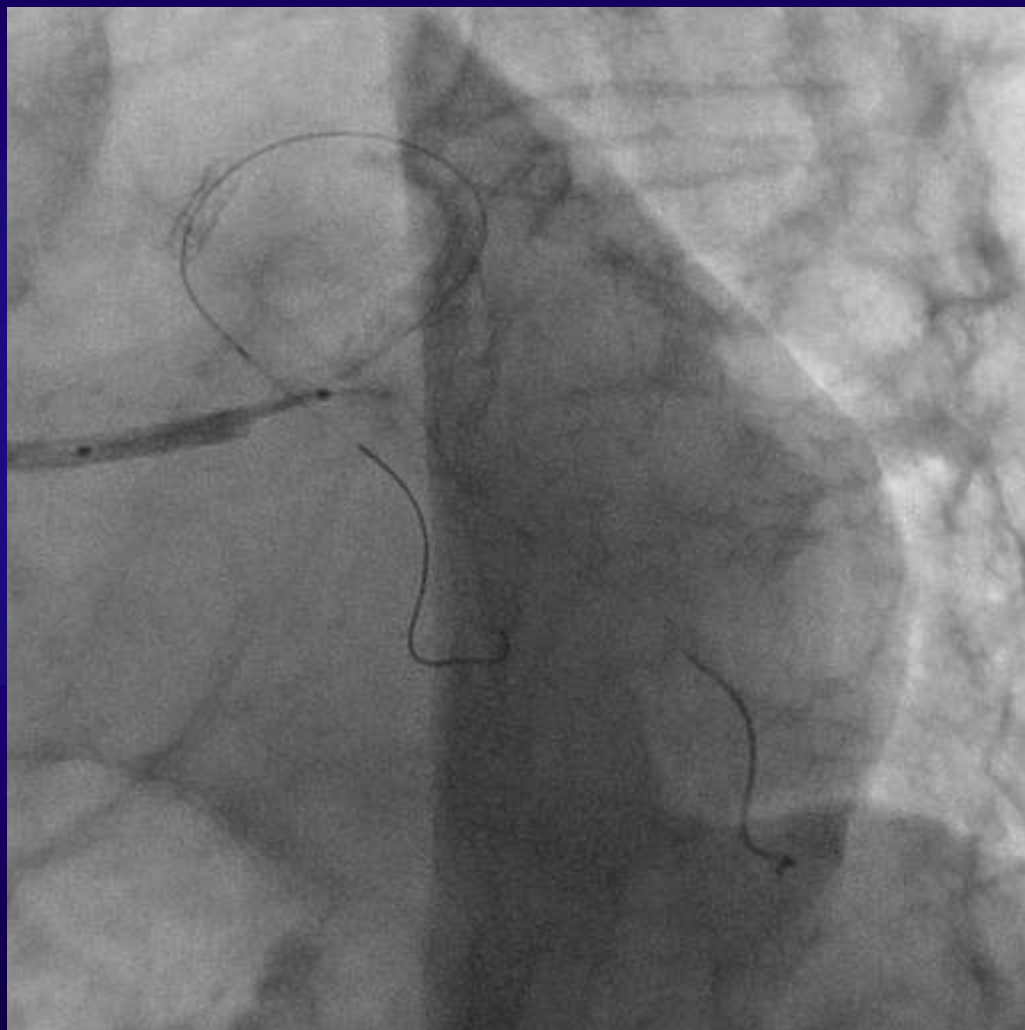
GC: 6Fr. VL3.5 SH

(Mach 1 BSC)

GW: BMW universal II x2
(Abbott Vascular)

Stent: 2.25/16 mm

Promus Element (BSC)



Balloon Anchoring Technique in TRI

Case

AP, 81 y.o. Male

Lt. radial approach

GC: 6Fr. VL3.5 SH

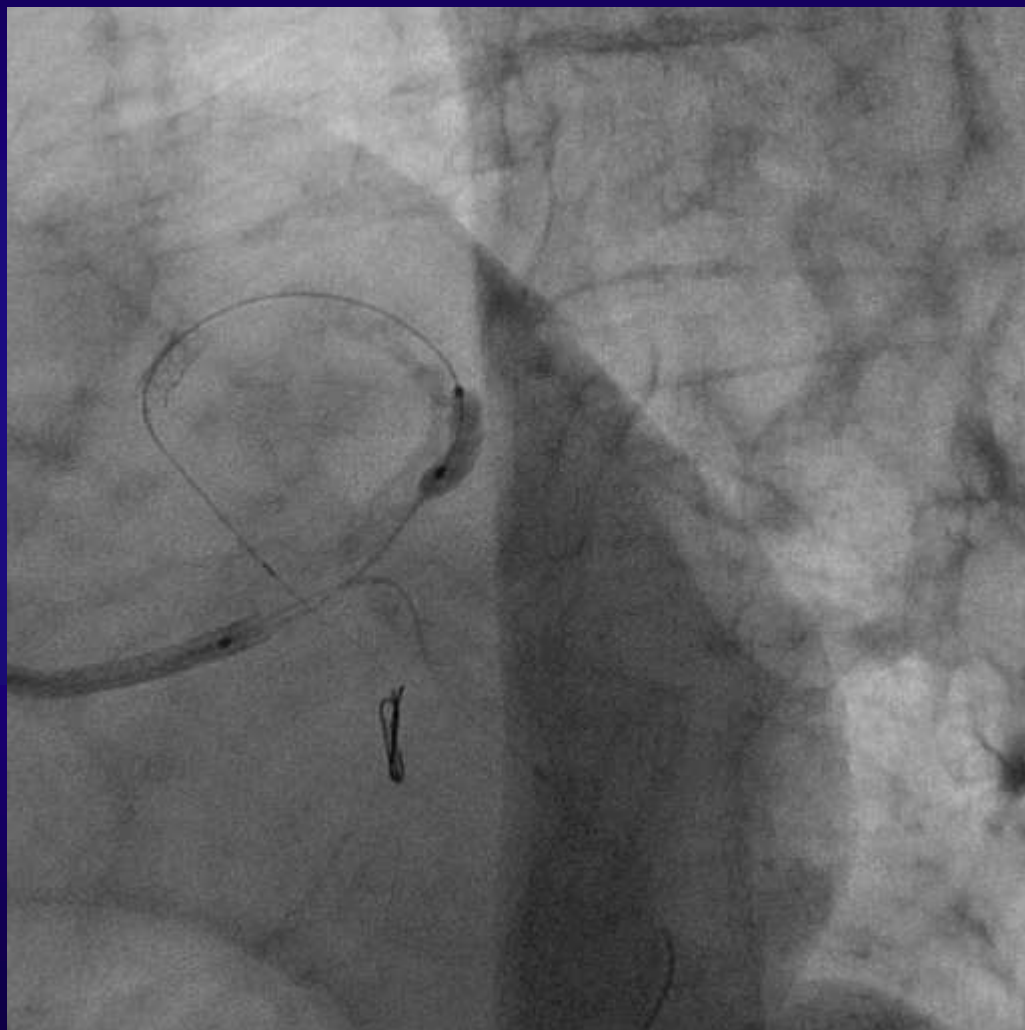
(Mach 1 BSC)

**GW: BMW universal II x2
(Abbott Vascular)**

Stent: 2.25/16 mm

Promus Element (BSC)

**Anchor balloon:
2.5/15mm Tazuna
(Terumo)**



Balloon Anchoring Technique in TRI

Case

AP, 81 y.o. Male

Lt. radial approach

GC: 6Fr. VL3.5 SH

(Mach 1 BSC)

Final result



Possible technical issues of TRI in LM PCI

- Less back up support ?

Heavily calcified lesion

Angulated LCx

We need to learn the key techniques which
provide us the strong back up support

Balloon Anchoring Technique

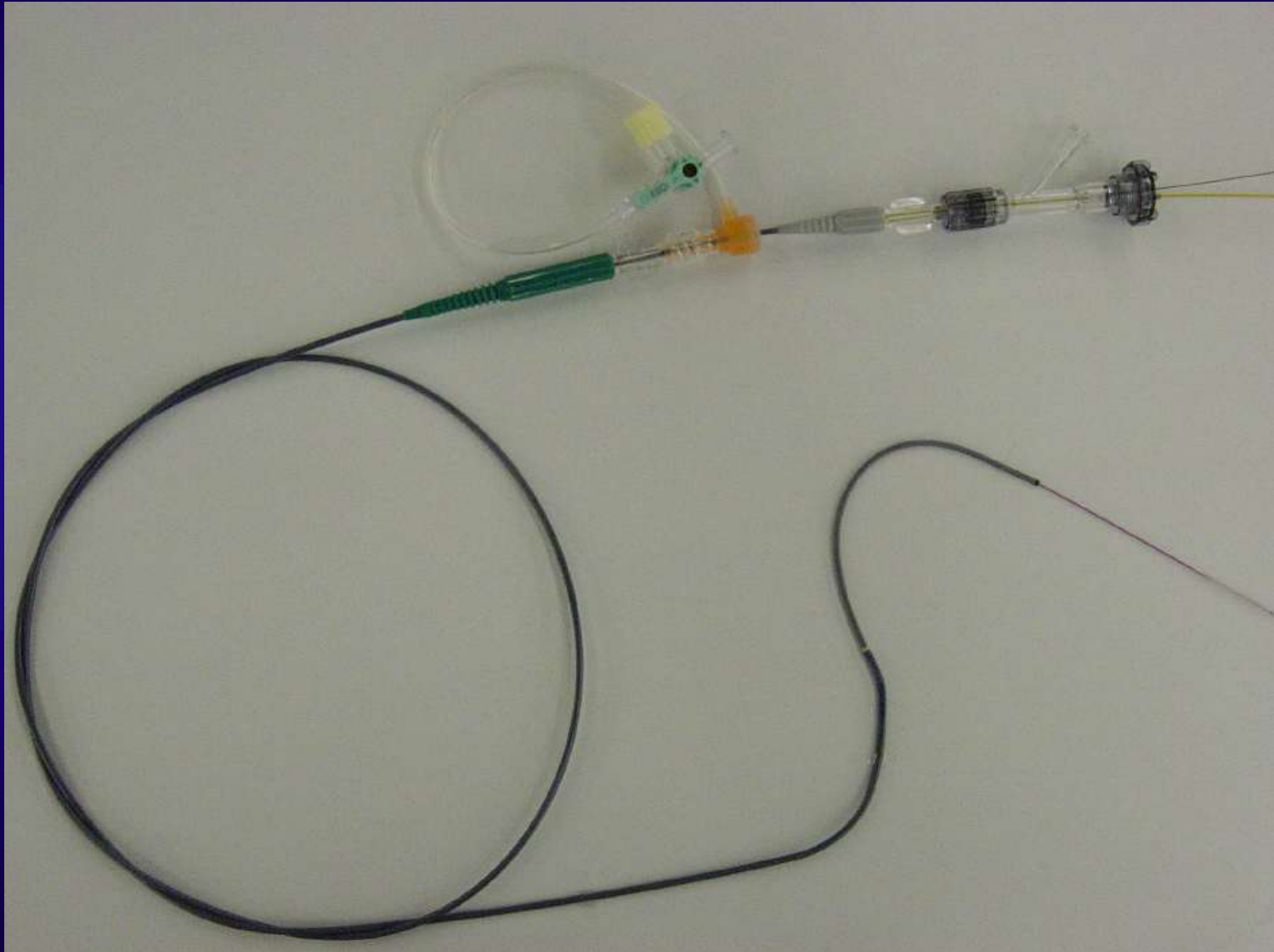
Mother Child Catheter Technique

Mother-Child Catheter Technique in TRI

Advantage over Anchor Balloon Technique

- No need for appropriate side branch**
- Prevent dislodged / deformed stent**

“ 5 in 6 “ system



KIWAMI (Terumo)

120cm



Inner Diameter 0.050" (1.27mm) Outer Diameter 4Fr (1.43mm)



"4 in 6"

TRI for Heavily Calcified Lesions

Case

UAP, 83 y.o. Female

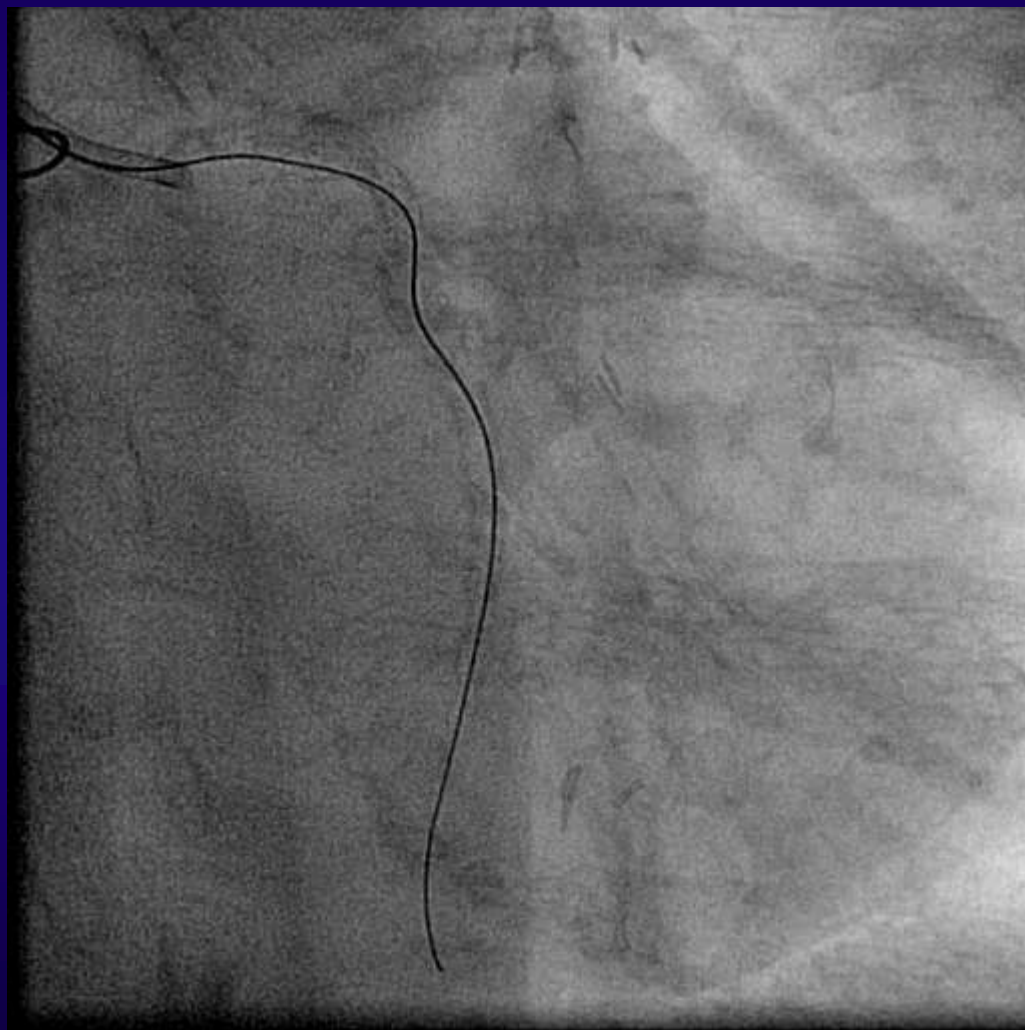
Rt. radial approach

GC: 6Fr. VL3.0 SH

(Mach 1, BSC)

GW: XT-A

(ASAHI INTECC)



TRI for Heavily Calcified Lesions

Case

UAP, 83 y.o. Female

Rt. radial approach

GC: 6Fr. VL3.0 SH

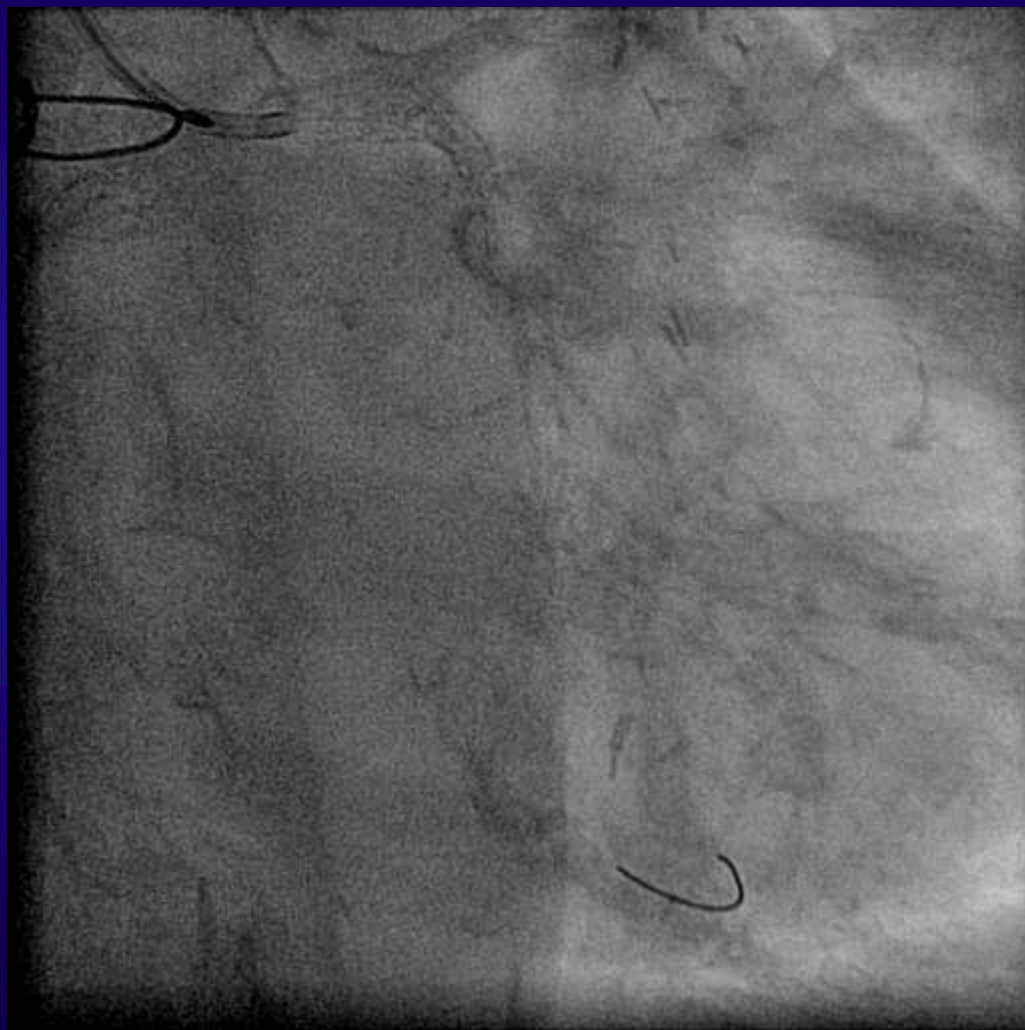
(Mach 1, BSC)

GW: RotaWire™ Floppy
(BSC)

Rotablator:

RotaLink™ Plus

Burr size: 1.25mm
(BSC)



TRI for Heavily Calcified Lesions

Case

UAP, 83 y.o. Female

Rt. radial approach

GC: 6Fr. VL3.0 SH

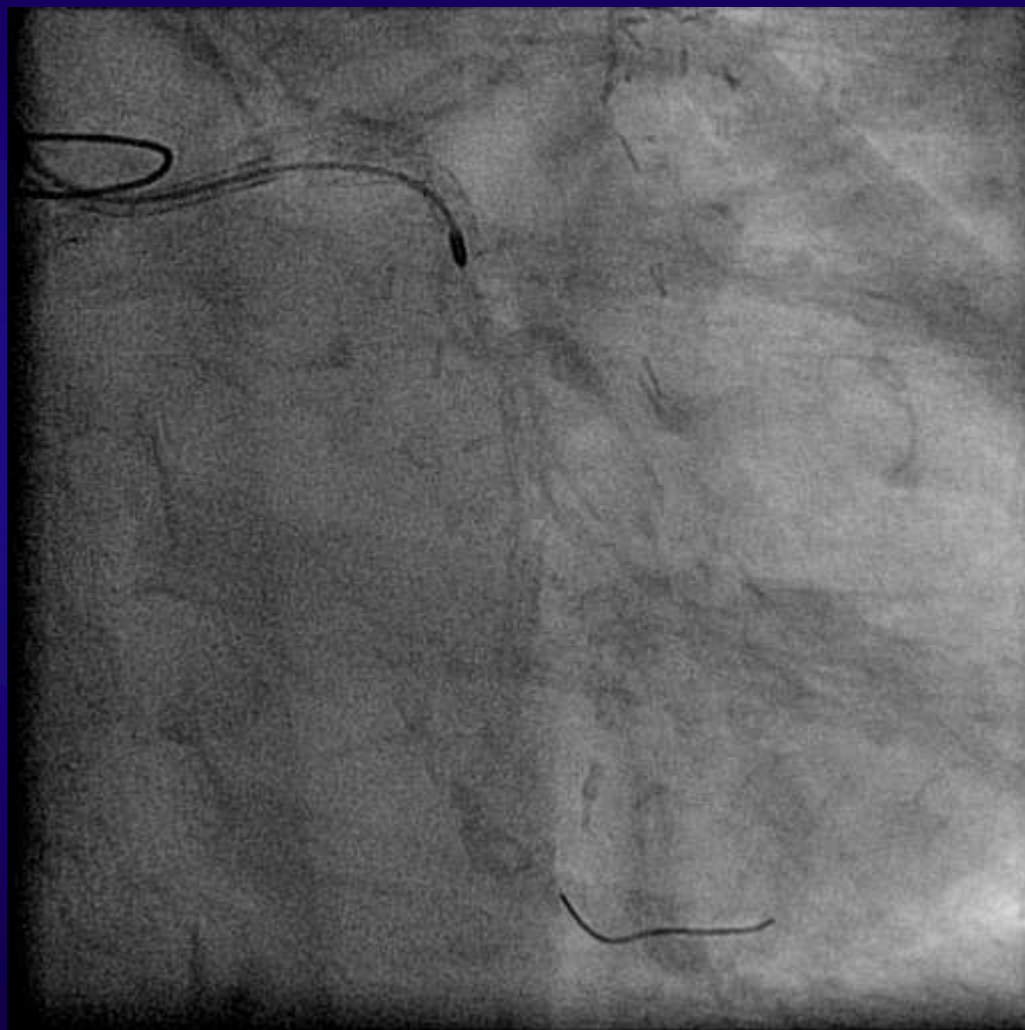
(Mach 1, BSC)

*GW: RotaWire™ Floppy
(BSC)*

Rotablator:

RotaLink™ Plus

*Burr size: 1.25mm
(BSC)*



TRI for Heavily Calcified Lesions

Case

UAP, 83 y.o. Female

Rt. radial approach

GC: 6Fr. VL3.0 SH

(Mach 1, BSC)

***GW: RotaWire™ Floppy
(BSC)***

Rotablator:

RotaLink™ Plus

***Burr size: 1.5mm
(BSC)***



TRI for Heavily Calcified Lesions

Case

UAP, 83 y.o. Female

Rt. radial approach

GC: 6Fr. VL3.0 SH

(Mach 1, BSC)

**GW: BMW Universal II
(Abbott Vascular)**

Balloon:

2.5/15 mm Hiryu

(Terumo)

**Inner GC: 4Fr. KIWAMI
(Terumo)**



TRI for Heavily Calcified Lesions

Case

UAP, 83 y.o. Female

Rt. radial approach

GC: 6Fr. VL3.0 SH

(Mach 1, BSC)

GW: BMW Universal II
(Abbott Vascular)

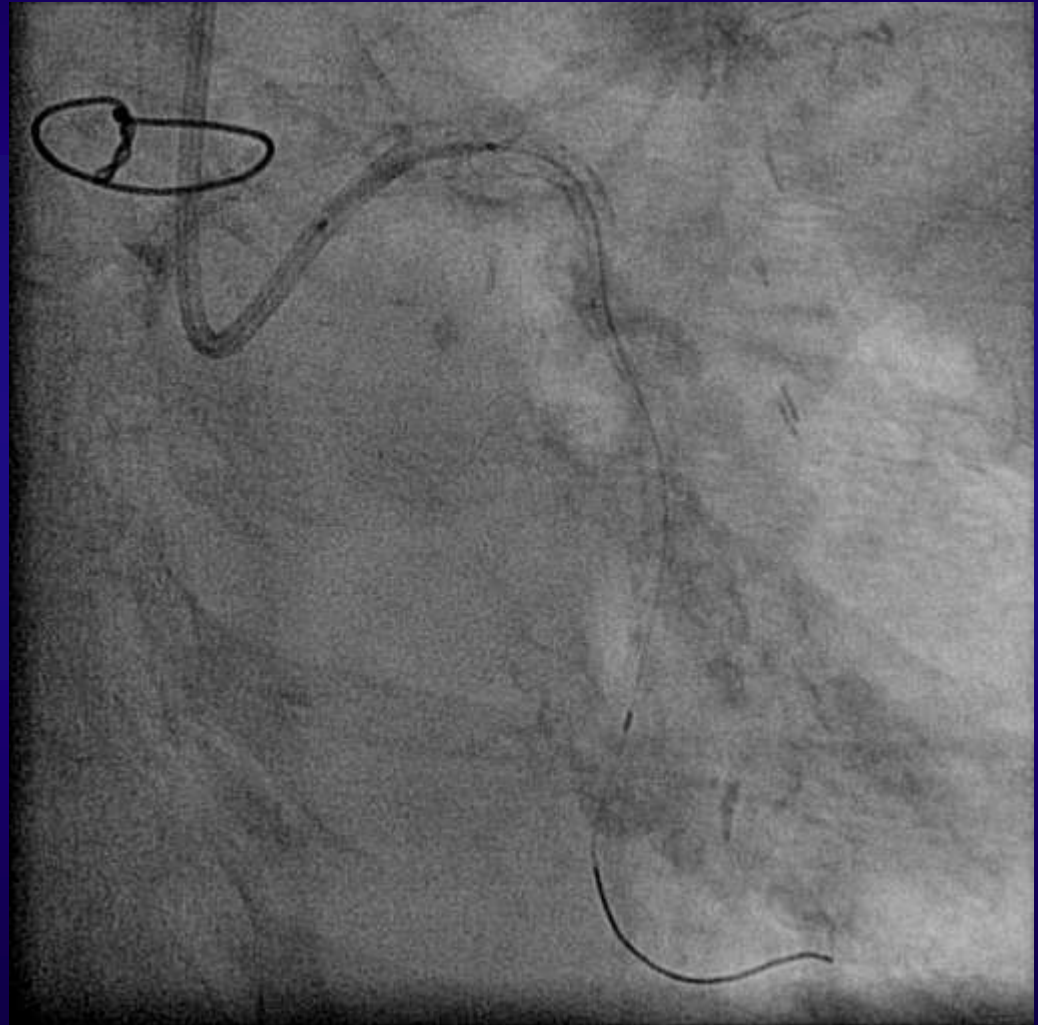
Stent:

2.5/14 mm Resolute

Integrity

(Medtronic)

Inner GC: 4Fr. KIWAMI
(Terumo)



TRI for Heavily Calcified Lesions

Case

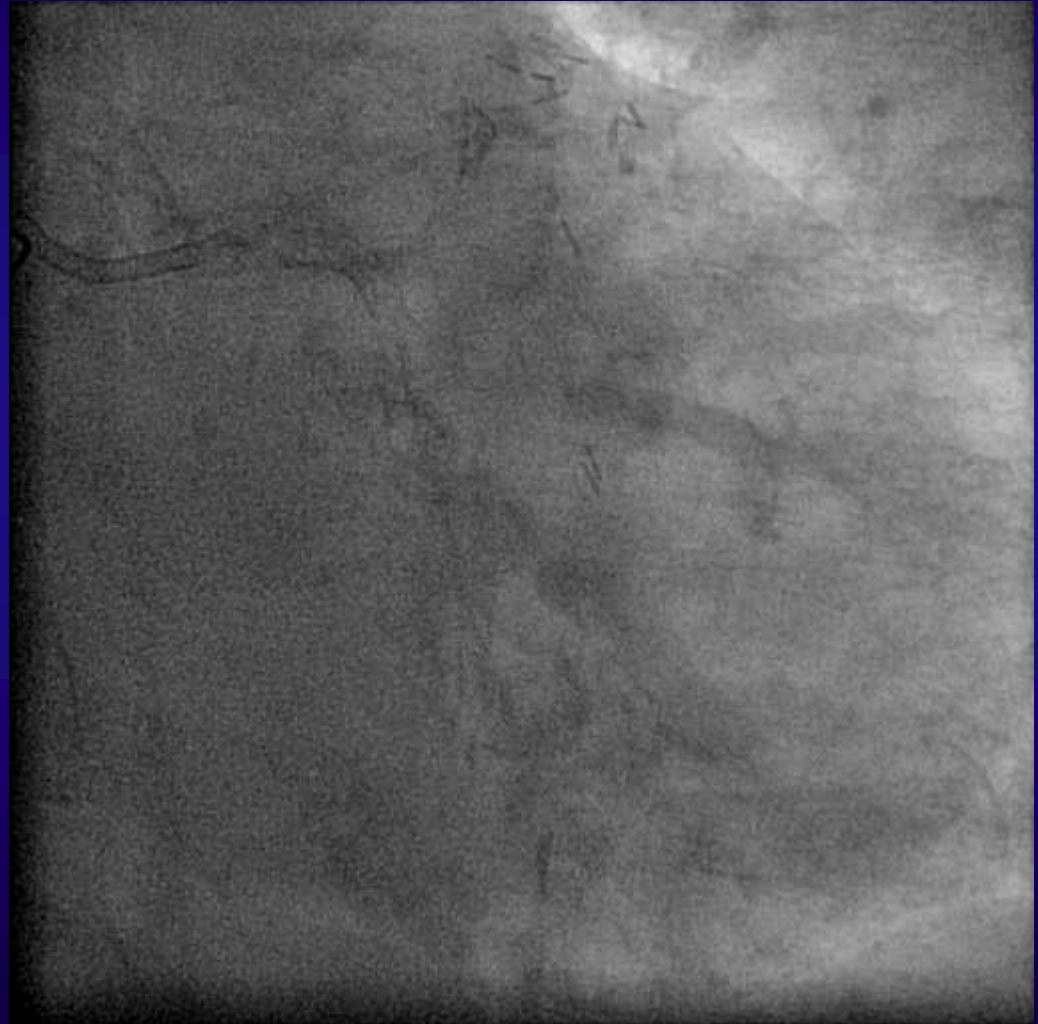
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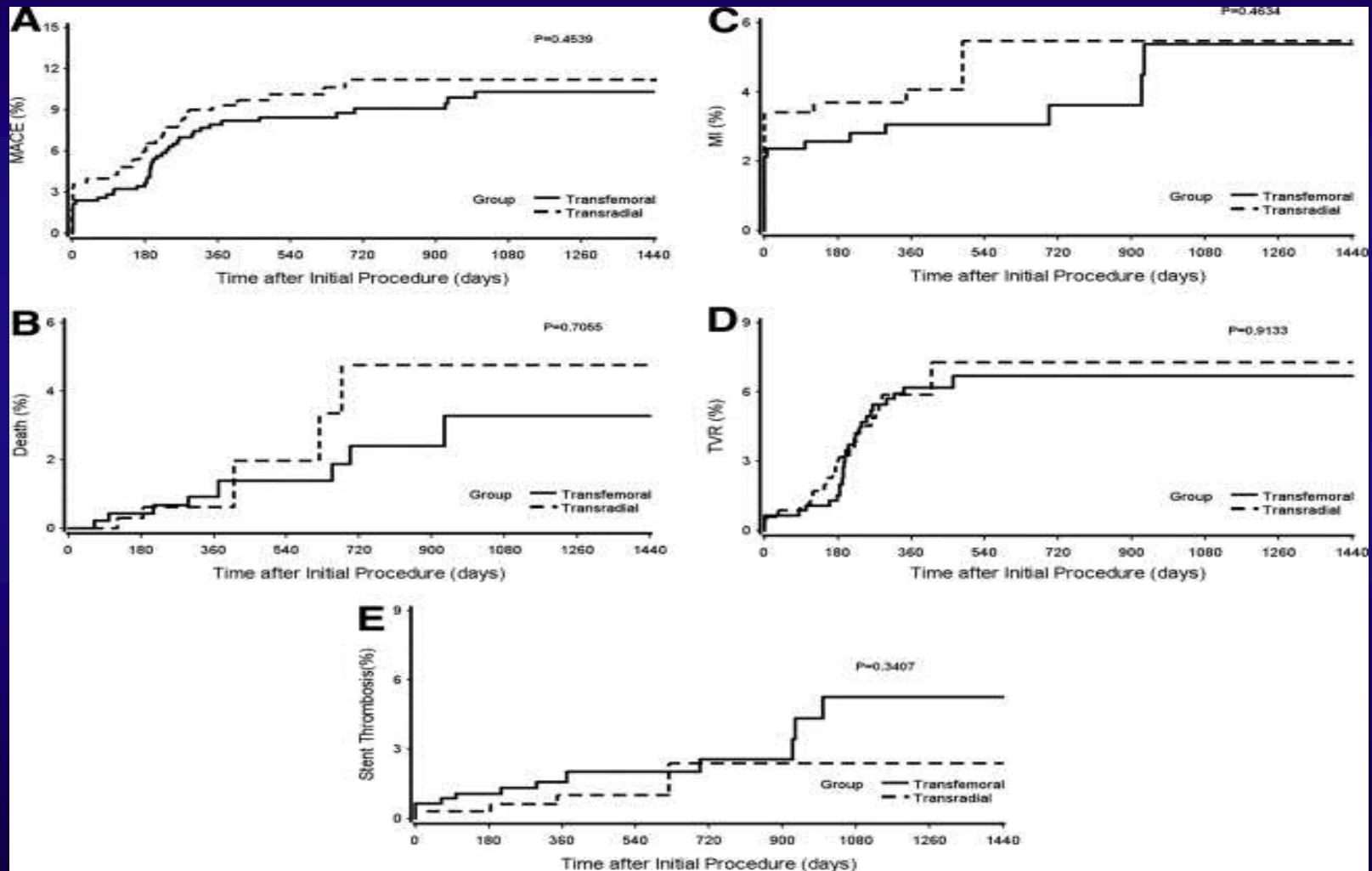
Final result



Possible technical issues of TRI in LM PCI

- Less back up support ?
Heavily calcified lesion
Angulated LCx
- Use 6Fr. guiding catheter mainly
Bifurcation treatment

Transradial Versus Transfemoral Method of Percutaneous Coronary Revascularization for Unprotected Left Main Coronary Artery Disease: Comparison of Procedural and Late-Term Outcomes



Transradial Versus Transfemoral Method of Percutaneous Coronary Revascularization for Unprotected Left Main Coronary Artery Disease: Comparison of Procedural and Late-Term Outcomes

	Transradial (n = 353)	Transfemoral (n = 468)	p Value
UPLM treatment characteristics			
LM PCI technique (%)			<0.01
Single stent	256 (81)	290 (62)	
Bifurcation stenting	67 (19)	178 (38)	
DES type			0.11
Sirolimus-eluting	280 (79)	349 (75)	
Paclitaxel-eluting	73 (21)	119 (25)	
Guiding catheter size, F	6.1 ± 0.4	6.9 ± 0.8	<0.01
Treated lesions/patient	1.7 ± 0.3	1.7 ± 0.3	0.86
Diameter stenosis before (%)	80.6 ± 15.6	82.1 ± 13.0	0.21
Pre-dilation (%)	275 (78)	393 (84)	0.08
UPLM stent diameter, mm	3.51 ± 0.47	3.59 ± 0.49	0.51
UPLM stent length, mm	27.3 ± 16.6	27.8 ± 15.8	0.67
Total stent length, mm	37.3 ± 15.3	37.6 ± 14.9	0.71
Maximal UPLM stent deployment pressure, atm	15.5 ± 3.6	15.3 ± 3.1	0.52
Overlapping stents (%)	88 (25)	145 (31)	0.06
Post-dilation (%)	251 (71)	357 (76)	0.12
Final kissing balloon (%)	176 (50)	346 (74)	<0.01

Cross-over single stenting vs crush stenting

	Single <i>n</i> = 34	Crush <i>n</i> = 66	<i>P</i> -value
Main vessel			
Stent size (mm)	2.92±0.48	3.03±0.40	n. s.
Maximal inflation pressure (atm)	17.2±2.6	17.0±2.2	n. s.
Side branch			
Stent size (mm)	-	2.62±0.24	
Balloon size (mm)	2.26±0.42	-	
Maximum inflation pressure (atm)	9.7±2.6	15.7±2.0	<0.05
KBT (%)	34 (100)	64 (97.0)	n. s.
KBT balloon size (mm)			
Main vessel	2.98±0.49	2.96±0.43	n. s.
Side branch	2.25±0.32	2.54±0.44	<0.05
KBT inflation pressure (atm)	8.5±1.2	8.4±1.2	n. s.
IVUS usage (%)	26 (76.5)	45 (68.2)	n. s.
Additional ballooning for main branch (%)	9 (26.4)	9 (13.6)	n. s.
Additional balloon inflation pressure (atm)	16.9±2.5	16.7±2.4	n. s.

Uchida Y, Wagatsuma K, et al: J Cardiol 2010; 55:180-188

Tsukuba Heart Center, Tsukuba Memorial Hospital

Case: Trifurcation LM lesion

Case

***UAP complicated by
cardiogenic shock,
71 y.o. Male***

Rt. radial approach

GC: 6Fr. VL3.0

(Mach 1, BSC)

IABP assisted

Post CABG

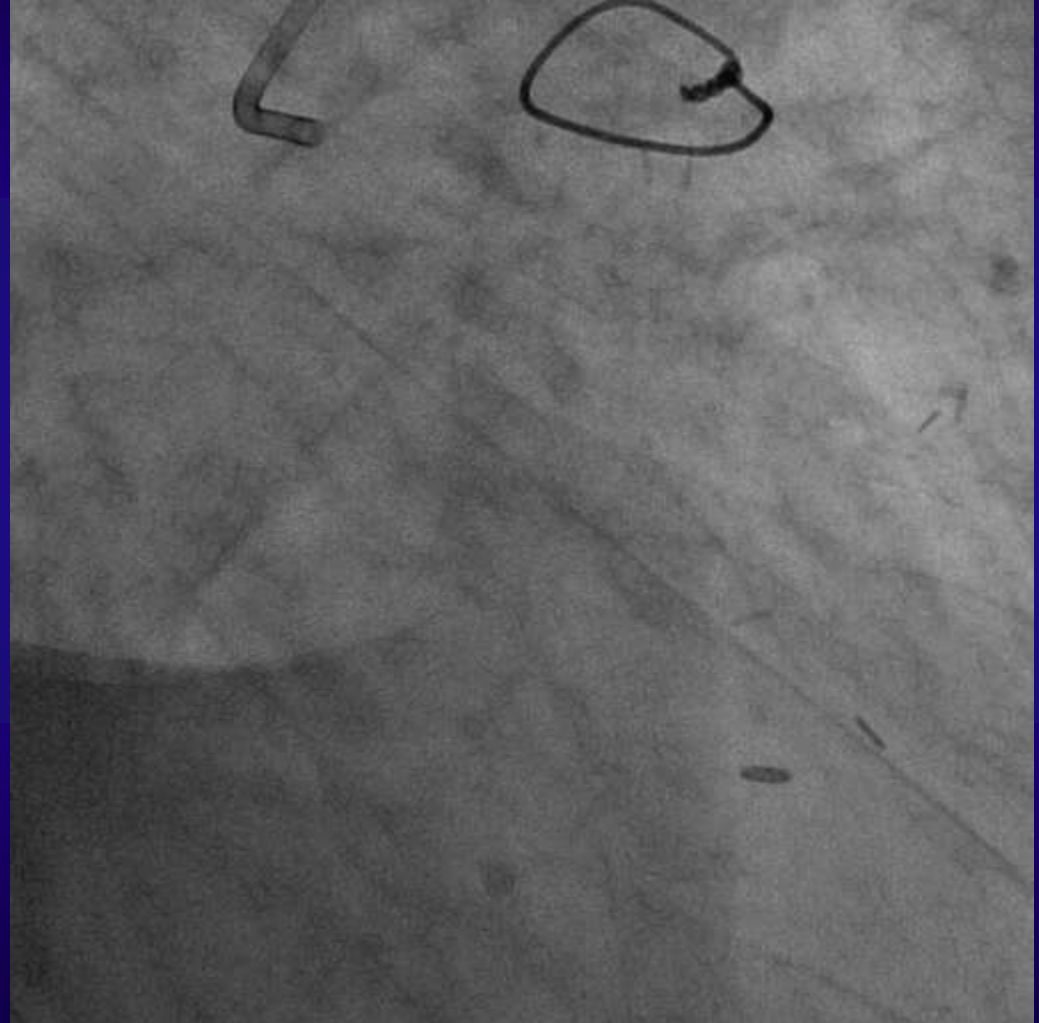
LITA-LAD: closed

SVG-IM: closed

SVG-OM: patent

Euro Score 17

SYNTAX Score 34



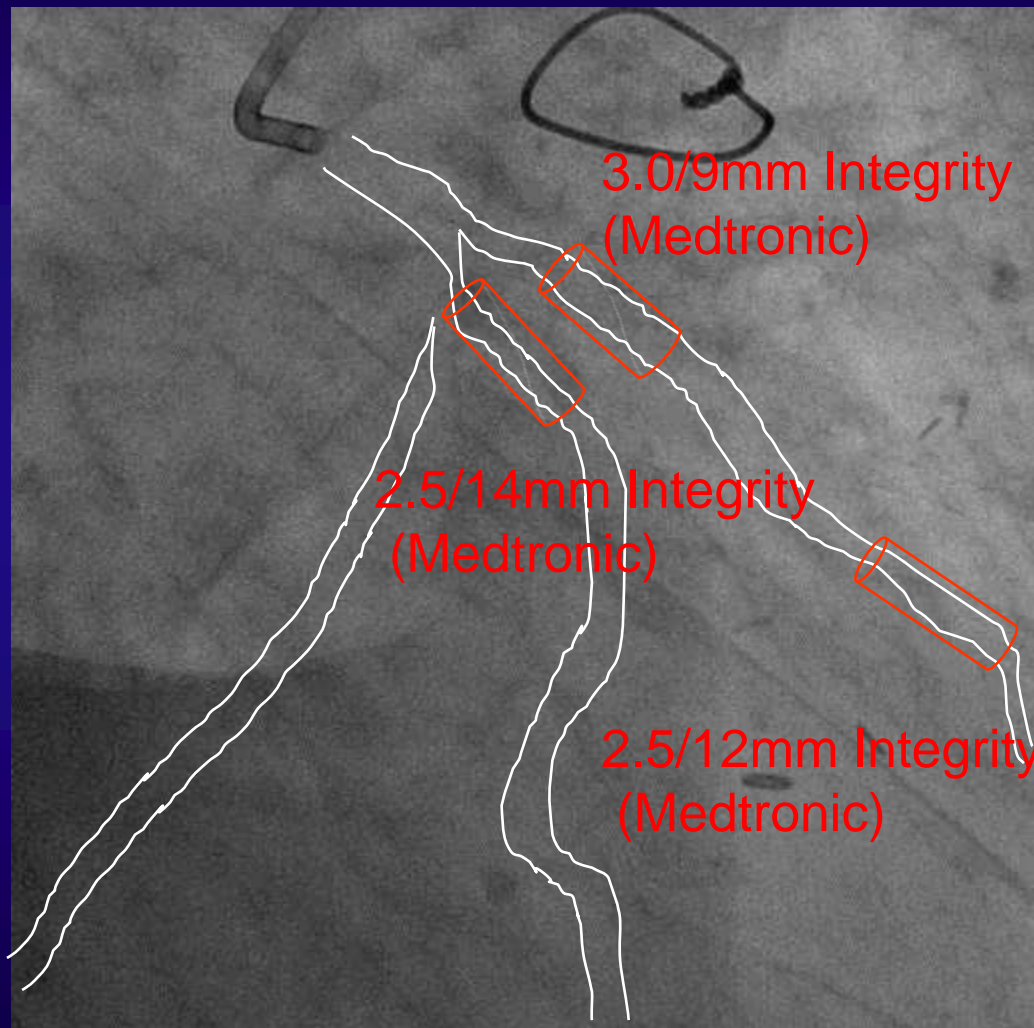
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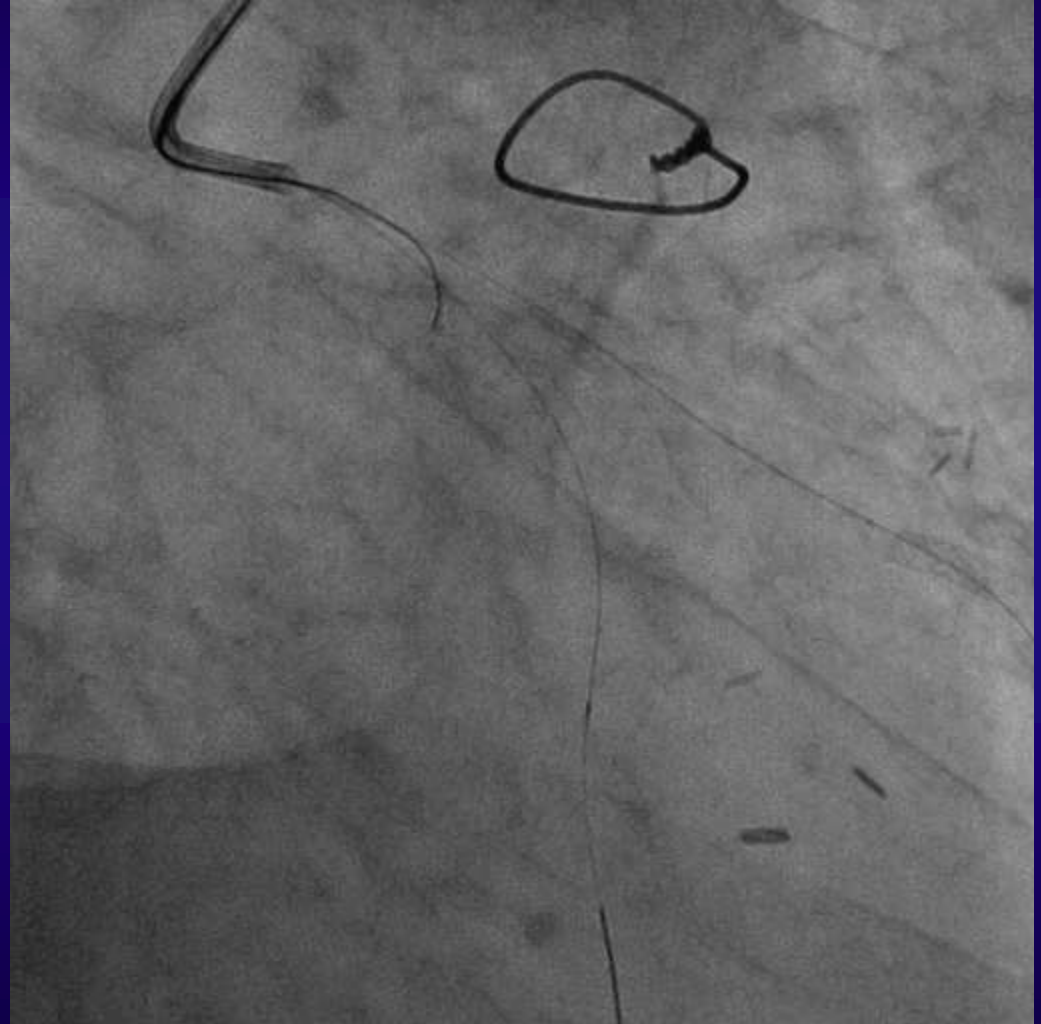
GC: 6Fr. VL3.0

(Mach 1, BSC)

GW:

***LAD, IM: BMW universal
II (Abbott Vascular)***

***LCx: XT-R (ASAHI
INTECC)***



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Rt. radial approach

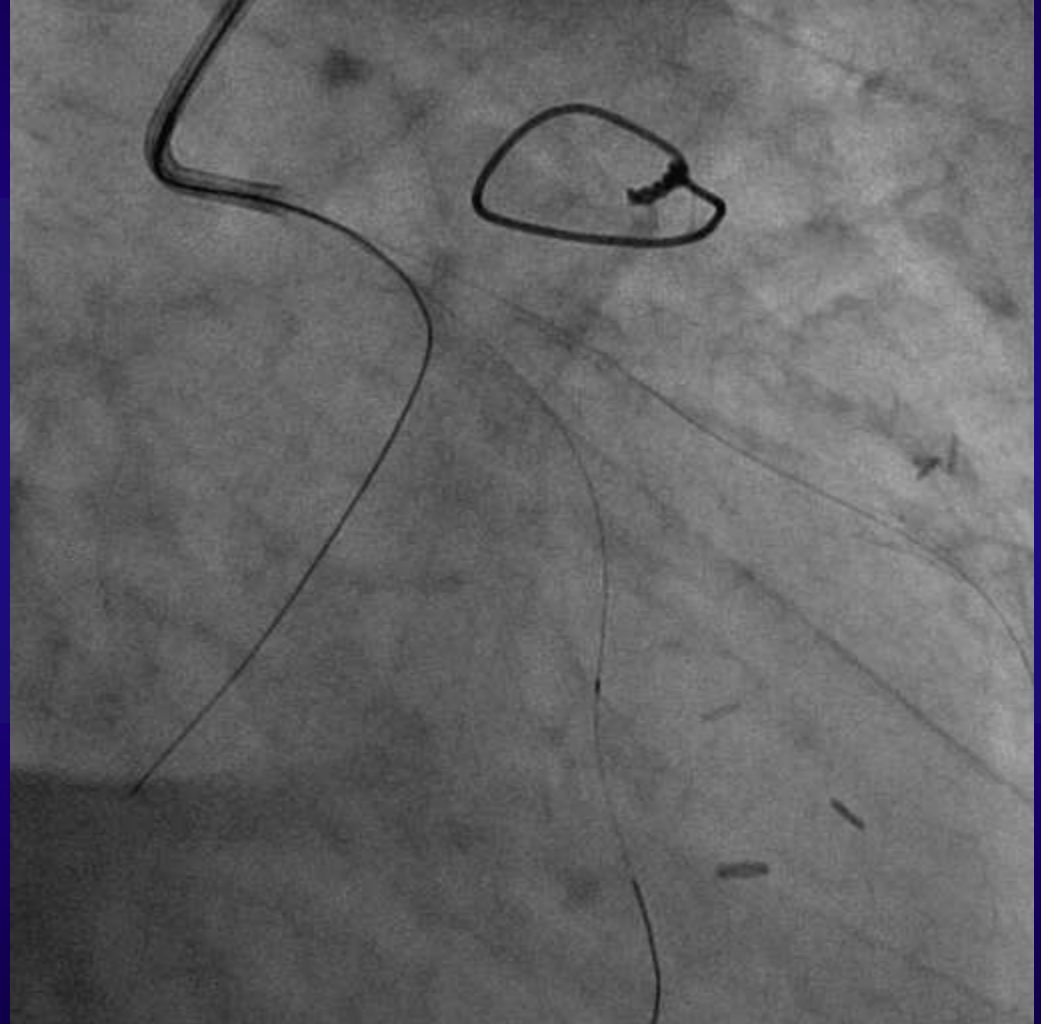
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Case: Trifurcation LM lesion

Case

***UAP complicated by
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71 y.o. Male***

Rt. radial approach

GC: 6Fr. VL3.0

(Mach 1, BSC)

***GW:BMW universal II x3
(Abbott Vascular)***

Balloon:

***2.0/15mm TREK (Abbott
Vascular)***



Case: Trifurcation LM lesion

Case

***UAP complicated by
cardiogenic shock,
71 y.o. Male***

Rt. radial approach

GC: 6Fr. VL3.0

(Mach 1, BSC)

GW:BMW universal II x3

(Abbott Vascular)

Stent: 2.25/12 mm

Promus Element

(BSC)

Balloon:

2.5/15 mm Tazuna

(Terumo)



Case: Trifurcation LM lesion

Case

***UAP complicated by
cardiogenic shock,
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Rt. radial approach

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GW:BMW universal II x3

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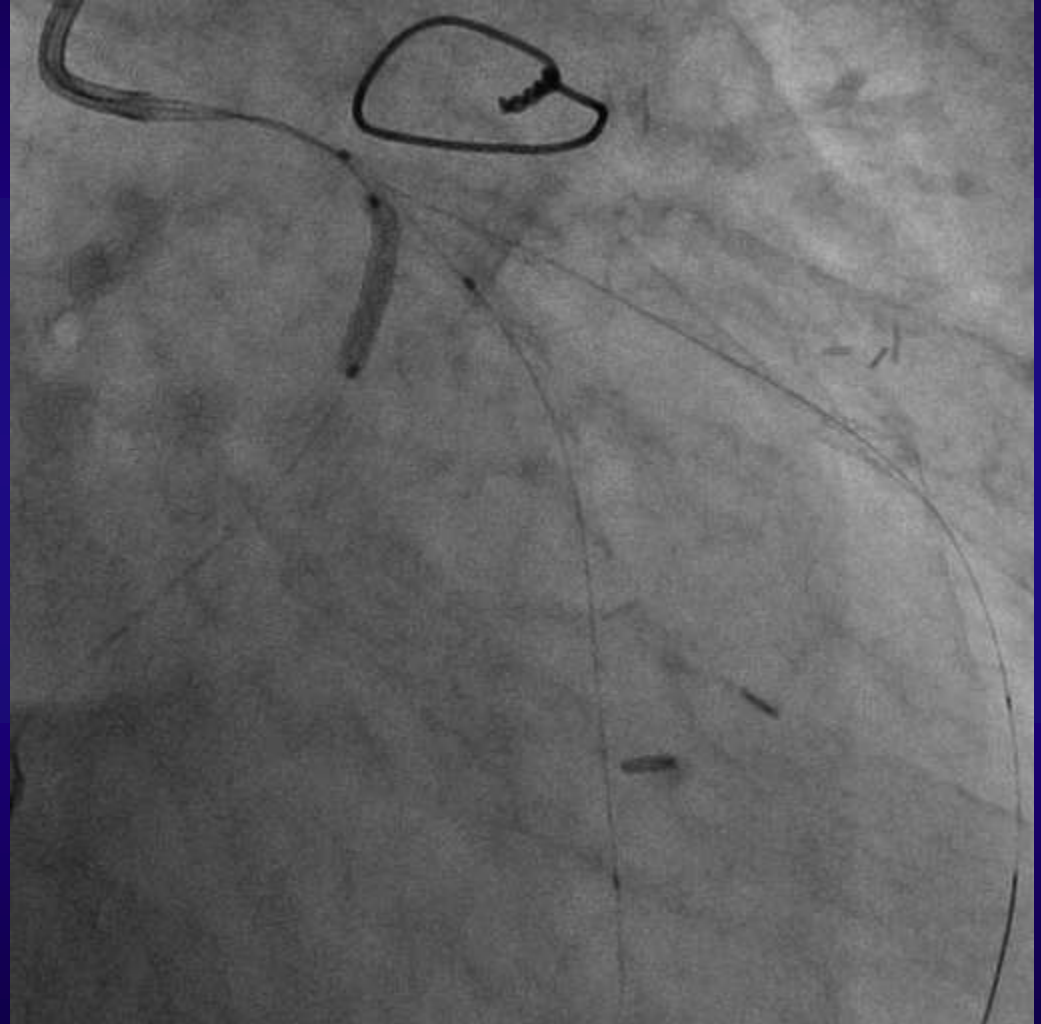
Promus Element

(BSC)

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(Terumo)



Case: Trifurcation LM lesion

Case

***UAP complicated by
cardiogenic shock,
71 y.o. Male***

Rt. radial approach

GC: 6Fr. VL3.0

(Mach 1, BSC)

GW:BMW universal II x2

(Abbott Vascular)

Stent: 2.25/12 mm

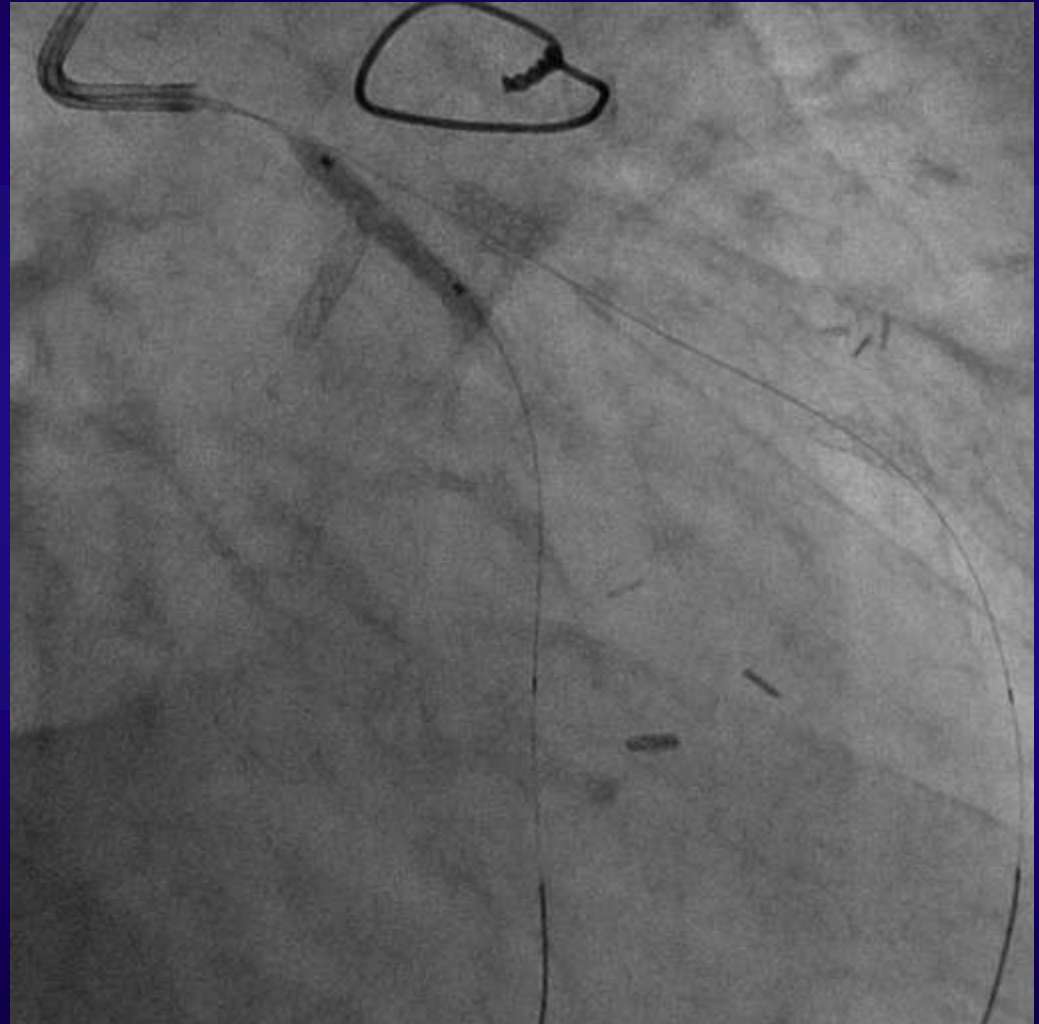
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GW:BMW universal II x2

(Abbott Vascular)

Stent: 2.5/28 mm

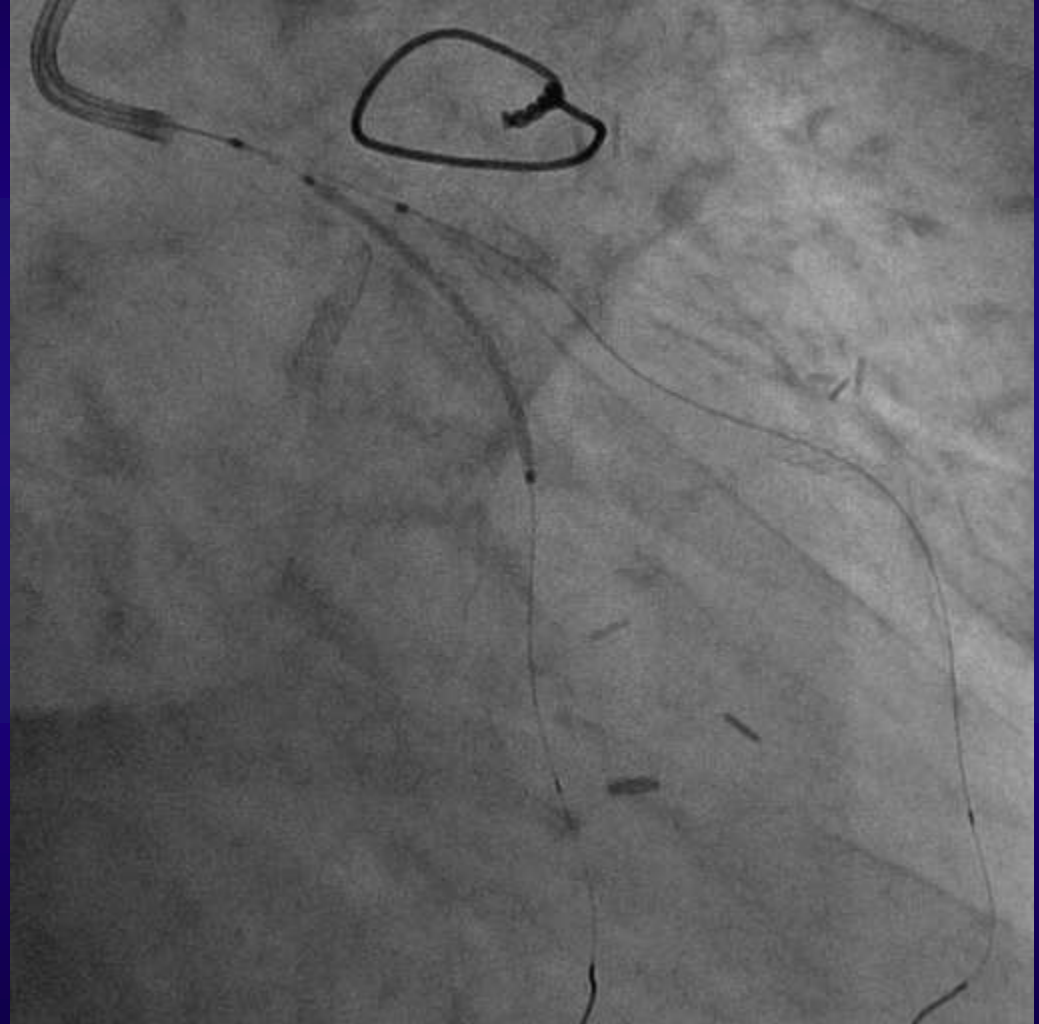
Promus Element

(BSC)

Balloon:

3.0/15 mm Hiryu

(Terumo)



Case: Trifurcation LM lesion

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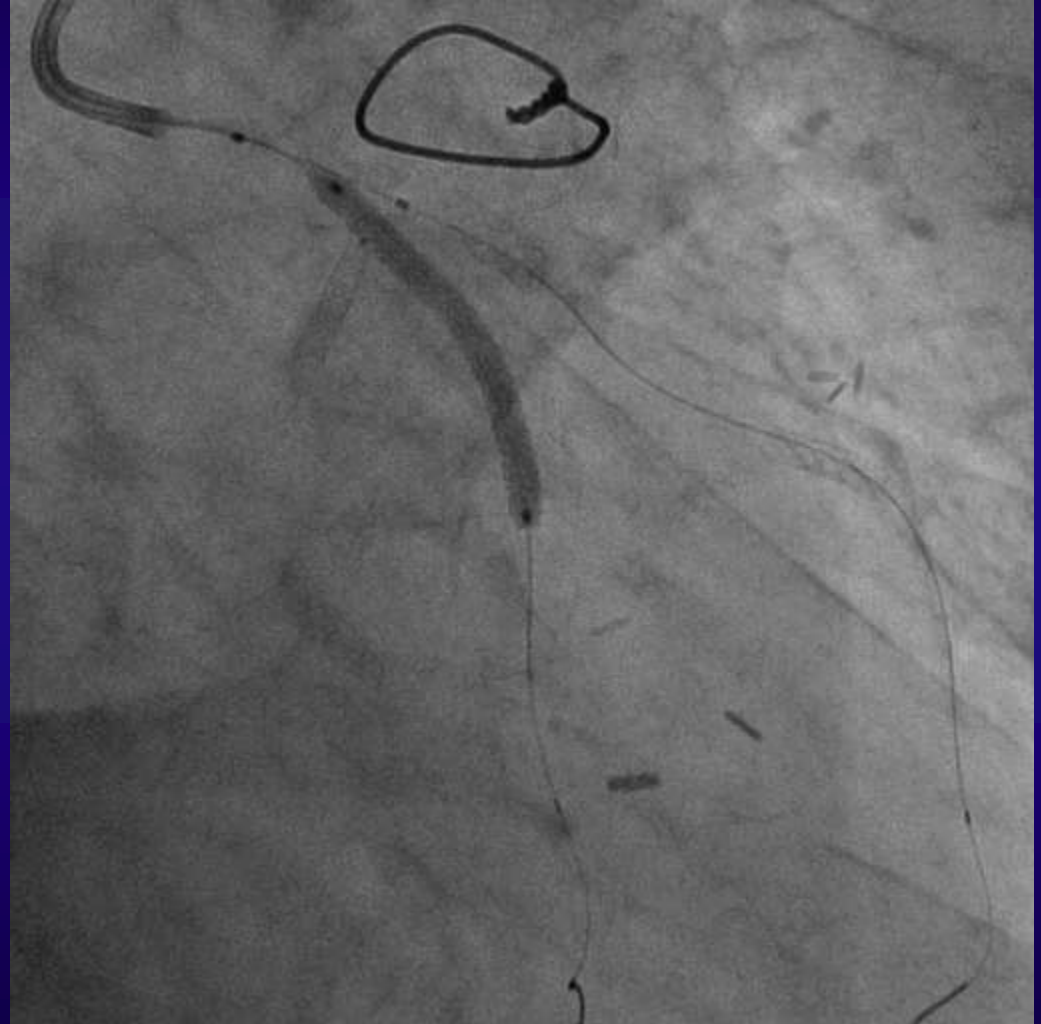
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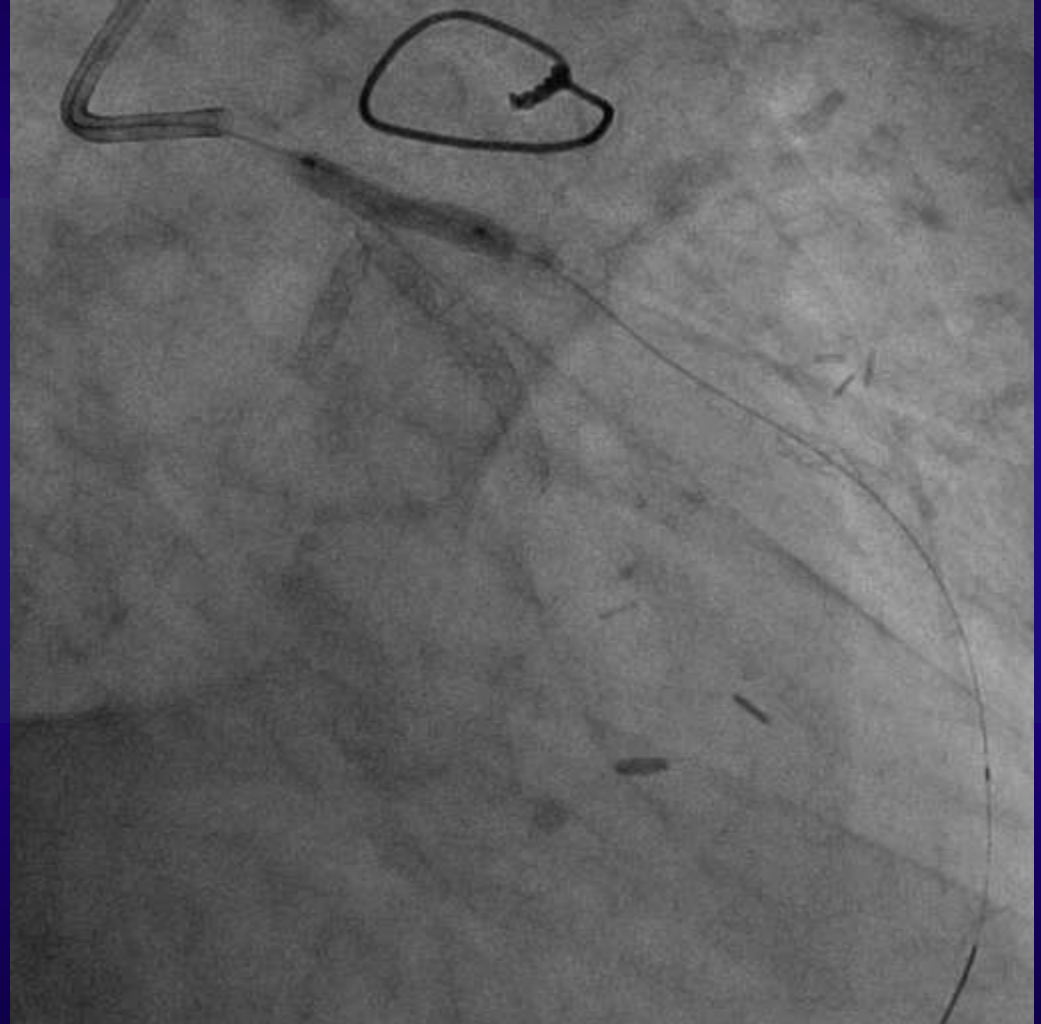
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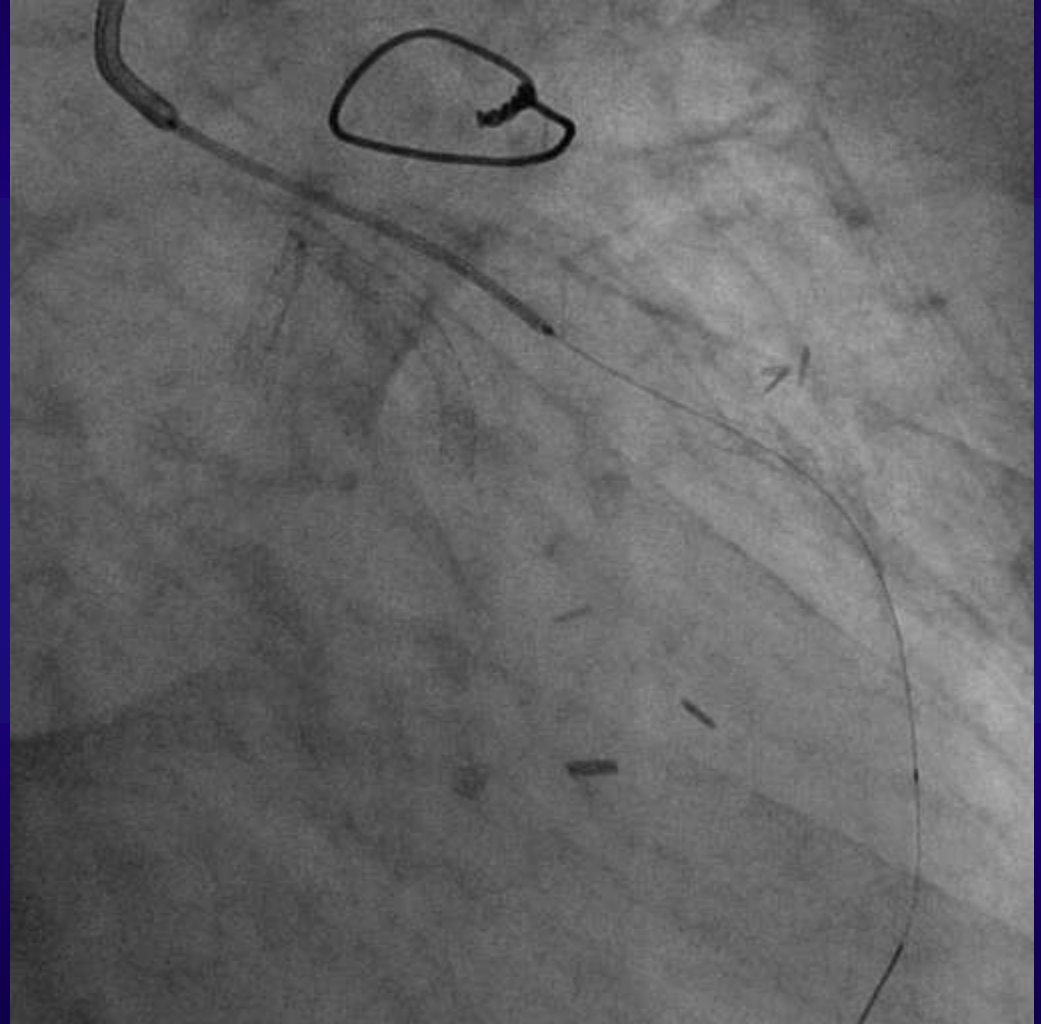
GW:BMW universal II

(Abbott Vascular)

Stent: 3.0/38 mm

Promus Element

(BSC)



Case: Trifurcation LM lesion

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Rt. radial approach

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(Mach 1, BSC)

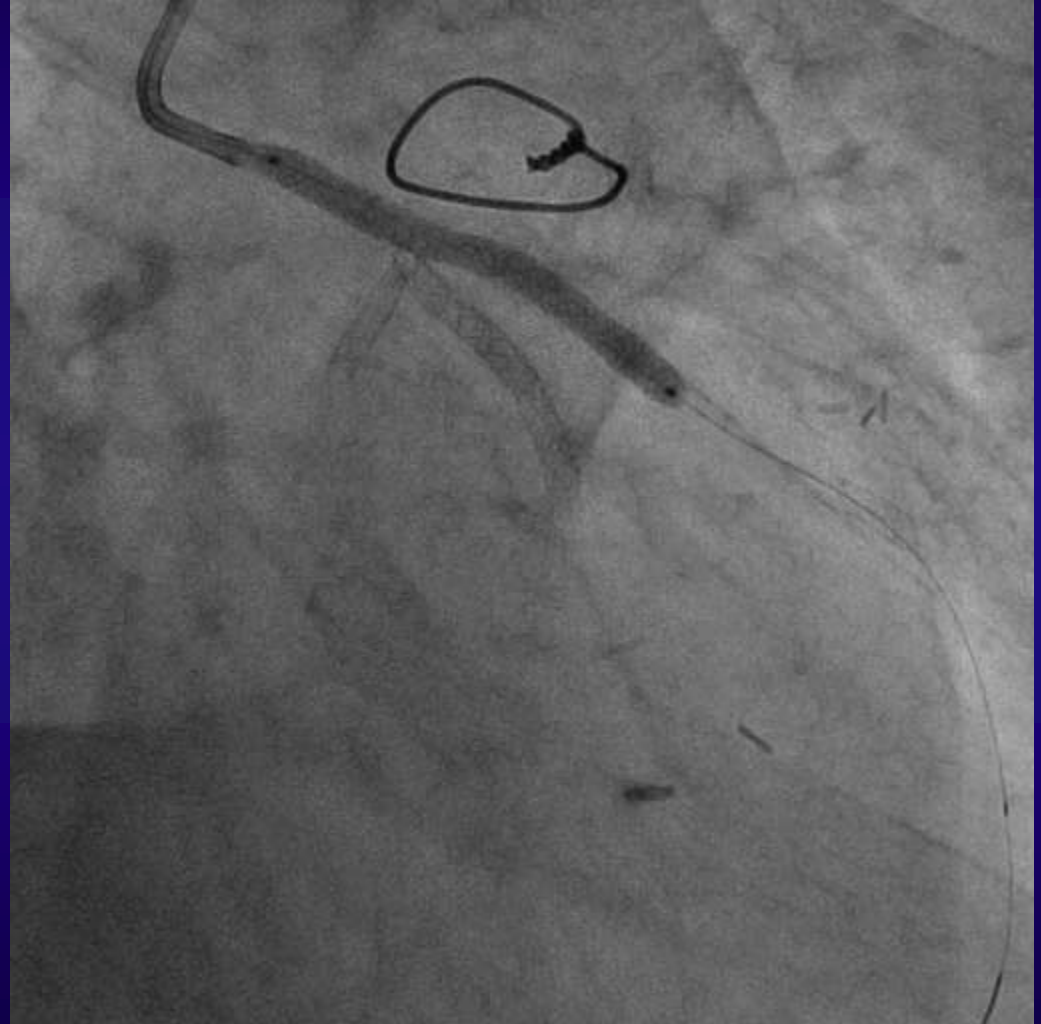
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Promus Element

(BSC)



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(Mach 1, BSC)

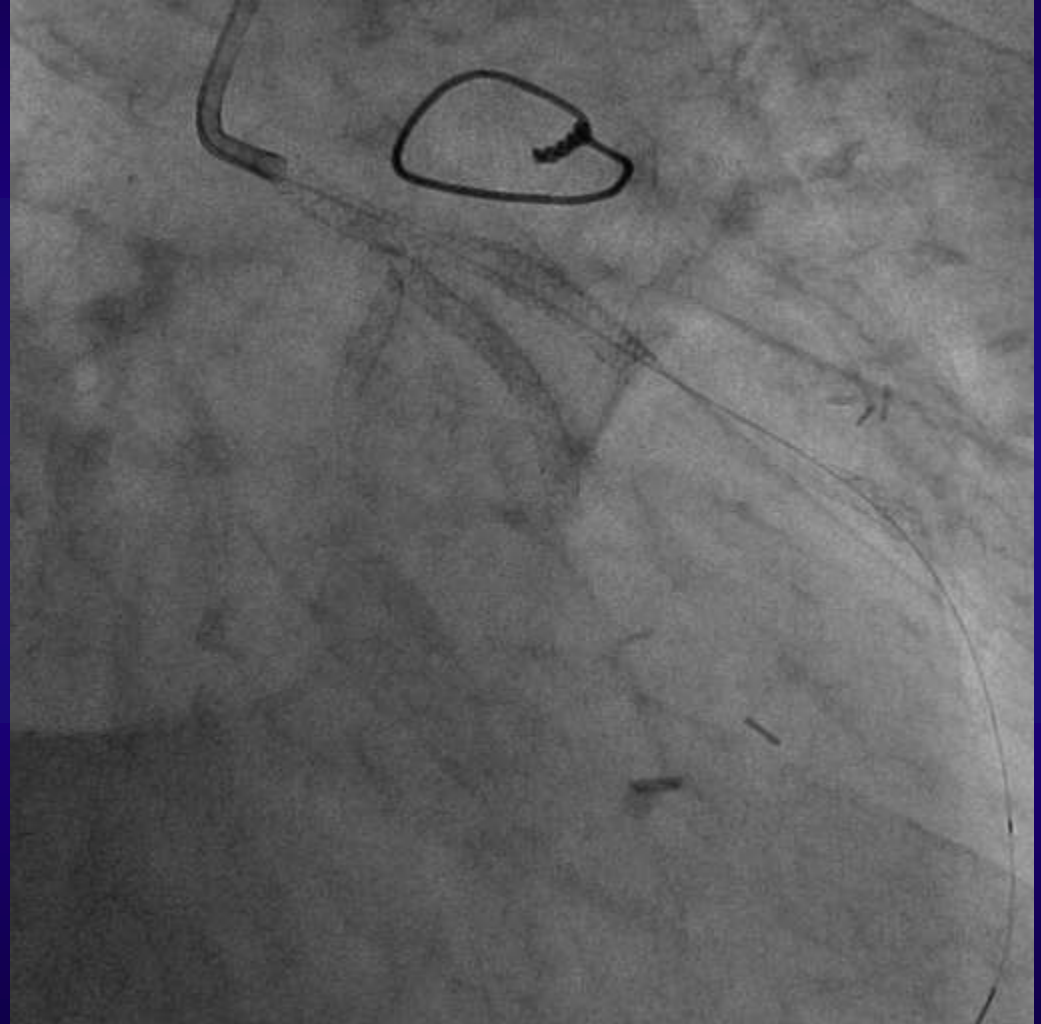
GW:BMW universal II

(Abbott Vascular)

Stent: 3.0/38 mm

Promus Element

(BSC)



Case: Trifurcation LM lesion

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Rt. radial approach

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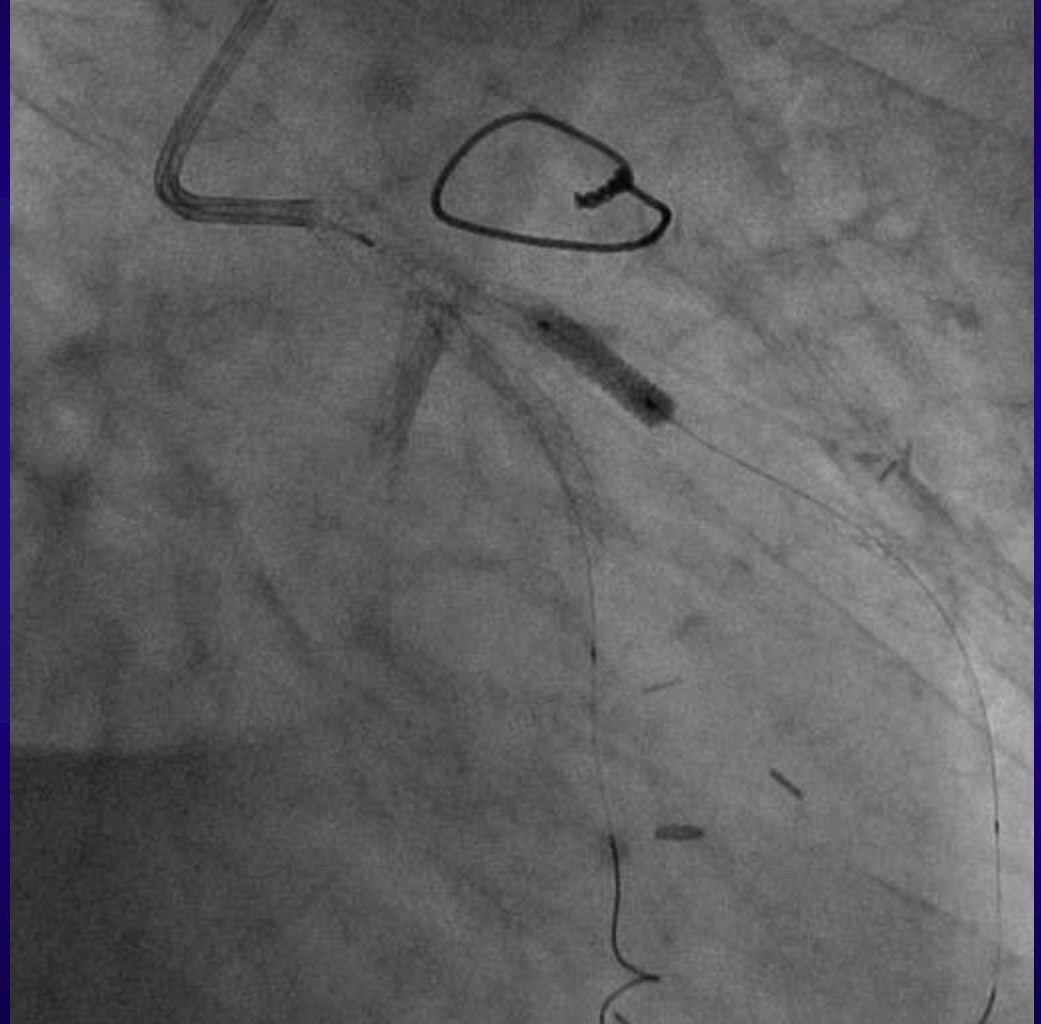
(Mach 1, BSC)

***GW:BMW universal II x2
(Abbott Vascular)***

Balloon: IM:1.25/10 mm

Sapphire (OrbusNeich)

***LAD:3.0/15 mm Hiryu
(Terumo)***



Case: Trifurcation LM lesion

Case

***UAP complicated by
cardiogenic shock,
71 y.o. Male***

Rt. radial approach

GC: 6Fr. VL3.0

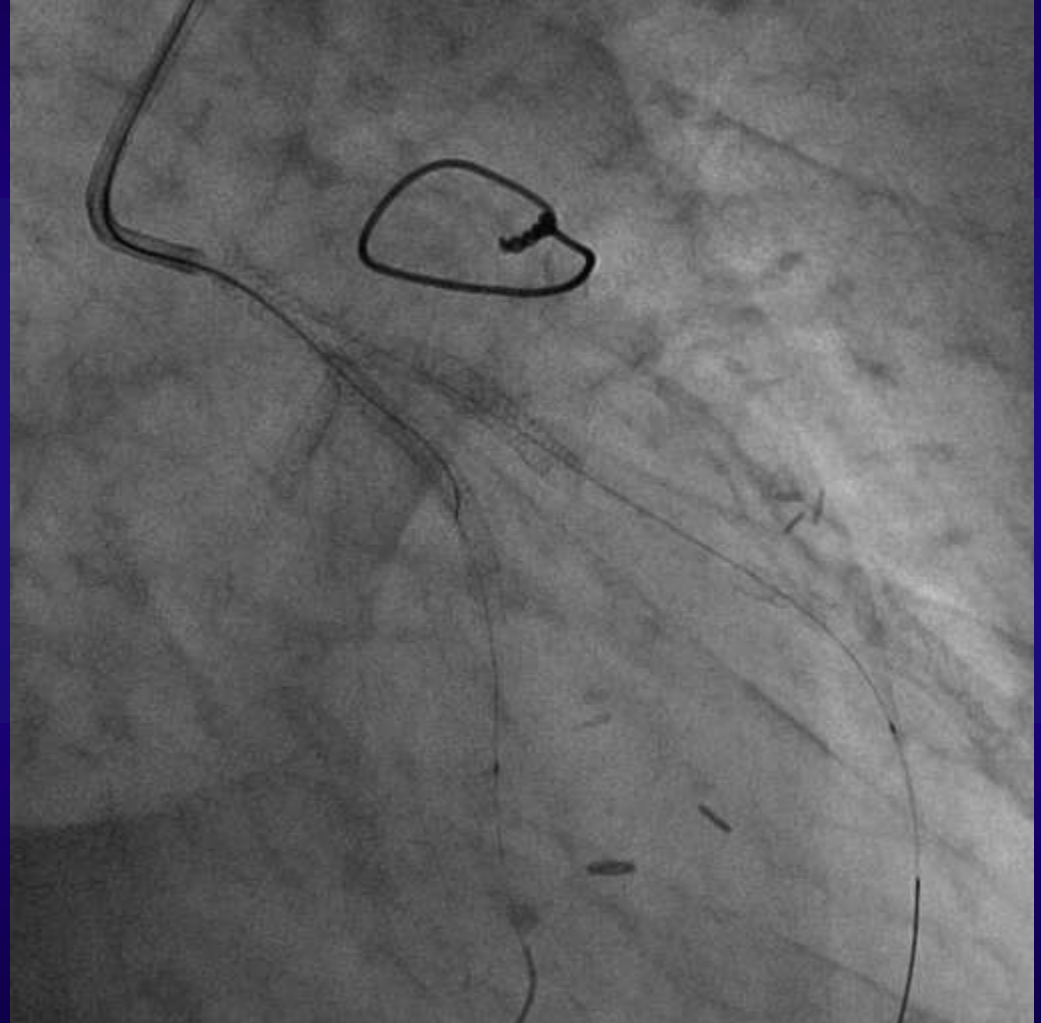
(Mach 1, BSC)

GW:BMW universal II x2

(Abbott Vascular)

Runthrough HC

(Terumo)



Case: Trifurcation LM lesion

Case

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71 y.o. Male***

Rt. radial approach

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GW:BMW universal II

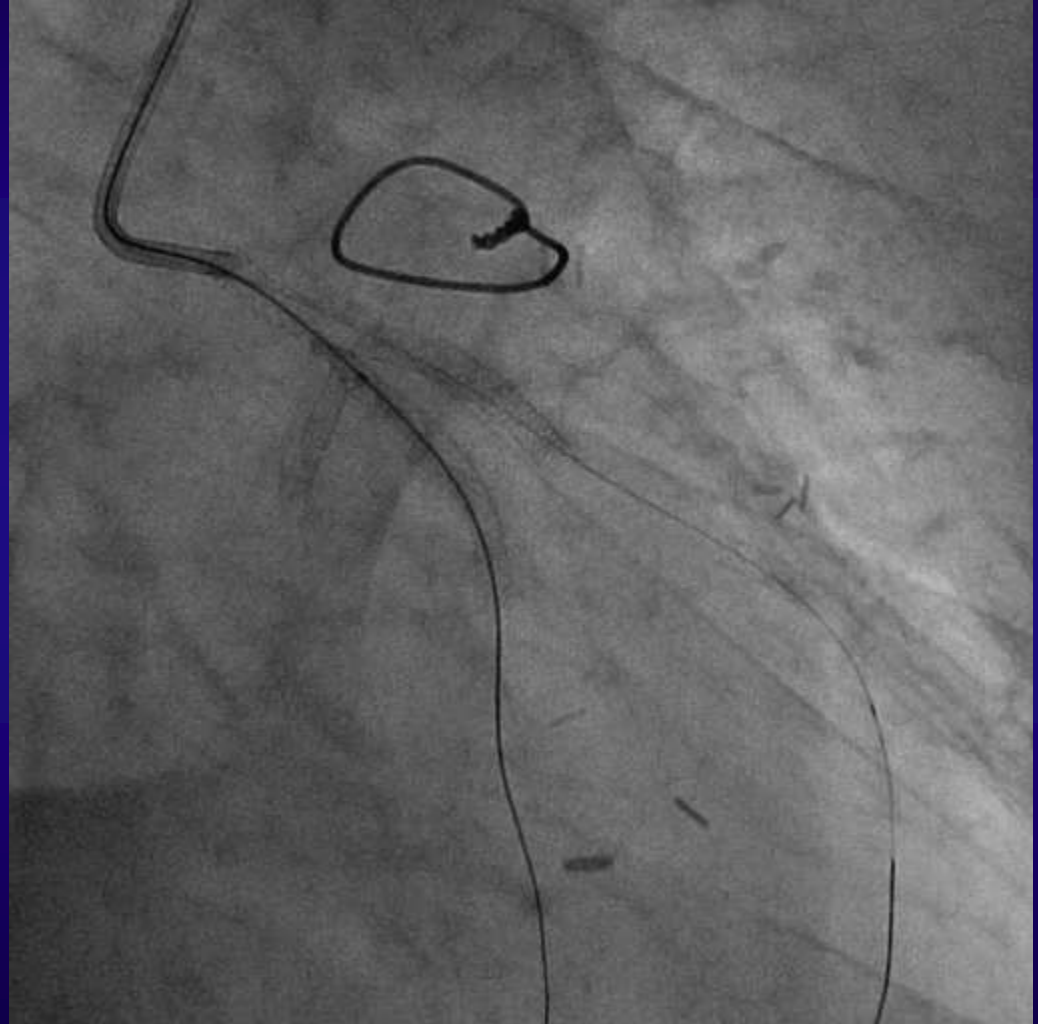
(Abbott Vascular)

Runthrough HC

(Terumo)

Balloon: 1.25/10 mm

Sapphire (OrbusNeich)



Case: Trifurcation LM lesion

Case

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cardiogenic shock,
71 y.o. Male***

Rt. radial approach

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GW:BMW universal II

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Runthrough HC

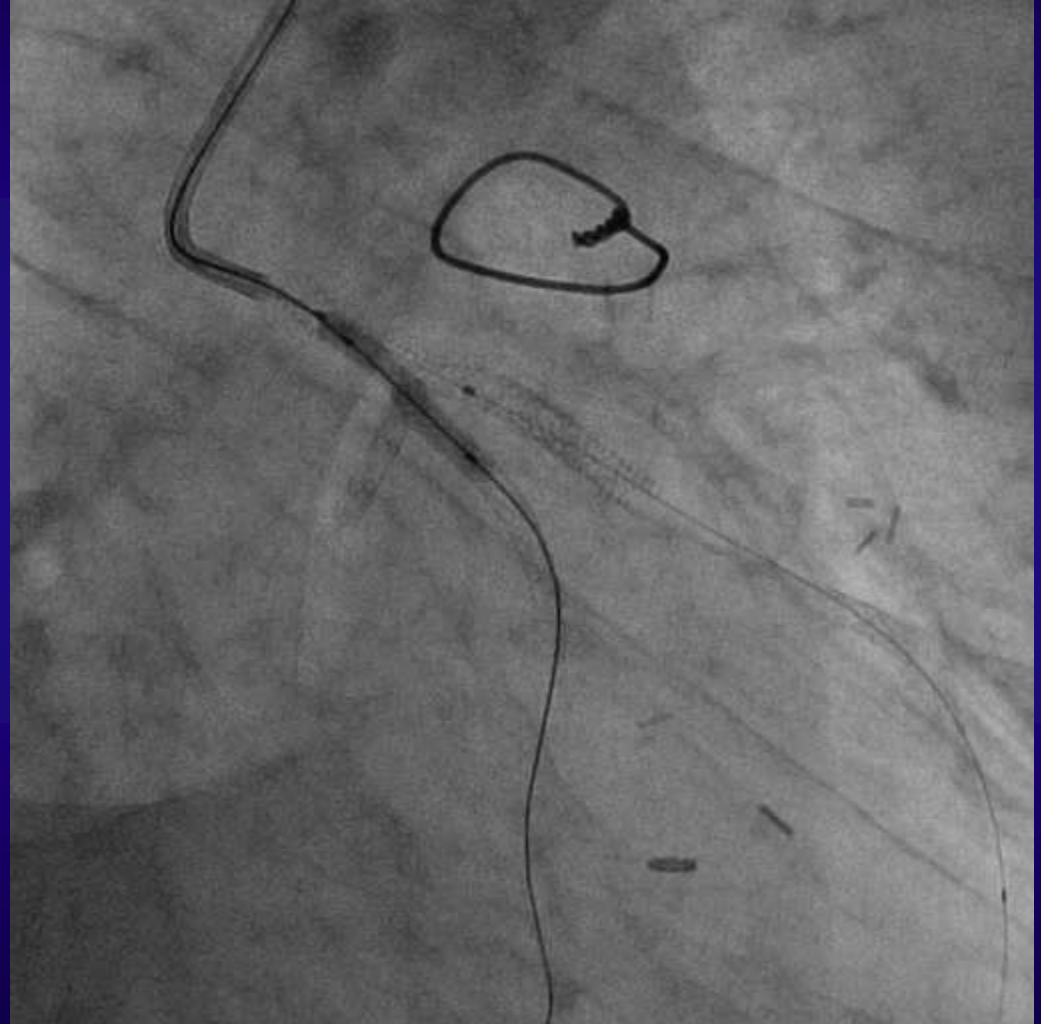
(Terumo)

Balloon: IM:2.5/15 mm

Emerge (BSC)

LAD:3.0/15 mm Hiryu

(Terumo)



Case: Trifurcation LM lesion

Case

***UAP complicated by
cardiogenic shock,
71 y.o. Male***

Rt. radial approach

GC: 6Fr. VL3.0

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GW:BMW universal II

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Runthrough HC

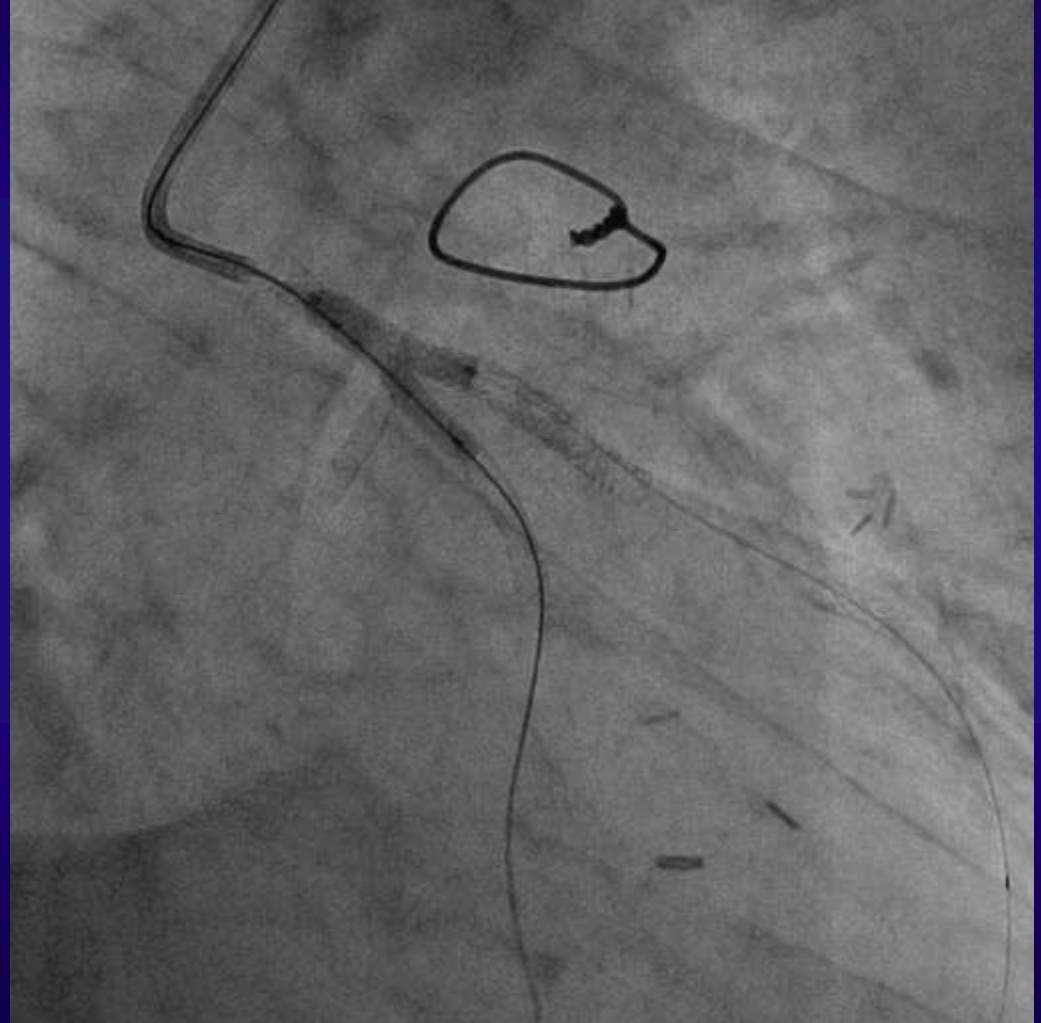
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Balloon: IM:2.5/15 mm

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Case: Trifurcation LM lesion

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Runthrough HC

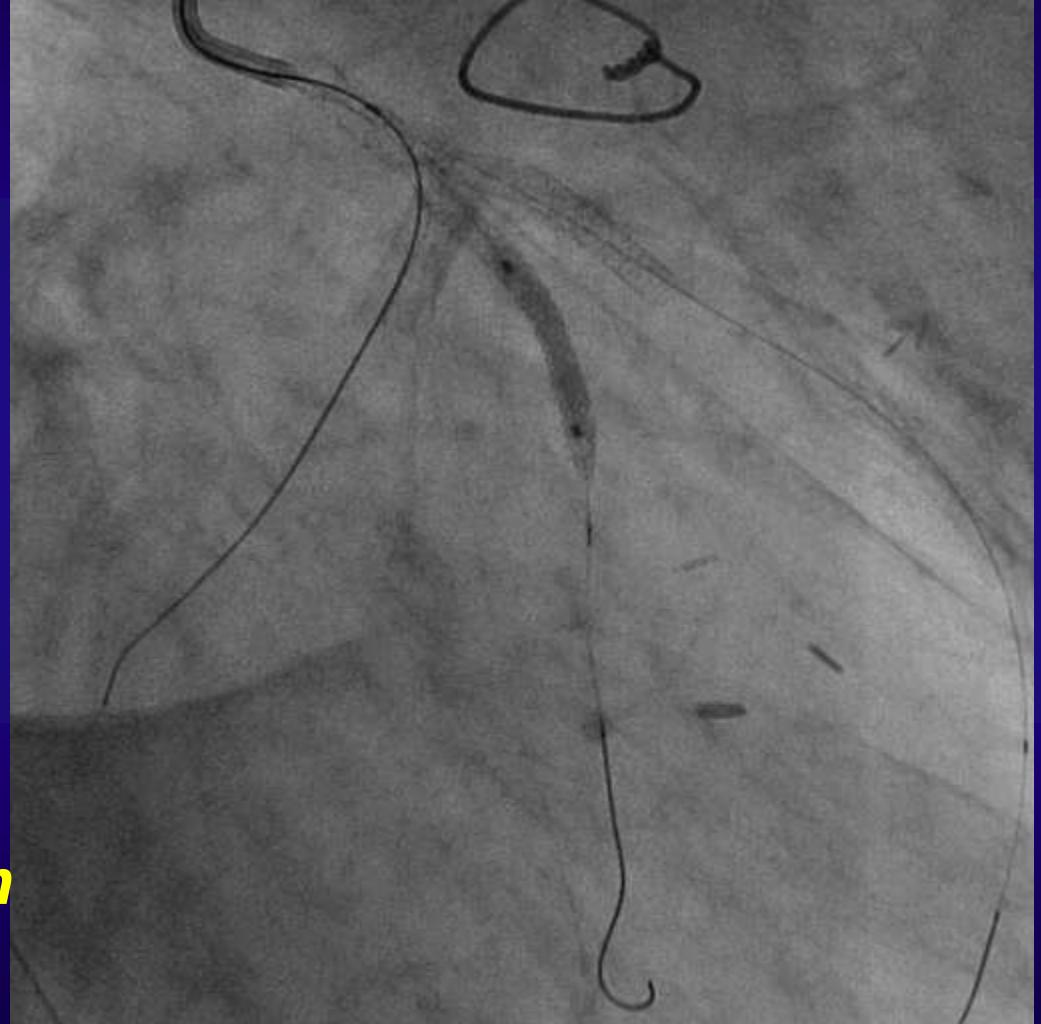
(Terumo)

Balloon: LCx:1.25/10 mm

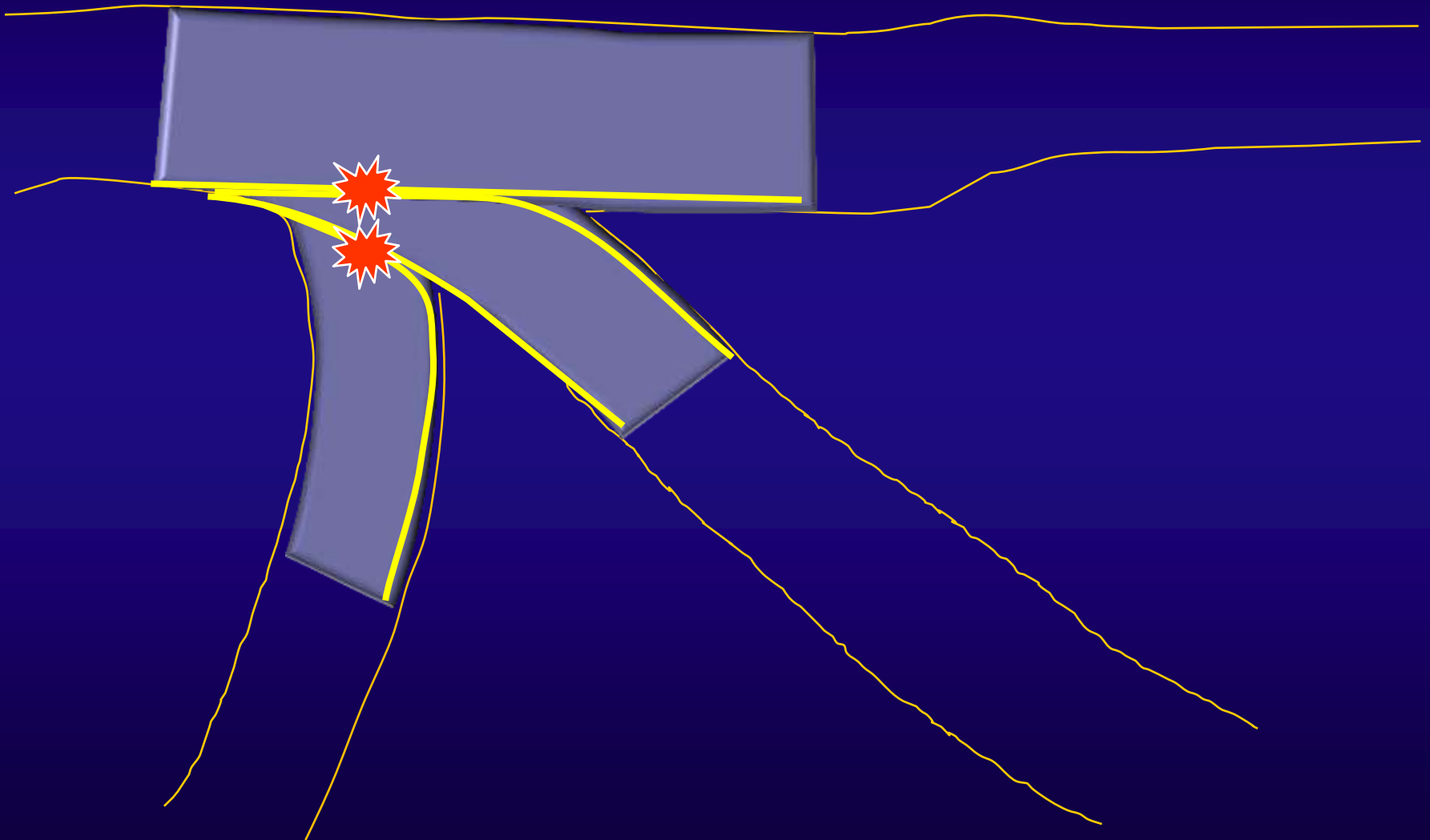
Sapphire (OrbusNeich)

IM:3.0/15 mm Hiryu

(Terumo)



Double Mini-Crush Technique for Trifurcation Lesions by 6Fr TRI



Case: Trifurcation LM lesion

Case

***UAP complicated by
cardiogenic shock,
71 y.o. Male***

Rt. radial approach

GC: 6Fr. VL3.0

(Mach 1, BSC)

Final result



Case: Trifurcation LM lesion

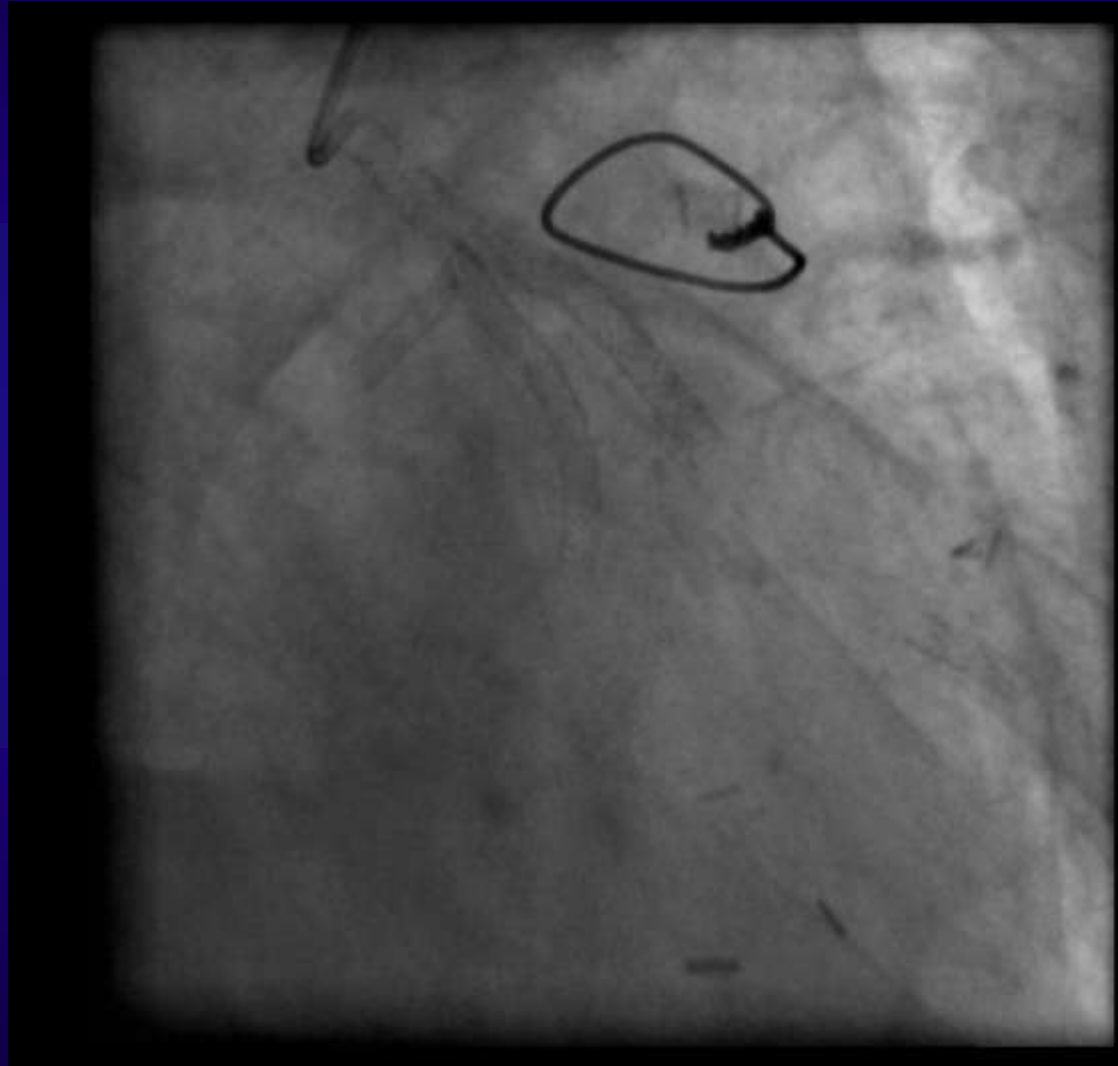
Case

***UAP complicated by
cardiogenic shock,***

71 y.o. Male

Pre discharge CAG

18days after PCI



Advantages of TRI in LM PCI

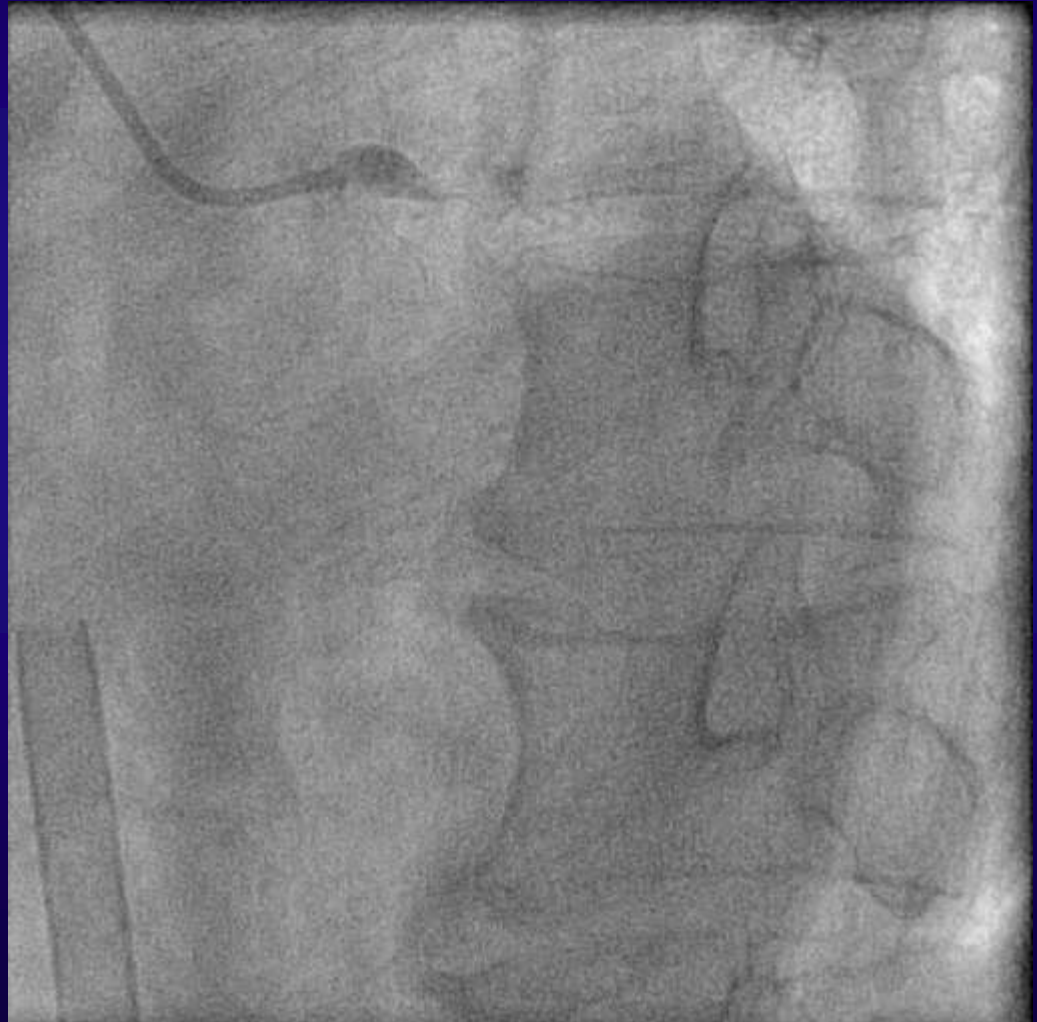
- Less bleeding complications
- Reserving the femoral arteries as the access site for the hemodynamic support devices (IABP, PCPS..)
- Comfortable for the patients

Supported PCI using PCPS and IABP for the patient with STEMI complicated by cardiogenic shock

Case

AMI, 65 y.o. Male

Onset 2.5 hours



Supported PCI using PCPS and IABP for the patient with STEMI complicated by cardiogenic shock

Case

AMI, 65 y.o. Male

Rt. radial approach

GC: 6Fr. VL3.5

(Mach 1, BSC)

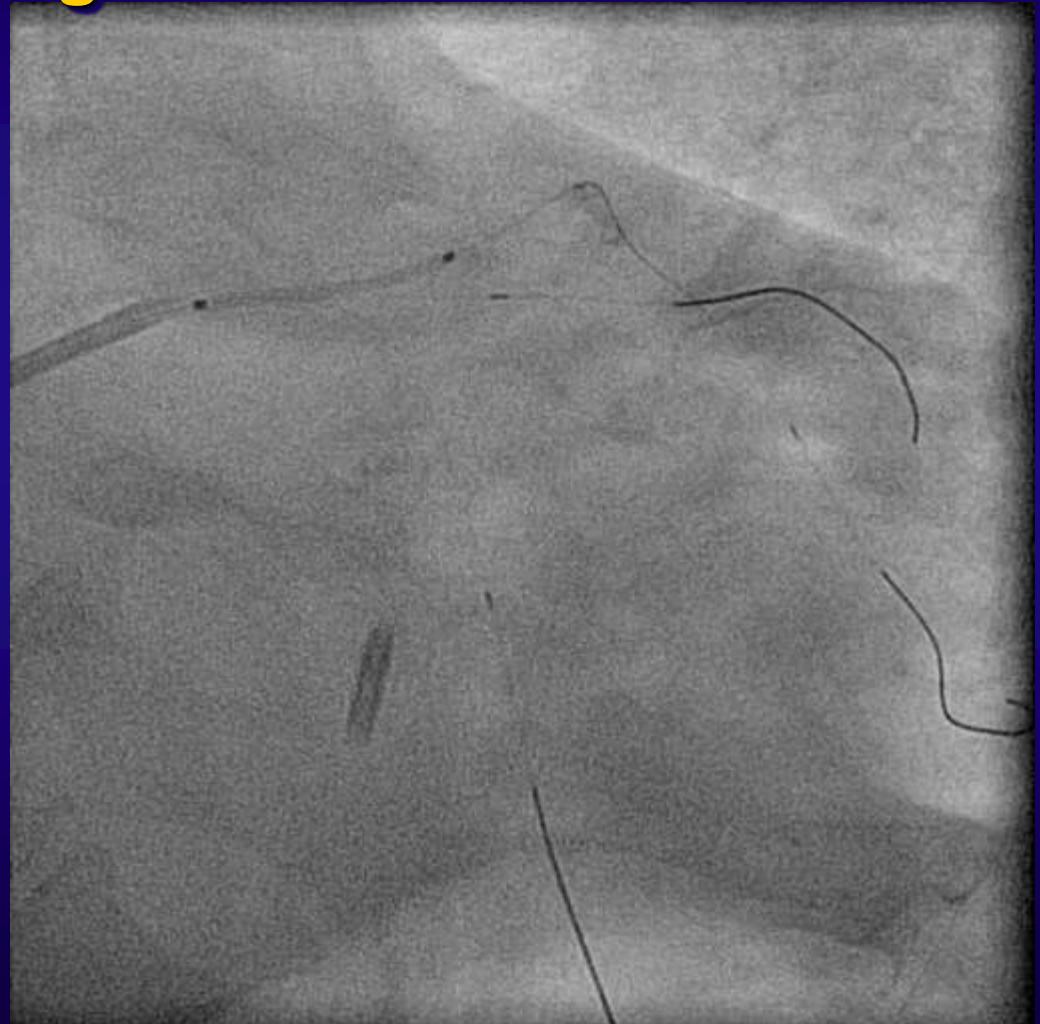
***GWs: BMW universal II
/ LAD, LCx, ramus br.***

(Abbott vascular)

Stent:

3.0/18mm DRIVER

(Medtronic)



Supported PCI using PCPS and IABP for the patient with STEMI complicated by cardiogenic shock

Case

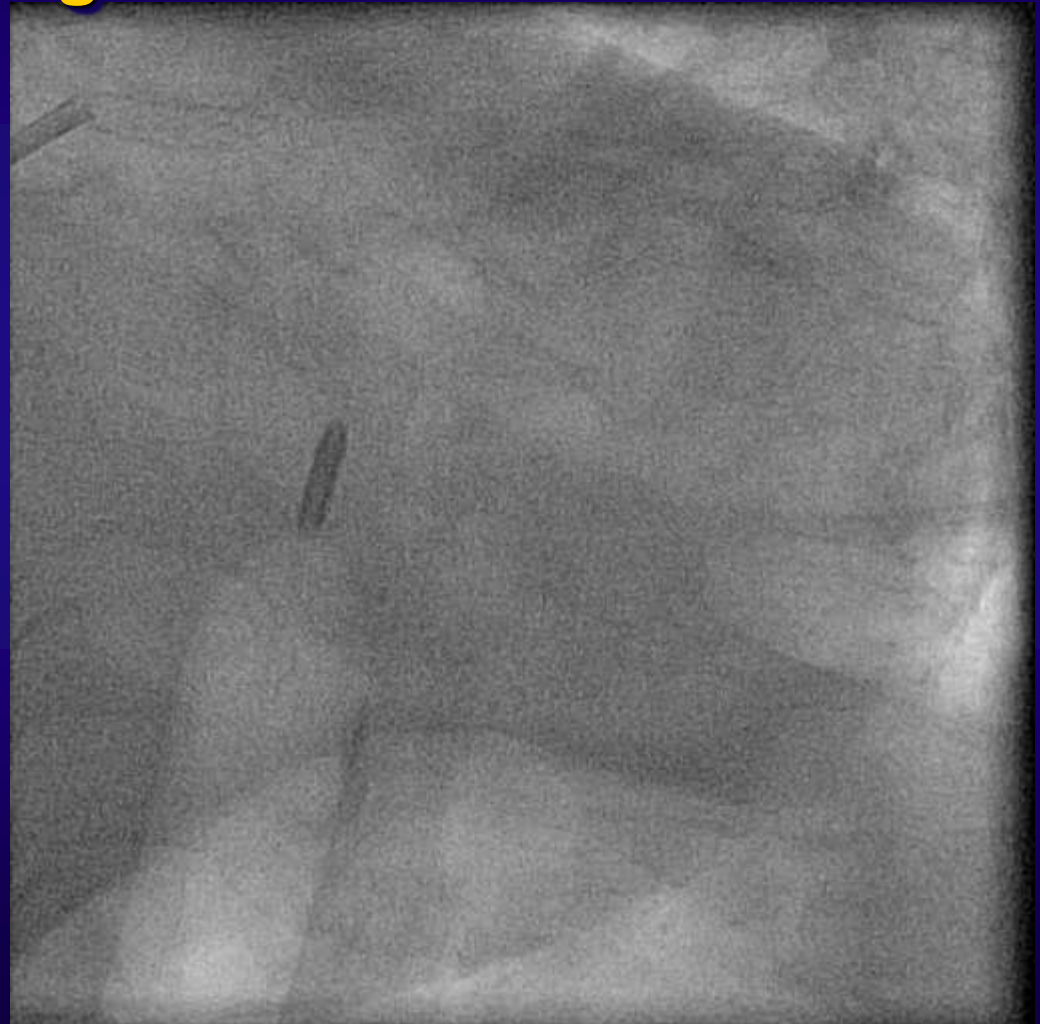
AMI, 65 y.o. Male

Rt. radial approach

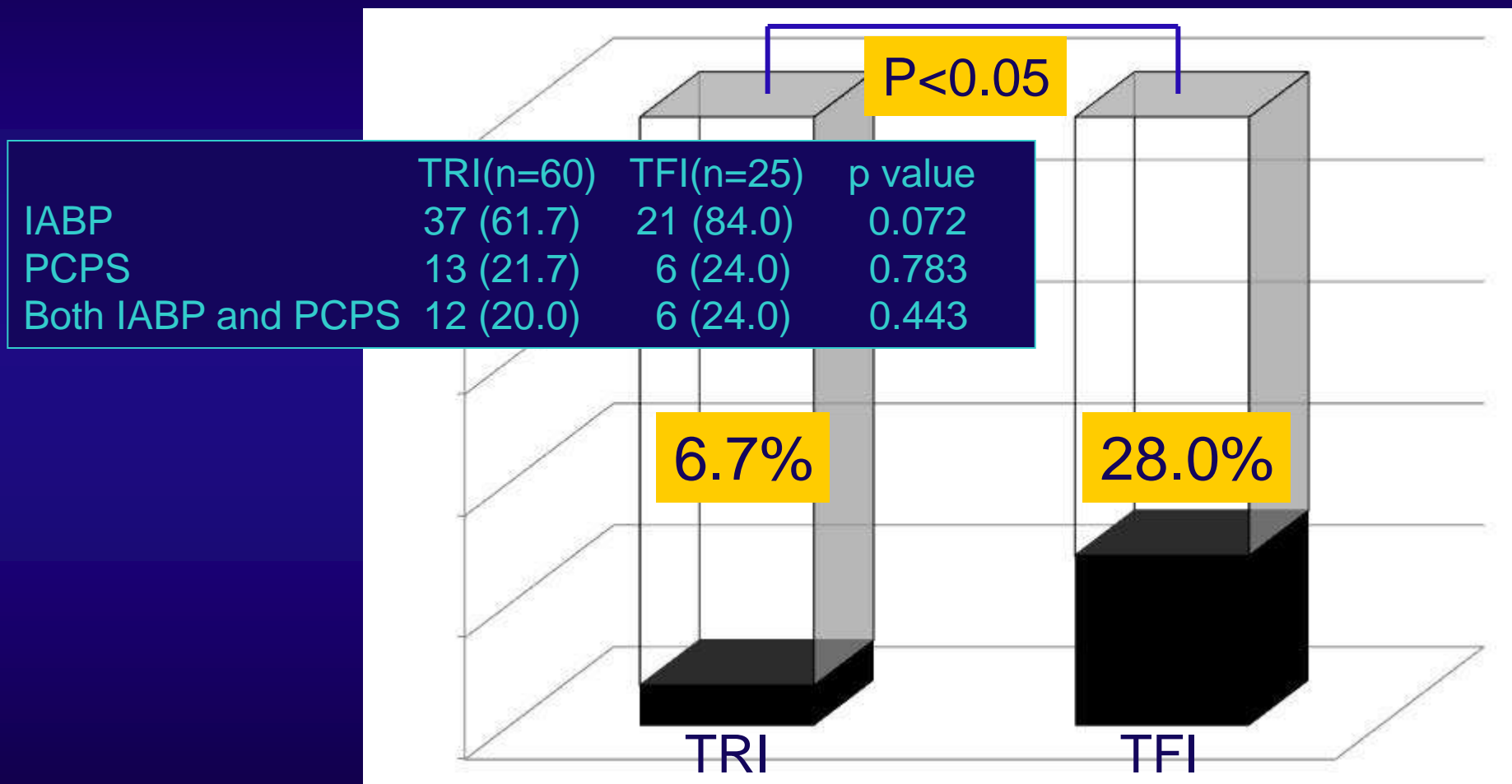
GC: 6Fr. VL3.5

(Mach 1, BSC)

Final result



TRI vs TFI for ACS complicated by cardiogenic shock: Major bleeding and vascular complications within 30 days



Conclusions

- Mother-child catheter technique and balloon anchoring technique are key techniques to treat angulated / calcified LM lesions by TRI
- How to perform final KBT is key to complete complex LM bifurcation stenting by 6Fr.TRI
- Reserving the access site of hemodynamic supporting device is the advantage in TRI especially for critical LM PCI
- Complex LM lesions that can be treated by femoral approach can also be treated by TRI

Thank You