Road to Successful PCI : Bifurcation stenting with Resolute Onyx

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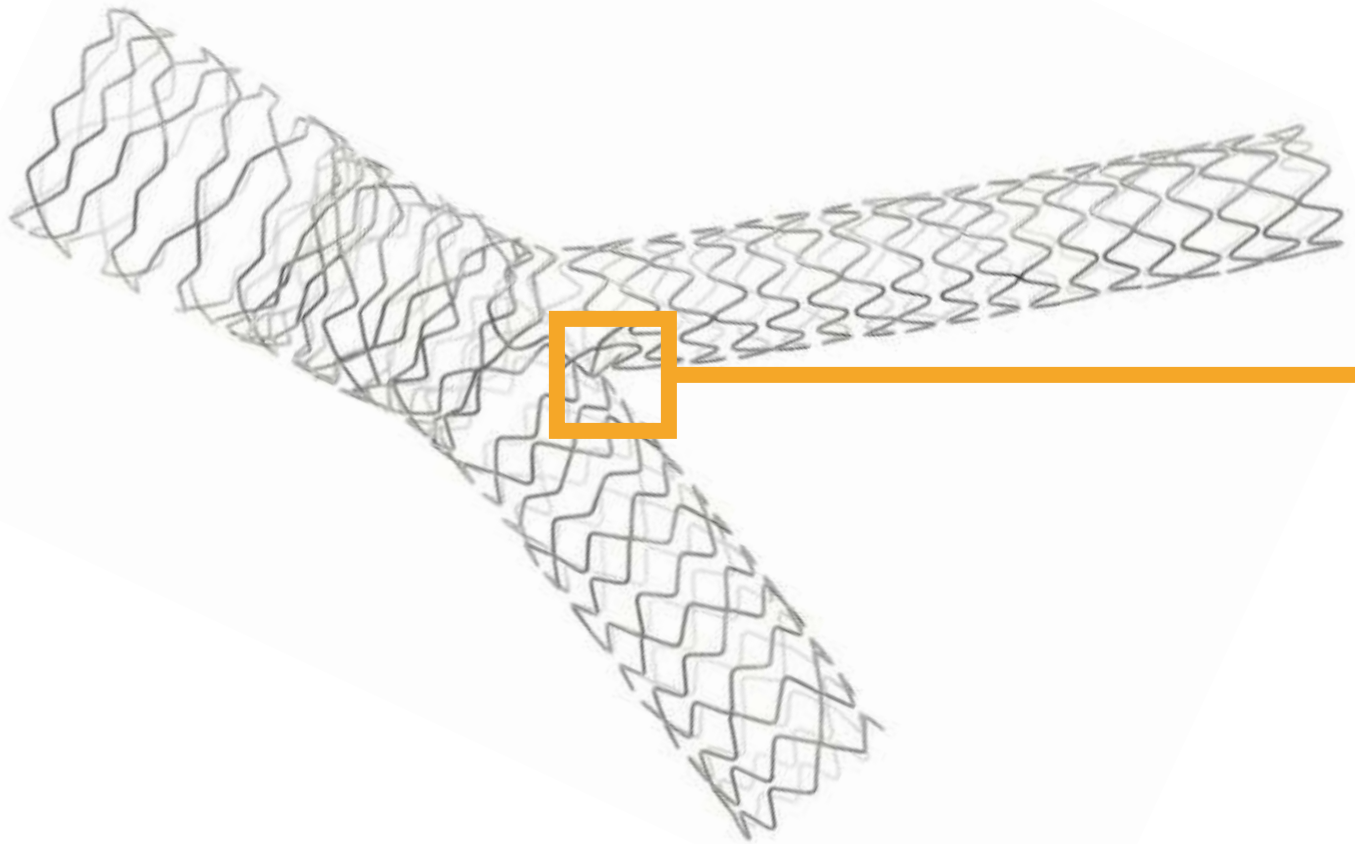
Disclosure

- I have nothing to disclose.

Contents

- Strengths of Resolute Onyx in bifurcation PCI
- Bifurcation PCI cases with Resolute Onyx
  - LAD bifurcation
  - LM true bifurcation



RESOLUTE ONYX
for BIFURCATION

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VISUALIZING IMPACT OF STENT DESIGN IN BIFURCATION PCI

PROCEDURAL STEP	Proximal Optimization Technique (POT)	Side Branch Access	Kissing Balloon Technique (KBT)	Final Scaffold
				
DESIGN IMPACT	▪ Precise deployment ▪ Even scaffolding	▪ Ease of secondary device crossing ▪ Low device catch rate	▪ Capability to clear metal from side branch opening	▪ Conformability and apposition

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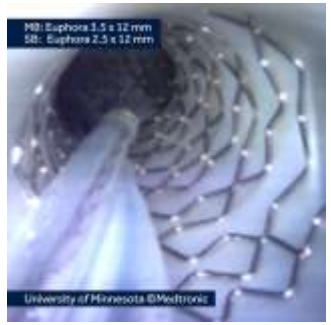
VISUALIZING IMPACT OF RESOLUTE ONYX™ DESIGN ON FINAL RESULT

PROCEDURAL STEP	Proximal Optimization Technique (POT)	Side Branch Access	Kissing Balloon Technique (KBT)	Final Scaffold
DESIGN IMPACT	▪ Precise deployment ▪ Even scaffolding	▪ Ease of secondary device crossing ▪ Device catch rate	▪ Capability to clear metal from side branch opening	▪ Conformability and apposition
				
RESOLUTE ONYX™ STENT DESIGN	▪ Visible Platinum Iridium core ▪ Dedicated extra large vessel design	▪ Rounded struts ▪ Regular cell shape	▪ Adequate cell size ▪ Larger cell size for extra large vessel design	▪ Single wire design supporting conformability and apposition

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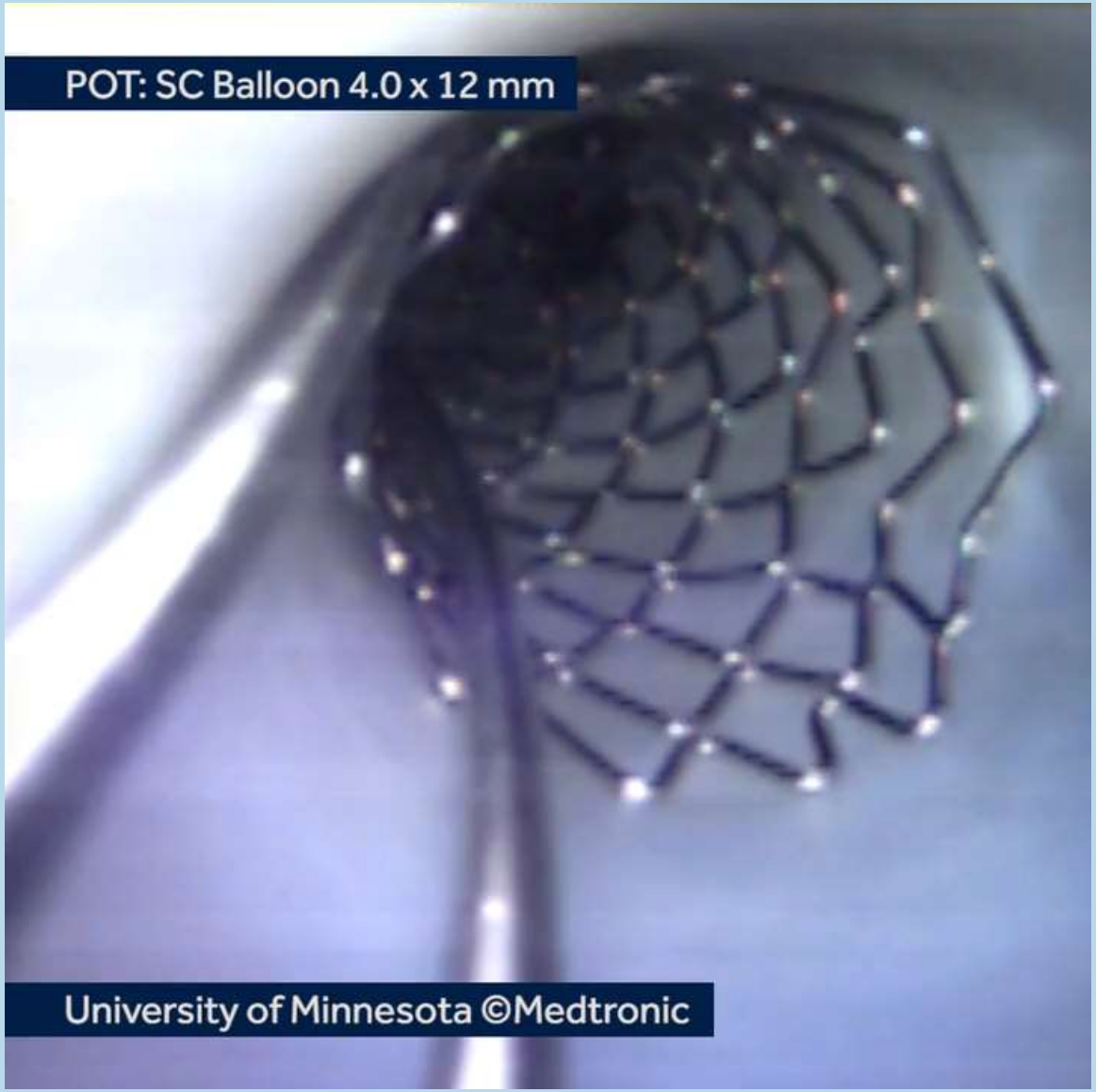
POT TECHNIQUE PERFORMED
TO ENSURE GOOD APPOSITION IN PROXIMAL MAIN BRANCH



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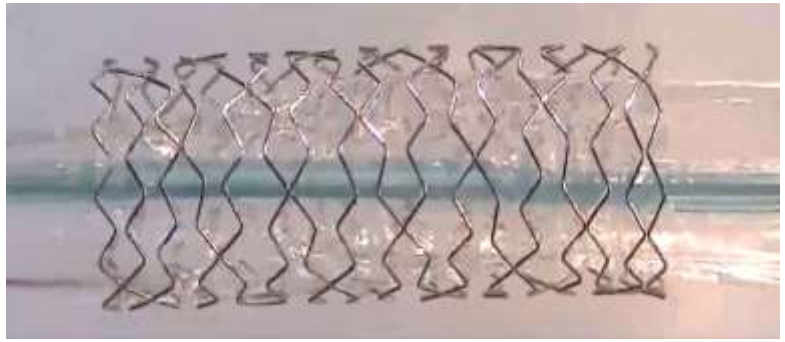
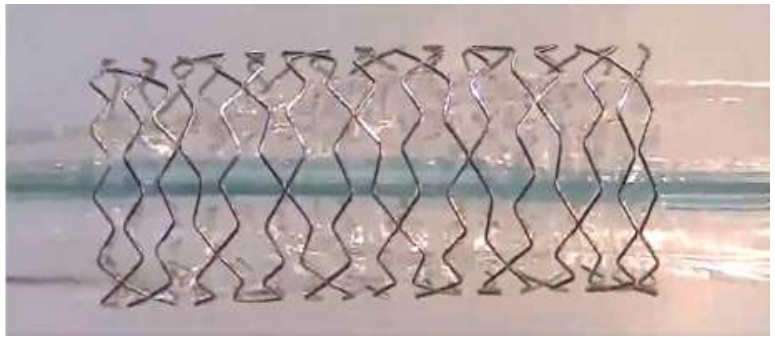
FORESHORTENING MAY IMPACT PRECISE STENT PLACEMENT

Resolute Onyx™ DES 5.0 mm x 18 mm DES

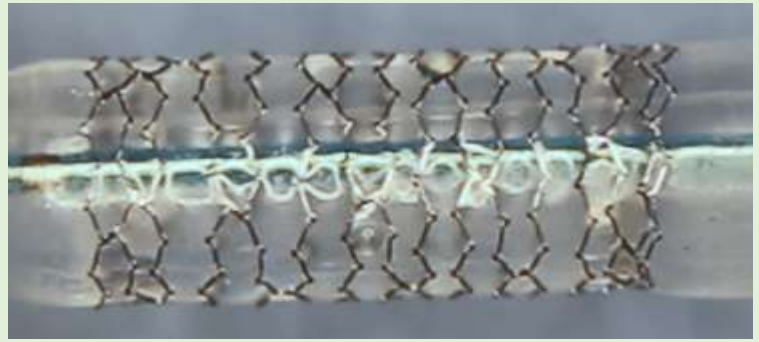


0.8% foreshortening

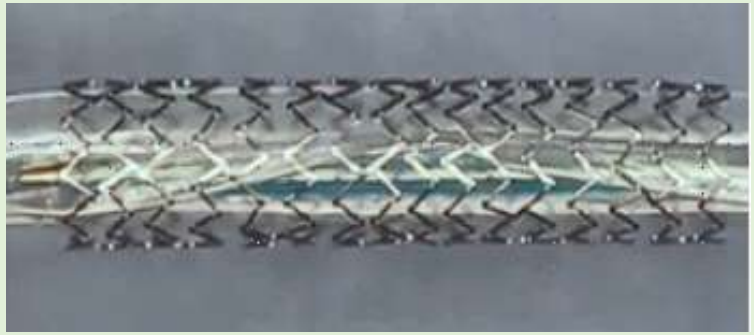


Deployed to 5.75 mm (maximum labeled overexpansion)[1]

Synergy™* DES 4.0 mm x 20 mm DES



14.7% foreshortening



Deployed to 5.75 mm (maximum labeled overexpansion)[1]

[1] Based on bench test data on file at Medtronic. May not be indicative of clinical performance. Resolute Onyx™ stents should not be expanded to a diameter beyond the maximum labeled diameter listed on the label per the *IFU*. Do not dilate the 4.5- and 5.0-mm stents to greater than 5.75 mm.

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ACCURATE STENT SIZING
SUPPORTS EVEN SCAFFOLDING AFTER PROXIMAL OPTIMIZATION

Resolute Onyx™ DES 5.0 mm x 18 mm DES

1.62 mm

Maximum distance between stent struts

Deployed to 5.75 mm (maximum labeled overexpansion)[1]

Synergy™* DES 4.0 mm x 20 mm DES

1.87 mm

Maximum distance between stent struts

Deployed to 5.75 mm (maximum labeled overexpansion)[1]

[1] Based on bench test data on file at Medtronic. May not be indicative of clinical performance. Resolute Onyx™ stents should not be expanded to a diameter beyond the maximum labeled diameter listed on the label per the *IFU*. Do not dilate the 4.5- and 5.0-mm stents to greater than 5.75 mm.

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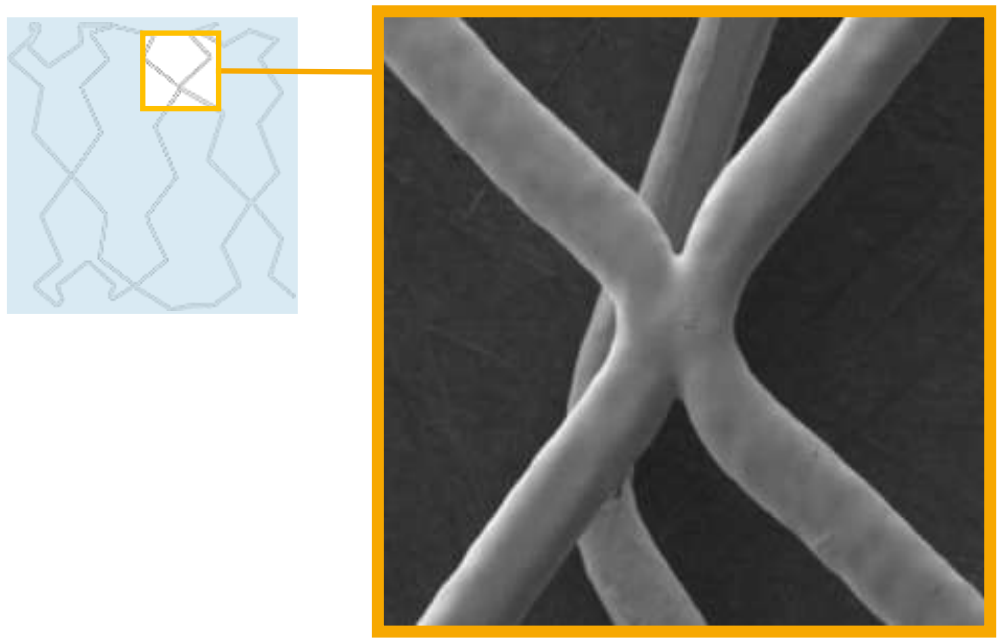
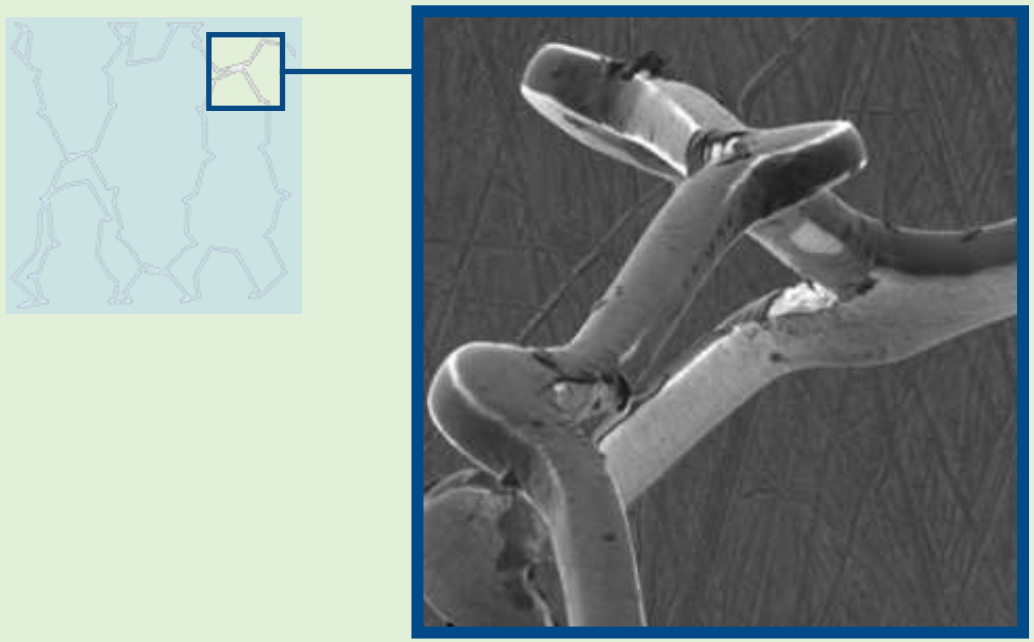
ACCURATE STENT SIZING
SUPPORTS COATING INTEGRITY AT OVEREXPANSION

Resolute Onyx™ DES 5.0 mm x 18 mm DES



Deployed to 5.75 mm (maximum labeled overexpansion)[1]

Synergy™* DES 4.0 mm x 20 mm DES



Deployed to 5.75 mm (maximum labeled overexpansion)[1]

[1] Based on bench test data on file at Medtronic. May not be indicative of clinical performance. Resolute Onyx™ stents should not be expanded to a diameter beyond the maximum labeled diameter listed on the label per the *IFU*. Do not dilate the 4.5- and 5.0-mm stents to greater than 5.75 mm.

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ADEQUATE SIZE FOR KISSING BALLOON TECHNIQUE
WIDER OPTION IN SIZES TO DEAL WITH VARIETY OF LESIONS

STENT LENGTH (mm)

STENT DIAMETER (mm)									
2.00	8	12	15	18	22	26	30		
2.25	8	12	15	18	22	26	30	34	38
2.50	8	12	15	18	22	26	30	34	38
2.75	8	12	15	18	22	26	30	34	38
3.00	8	12	15	18	22	26	30	34	38
3.50	8	12	15	18	22	26	30	34	38
4.00	8	12	15	18	22	26	30	34	38
4.50		12	15	18	22	26	30		
5.00		12	15	18	22	26	30		

CE

1-mo DAPT in HBR Bifurcation
- Left main
- Long lesions
- CTOs
- Total occlusions
- AMIs

Small vessels
- Multivessels
- Diabetes
- ACS
- UA
- Bifurcations

DAPT: Low risk of ST after 1 month[1]

[1]**First FDA-approved DES for patients with diabetes (Resolute Integrity™ DES)** [1]One-year data from the RESOLUTE Clinical Program indicates low stent thrombosis rates for those that interrupted or discontinued DAPT any time after 1 month. While physicians should adhere to current ESC or ACC/AHA/SCAI Guidelines for PCI, patients who interrupt or discontinue DAPT medication 1 month or more after stent implantation are considered at low risk and showed no increased risk for stent thrombosis. Early discontinuation of prescribed antiplatelet medication could result in a higher risk of thrombosis, MI, or death.

SMOOTH PASSAGE OF WIRE
INTO THE DISTAL CELL

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STRUT AND CELL SHAPES
IMPACT SIDE BRANCH ACCESS

Strut Shape[1]
Cross sectional images

Rounded struts

Resolute Onyx™ DES

Square struts

Synergy™* DES

Xience Sierra™* DES

Cell Shape
Cross sectional images

Regular Cell Shape

Resolute Onyx™ DES

Irregular Cell Shape

Xience Alpine™* DES

[1]Based on bench test data on file at Medtronic. May not be indicative of clinical performance.
3.0 mm size was tested for the Resolute Onyx™, Xience Sierra™*, and Synergy™* platforms.

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SIDE BRANCH ACCESS
ROUND STRUT AND REGULAR CELL SHAPES

Stent effects when catching on a secondary device

Resolute Onyx™ DES

Competitor B's DES

[1]Based on bench test data on file at Medtronic. May not be indicative of clinical performance. 3.0 mm size was tested for the Resolute Onyx™, Resolute Integrity™, Promus Element™*,

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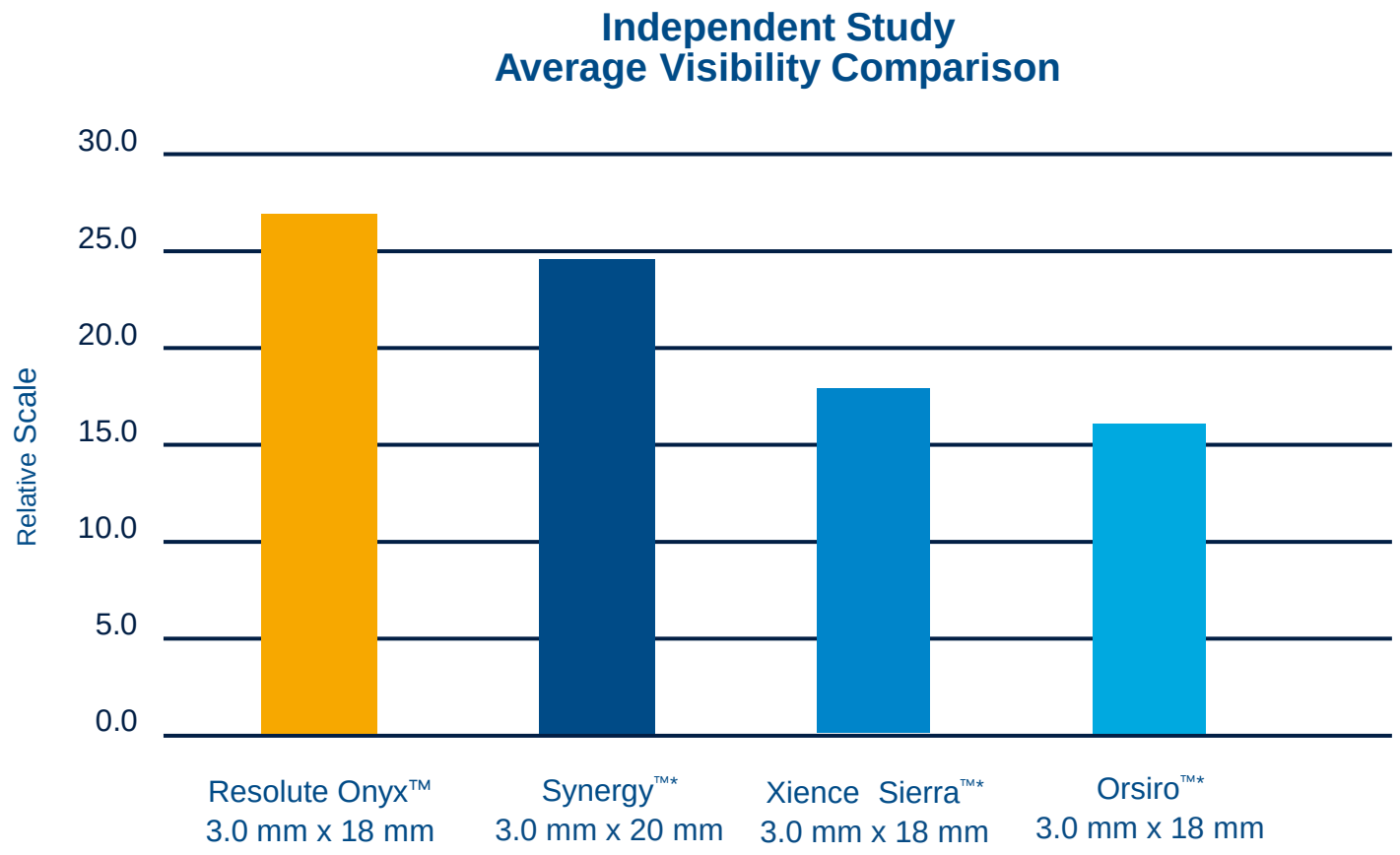
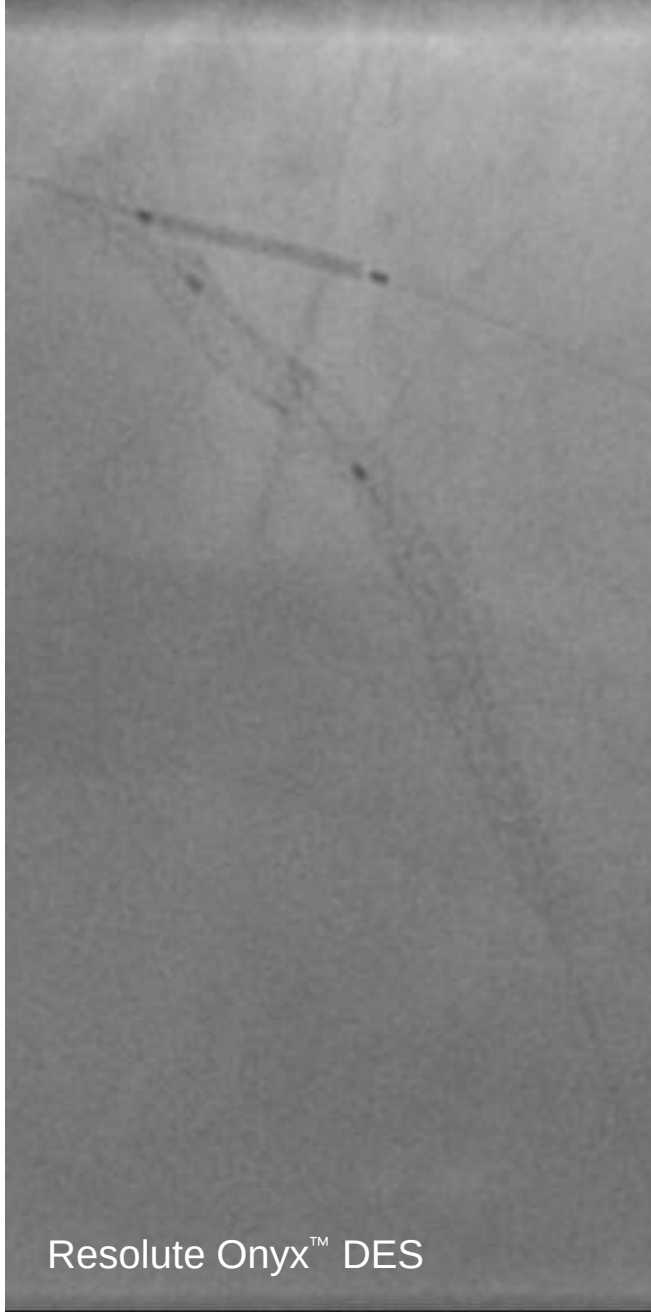
PRECISE STENT PLACEMENT
VISIBILITY OF STENT STRUT





Based on third party test data on file at Medtronic. May not be indicative of clinical performance.

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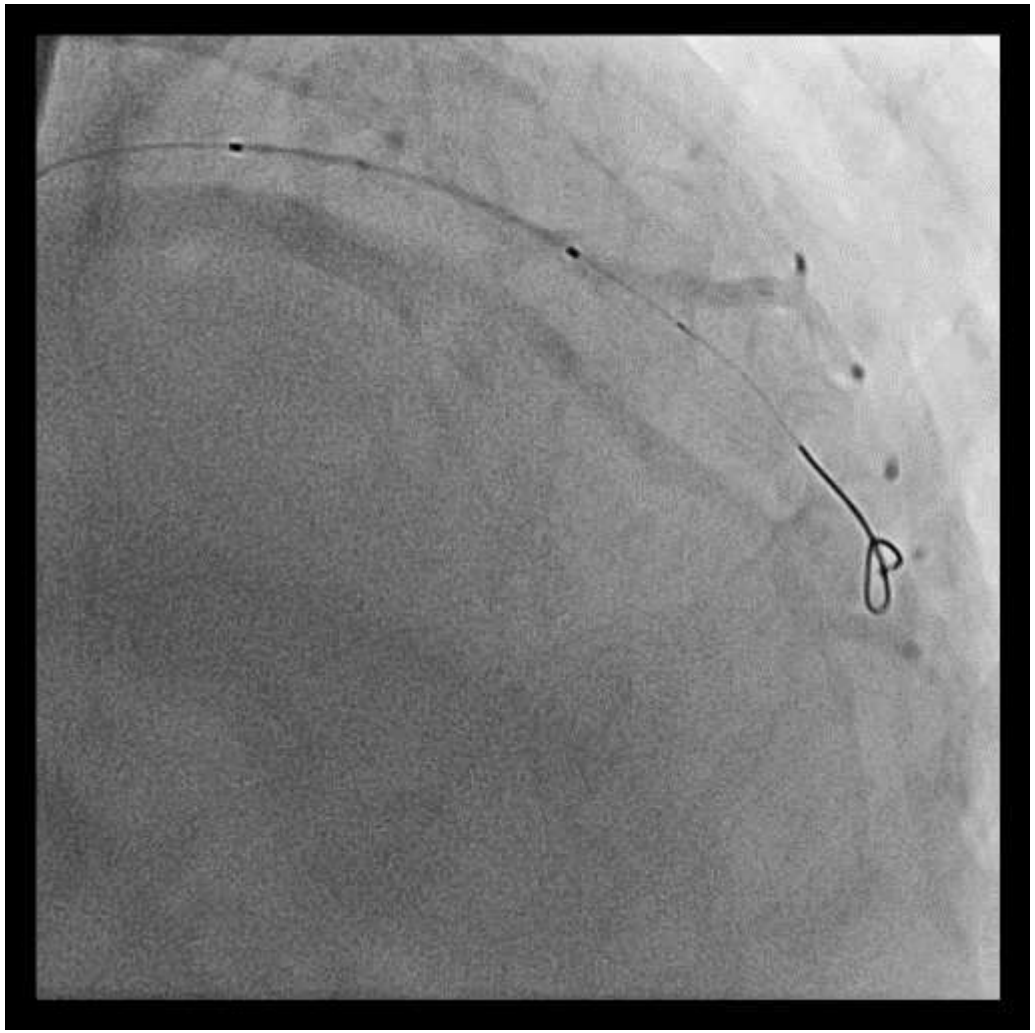
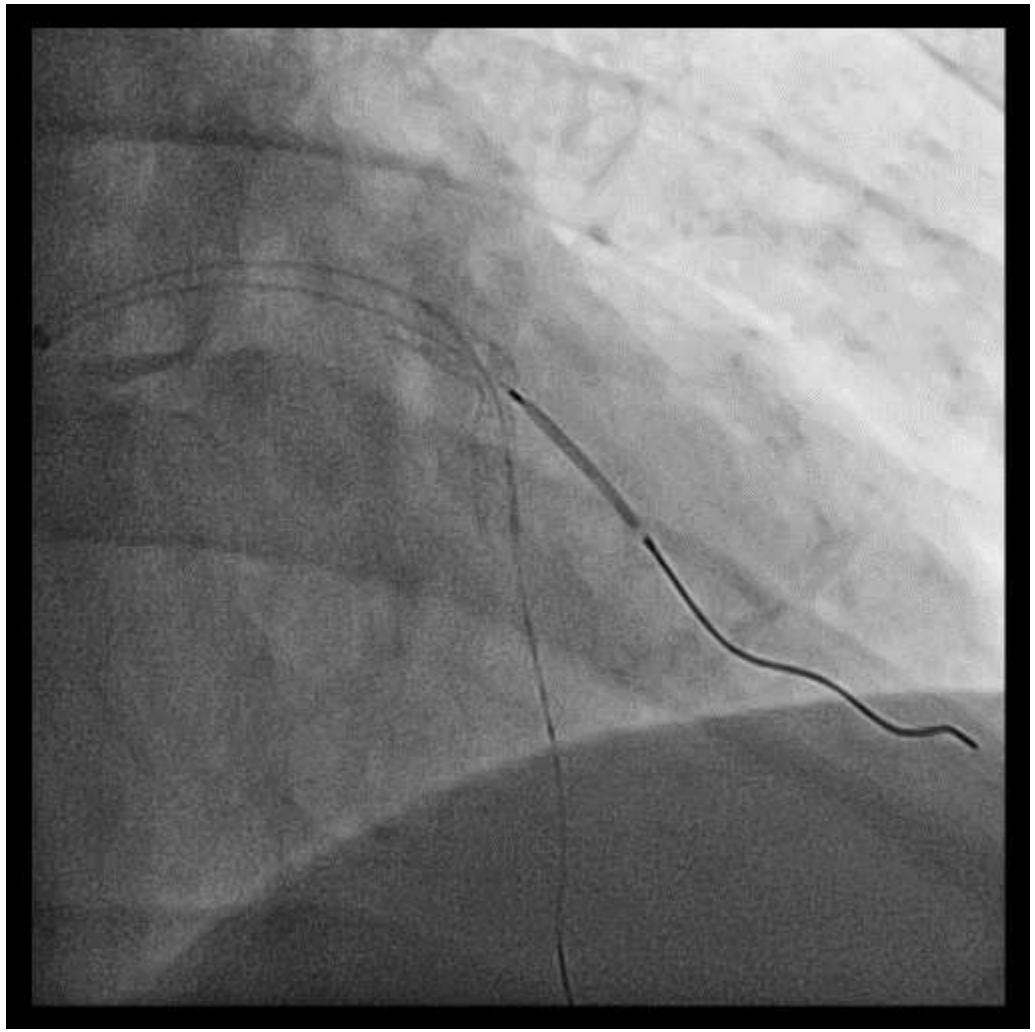
Visibility of stent strut

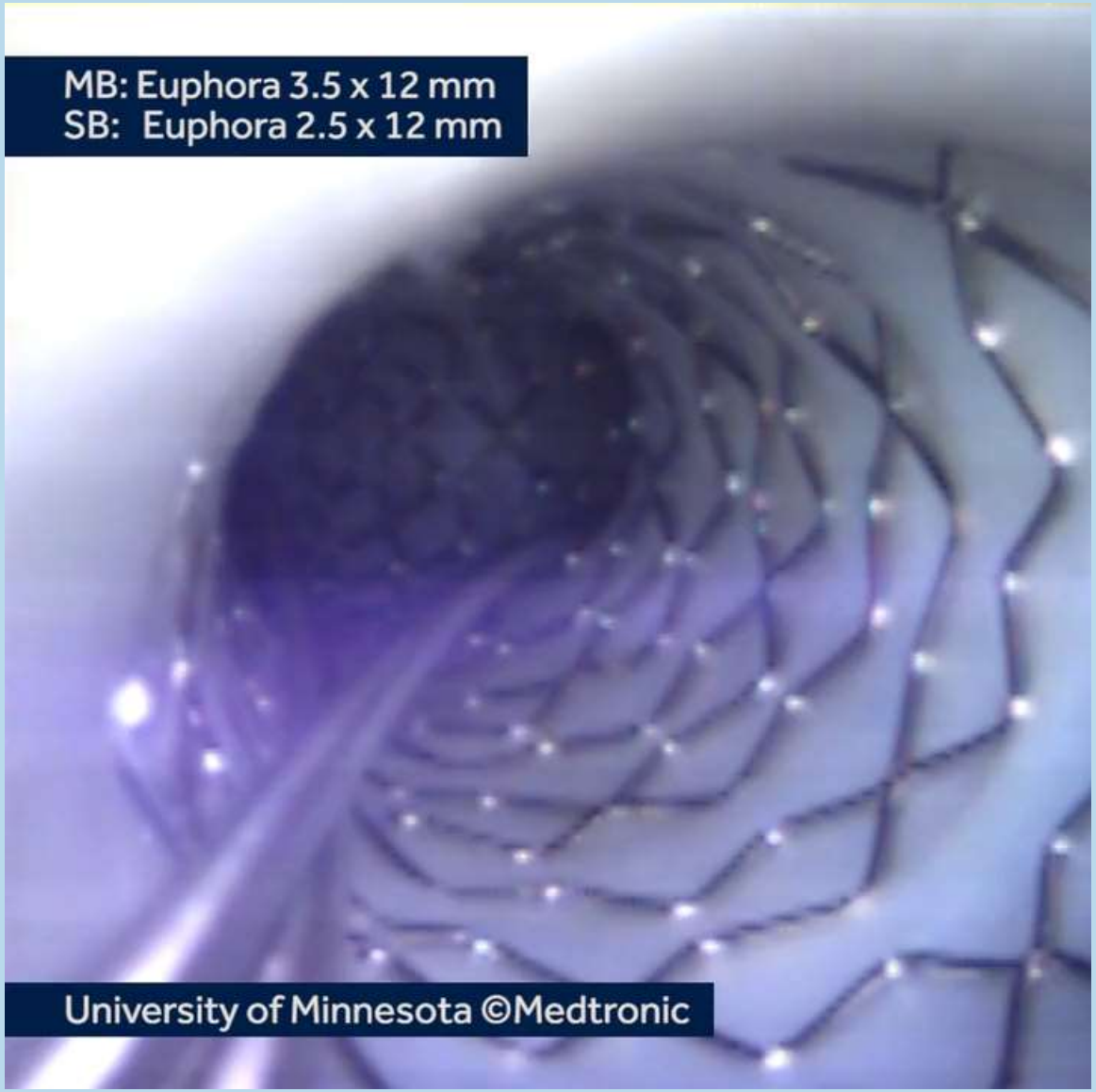
Competitor DES



Resolute Onyx



KISSING BALLOON TECHNIQUE
TO OPEN SIDE BRANCH



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ADEQUATE SIZE FOR KISSING BALLOON TECHNIQUE
OPEN CELL DESIGN FOR EXCELLENT SB ACCESS

Sidebranch Cell Size After Expansion

Characteristic	Resolute Onyx™ DES			
Stent size (mm)	2.00, 2.25, 2.50	2.75, 3.00	3.50, 4.00	4.50, 5.00
Cell diameter for bifurcation (mm)	3.7	3.9	3.8	4.9

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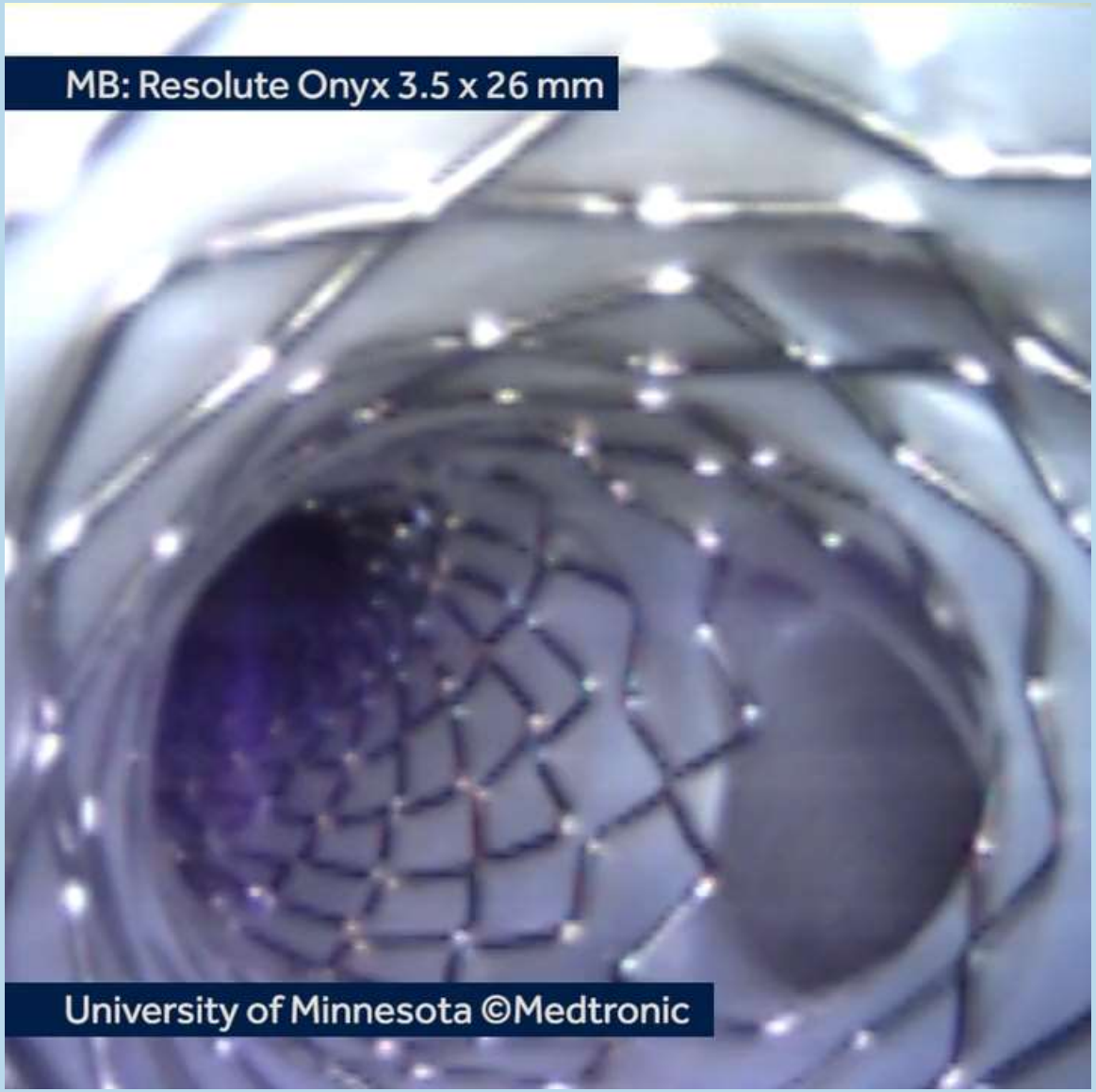
FULLY APPOSED SCAFFOLDING
IN PROVISIONAL FINAL RESULT



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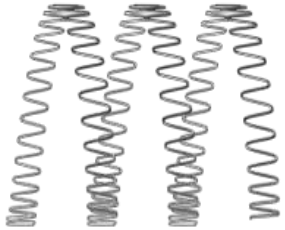
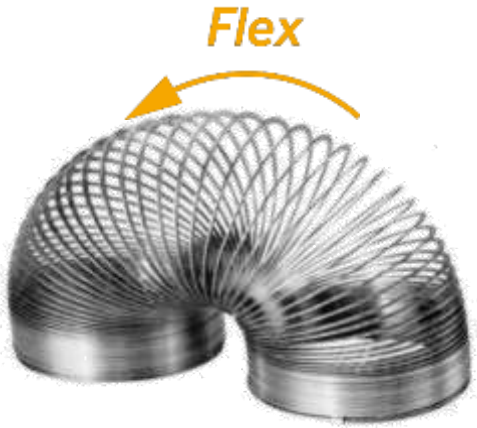
CONFORMABILITY AND APPOSITION
SINGLE WIRE DESIGN

Sinusoid-formed wire



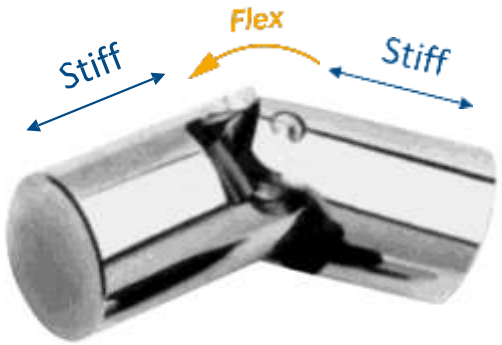
Helical wrap

Laser-fused



Single wire design

VS



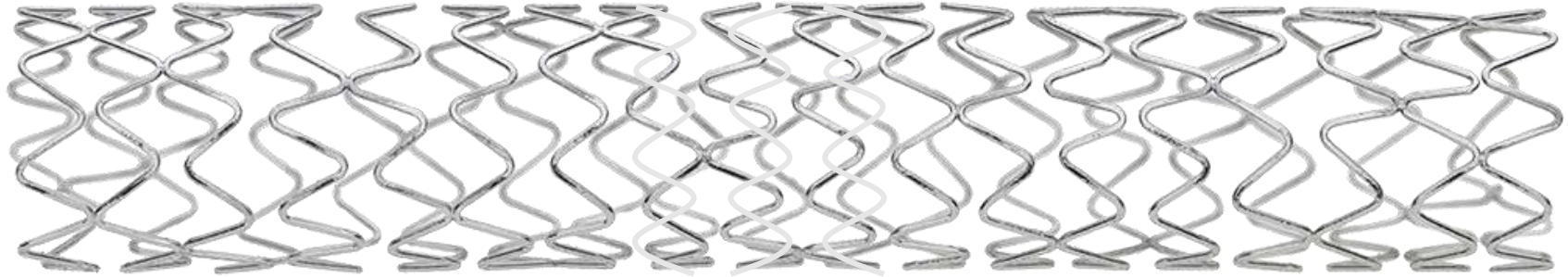
Laser cut design

A single strand of wire in a continuous sinusoidal waveform provides a fluid range of motion with **greater flexibility and conformability than laser-cut stent platforms**

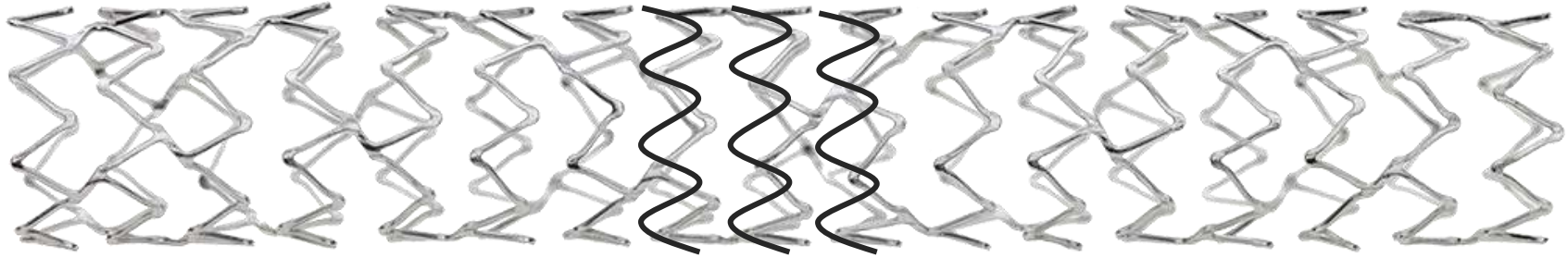
CONFORMABILITY AND APPOSITION
COMPRESSION-RESISTANT DESIGN

Peak-to-peak Design Provides Longitudinal Compression Resistance

Resolute Onyx™ Platform



Competetitor B's DES Platform



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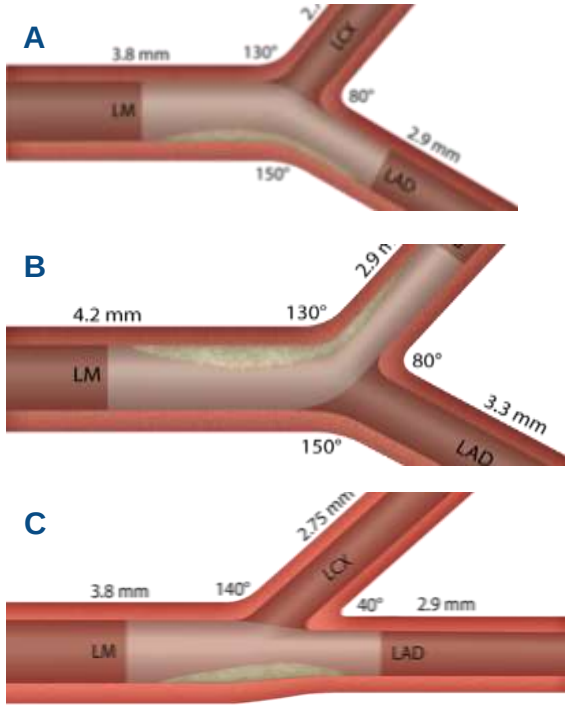
ENSURING GOOD APPOSITION REDUCES ARTERIAL INJURY AND THROMBUS FORMATION[1]

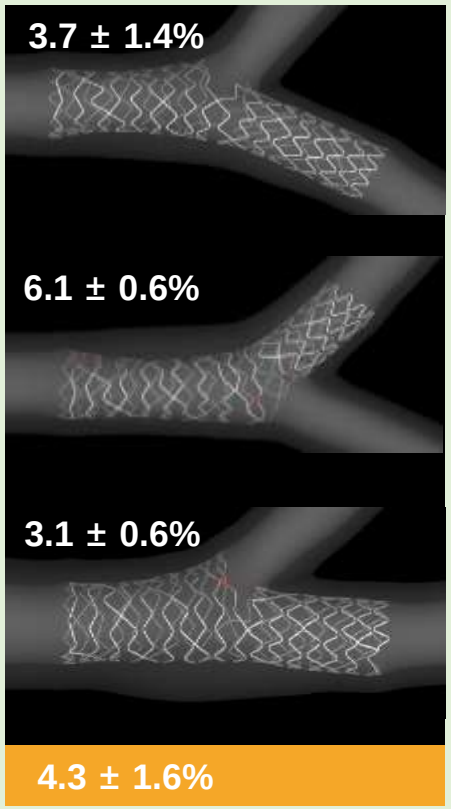
Models

Represent a range of bifurcation anatomies

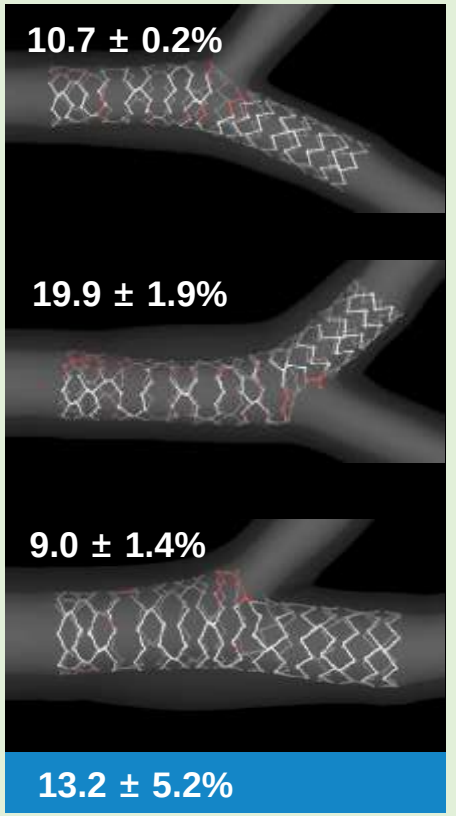


Percent Malapposed Struts[2]

Resolute Onyx™ DES
3.0 mm x 18 mm



Synergy™* DES
3.0 mm x 20 mm



p < 0.001

[1] Mortier. JACC: Cardiovasc Interv. 2014; 7(3): 325–333.
[2] Modeling method per Mortier. JACC: Cardiovasc Interv. 2014; 7(3): 325–333.
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RESOLUTE ONYX™ DES
BIFURCATION ADVANTAGES

Single Wire Design

Increased conformability and apposition

Truly Rounded Struts

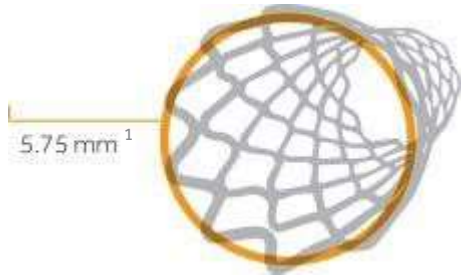
Easier side branch access

Platinum Iridium Core

Enhanced visibility for precise stent placement

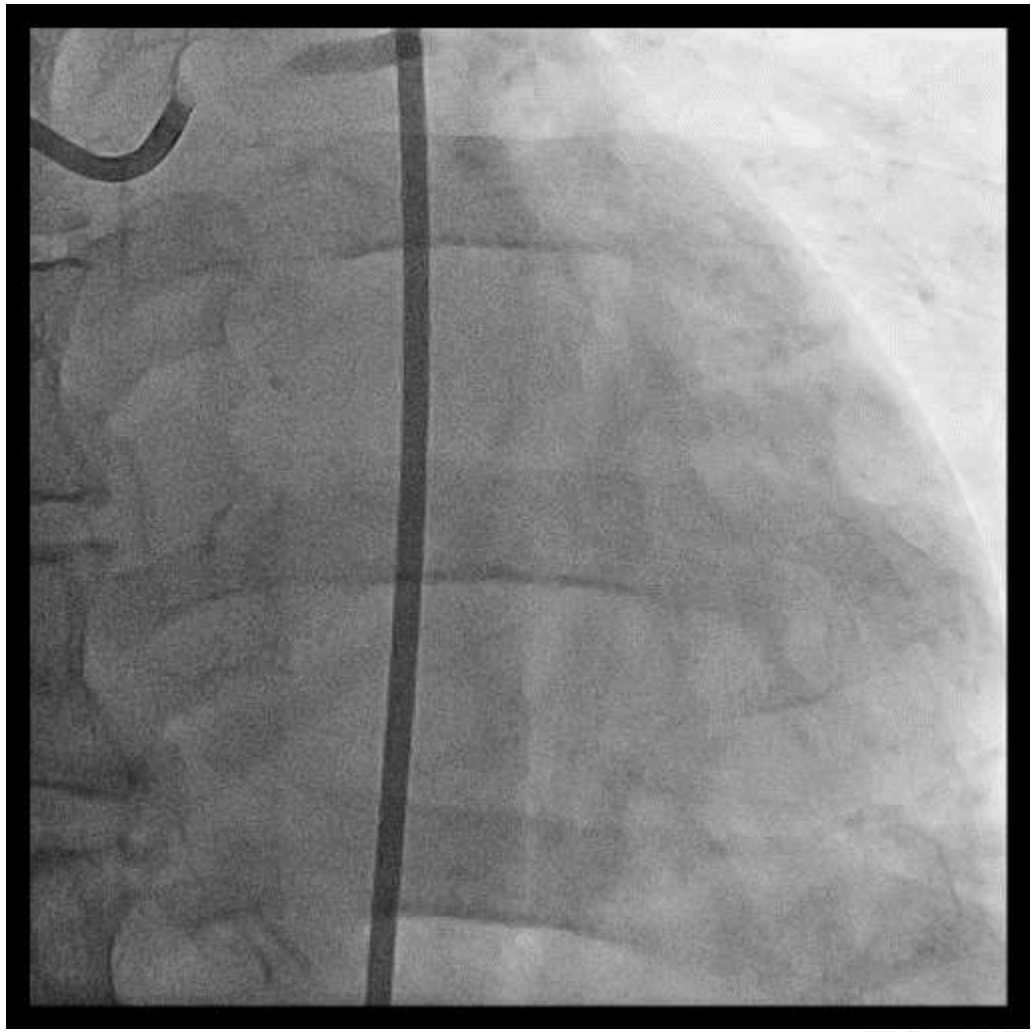
Broadest Size Matrix

Optimized deployment and expansion



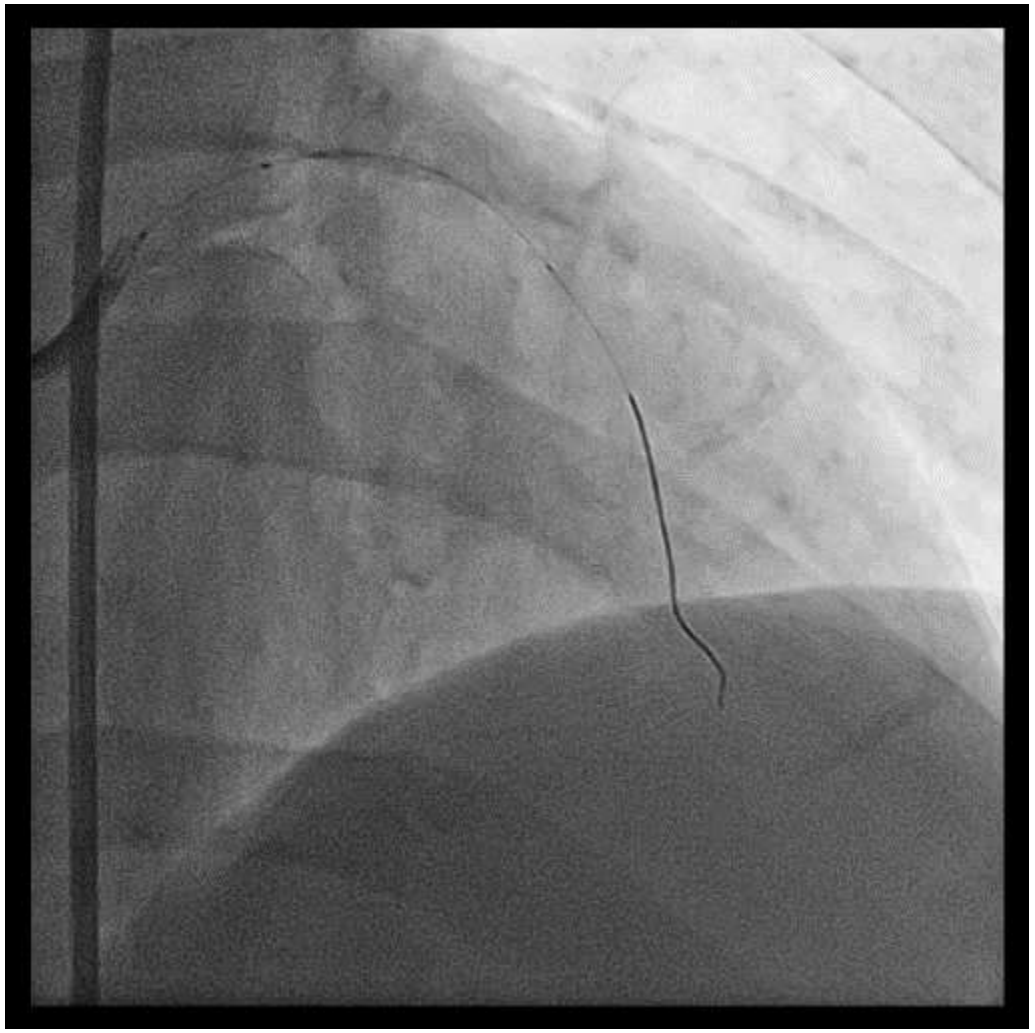
M/57

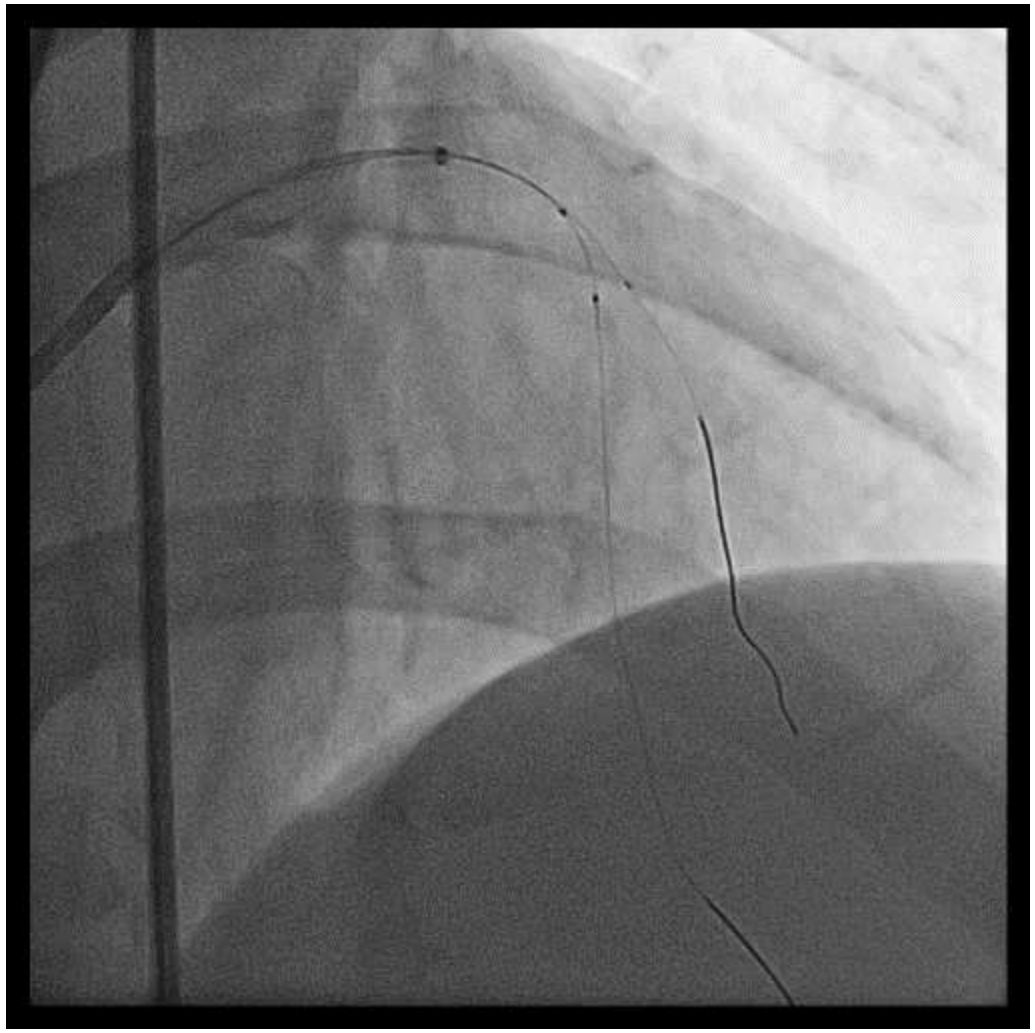
- Chest pain,
  which started 3 hours ago
- No past medical history
- ECG showed precordial ST elevation



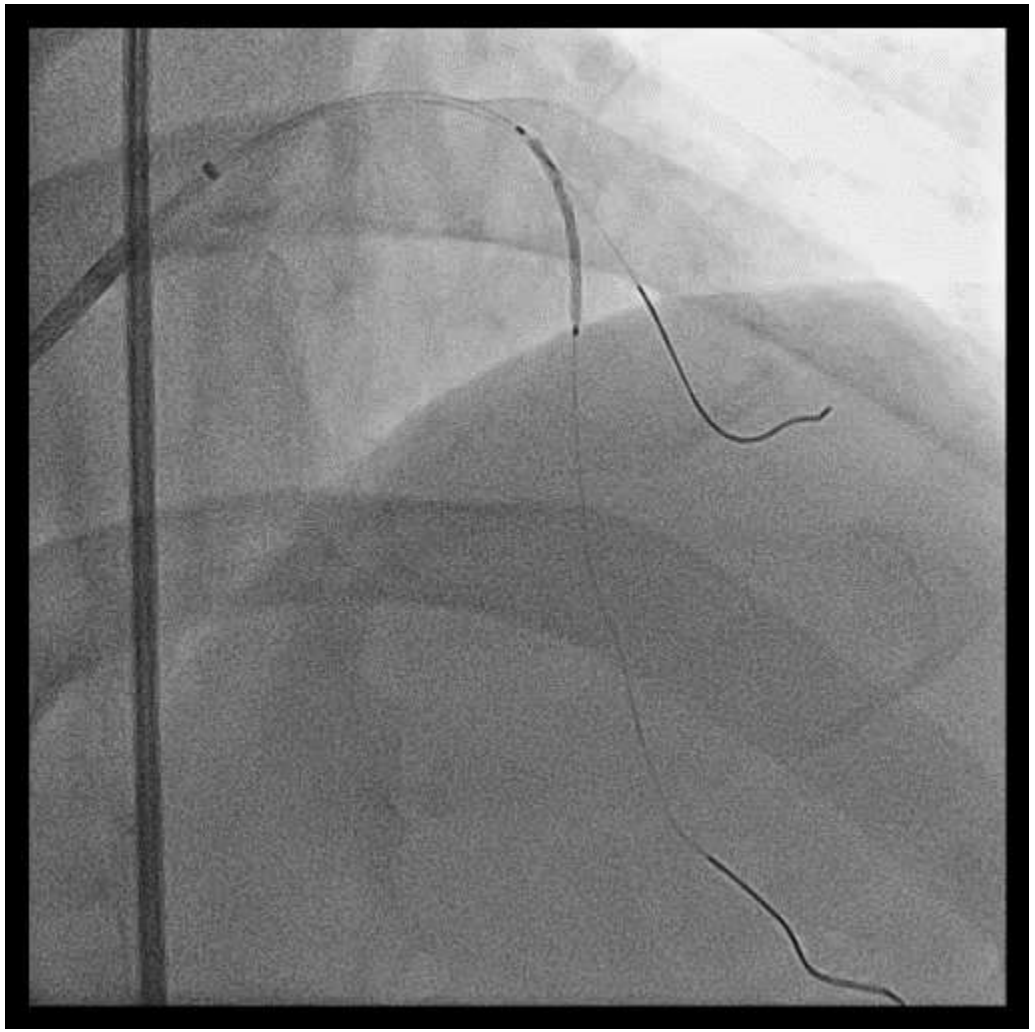
After initial wiring & POBA

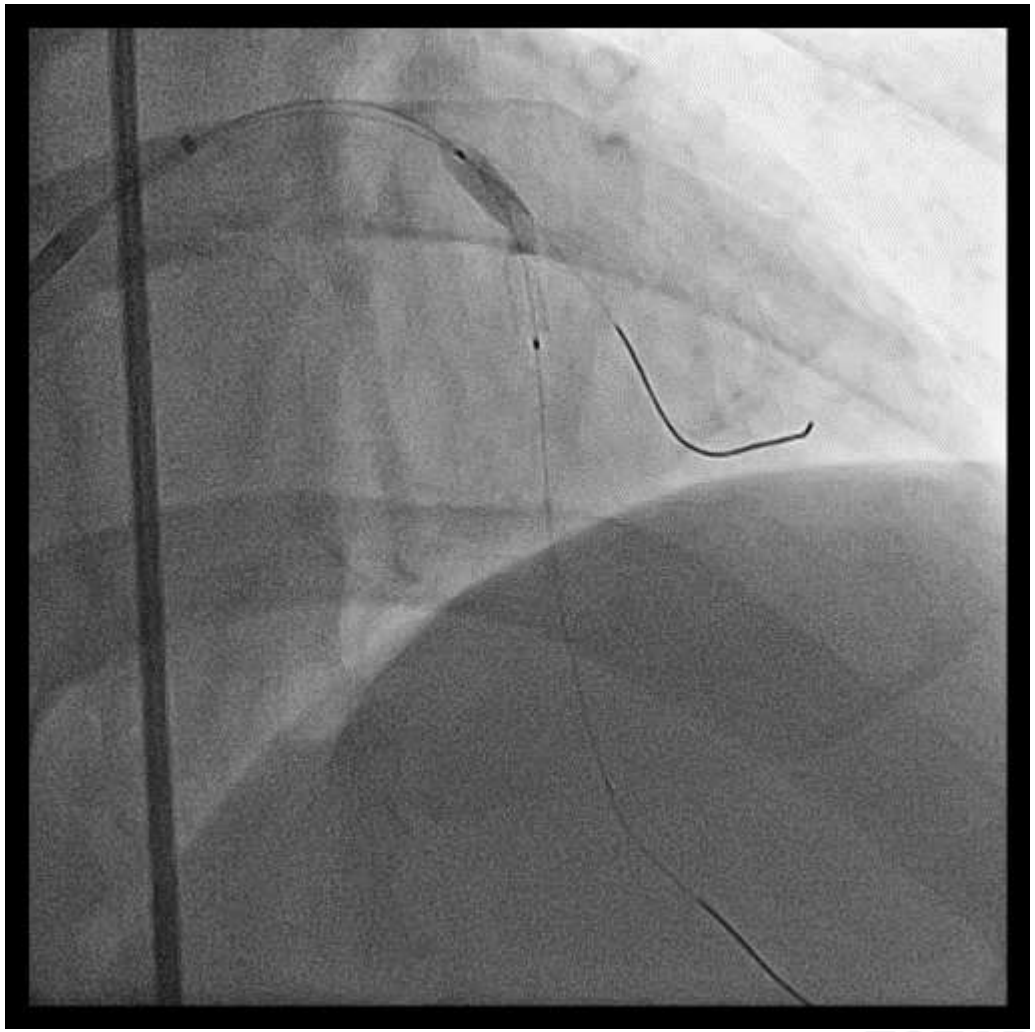
Sion / BMW in Dg / LAD, Euphora 2.5 * 15mm,





Resolute Onyx 3.5 * 18mm

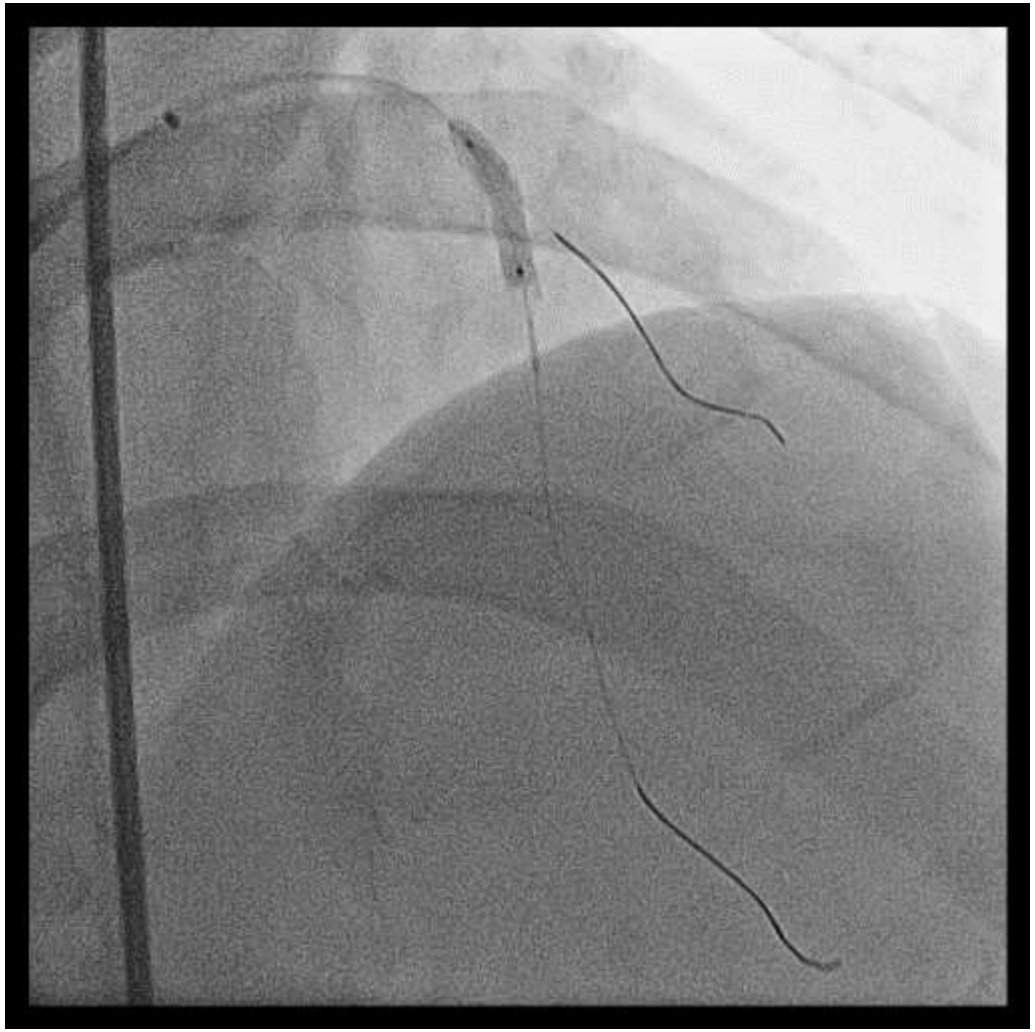


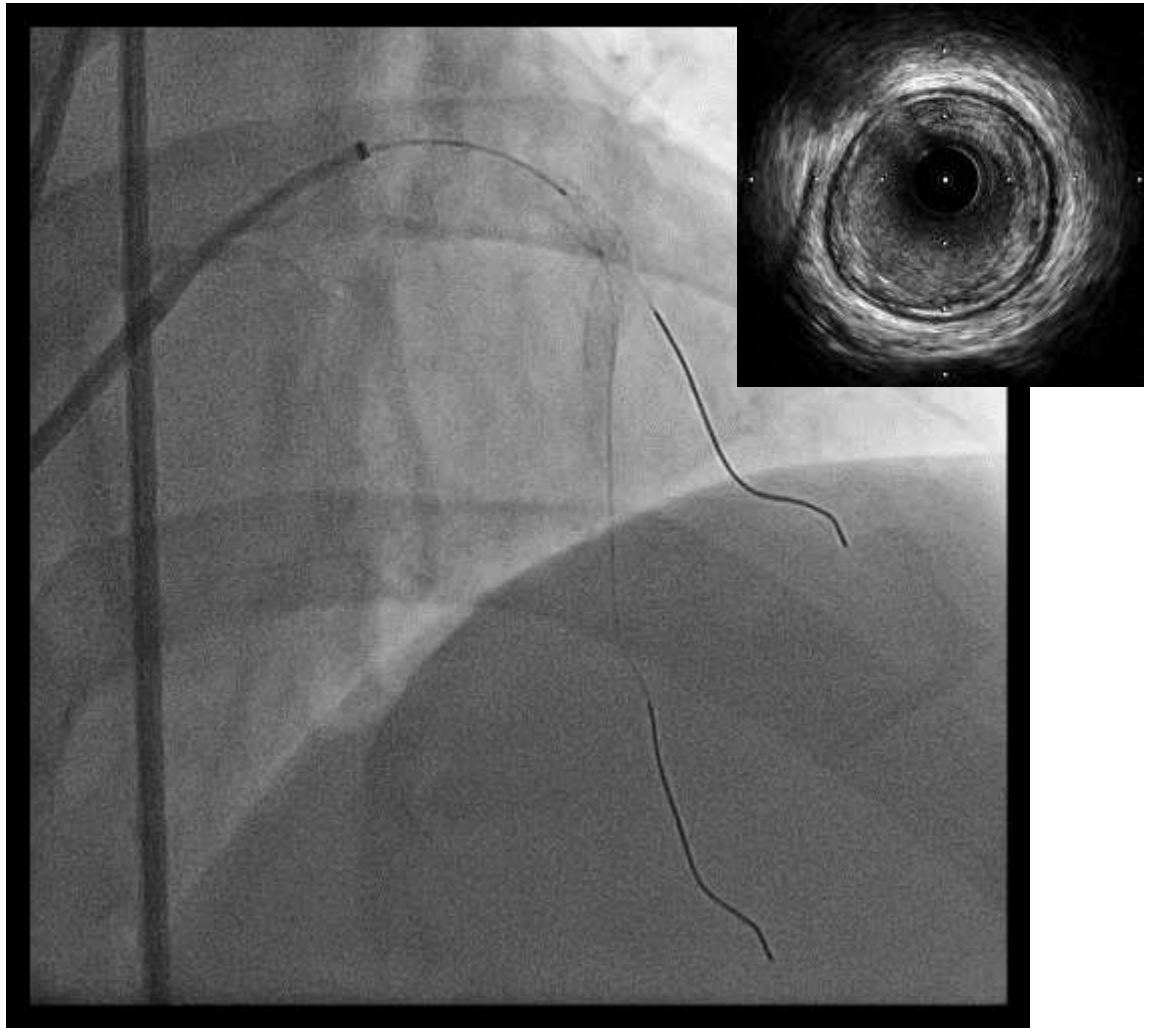


TCTAP 2022

Adj. ballooning with 3.5 * 15mm NC balloon

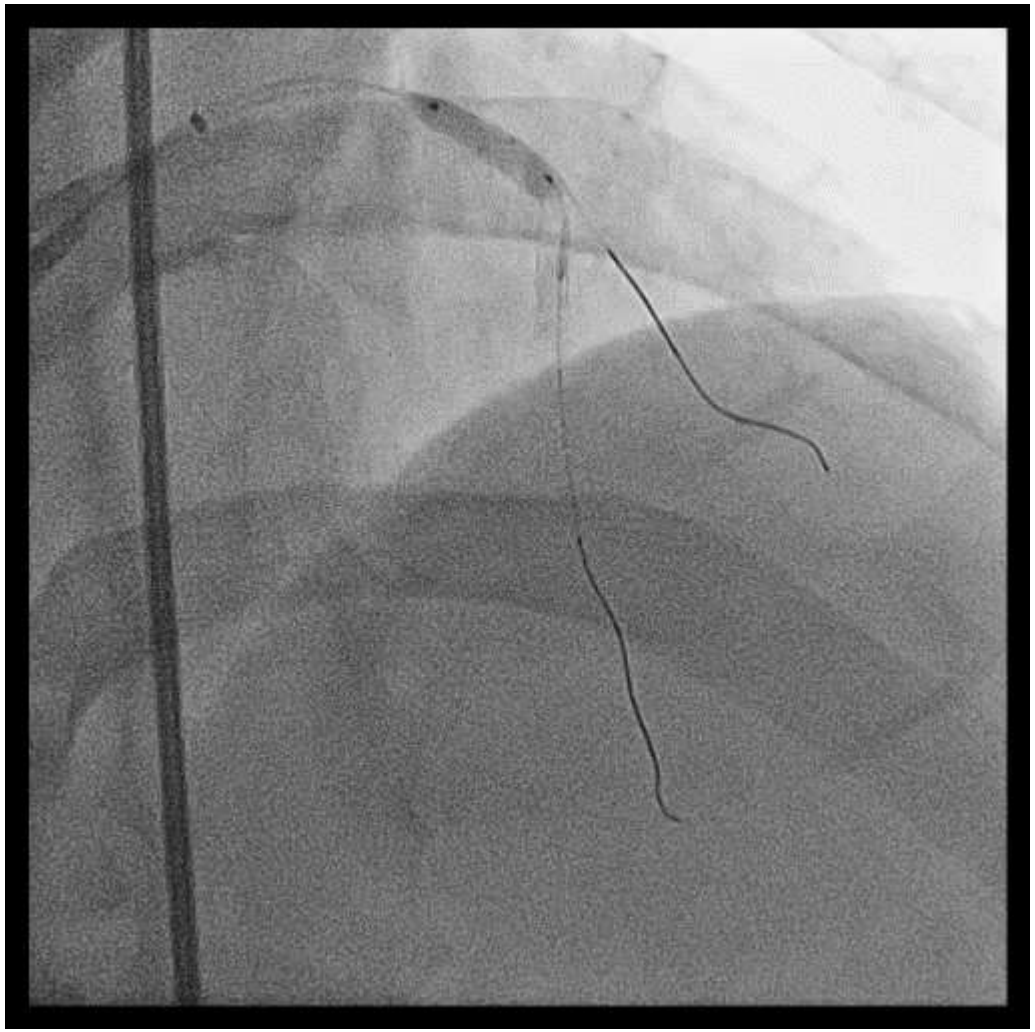
Big Dg ostium was compromised (aggravating pain even with TIMI 3 flow)



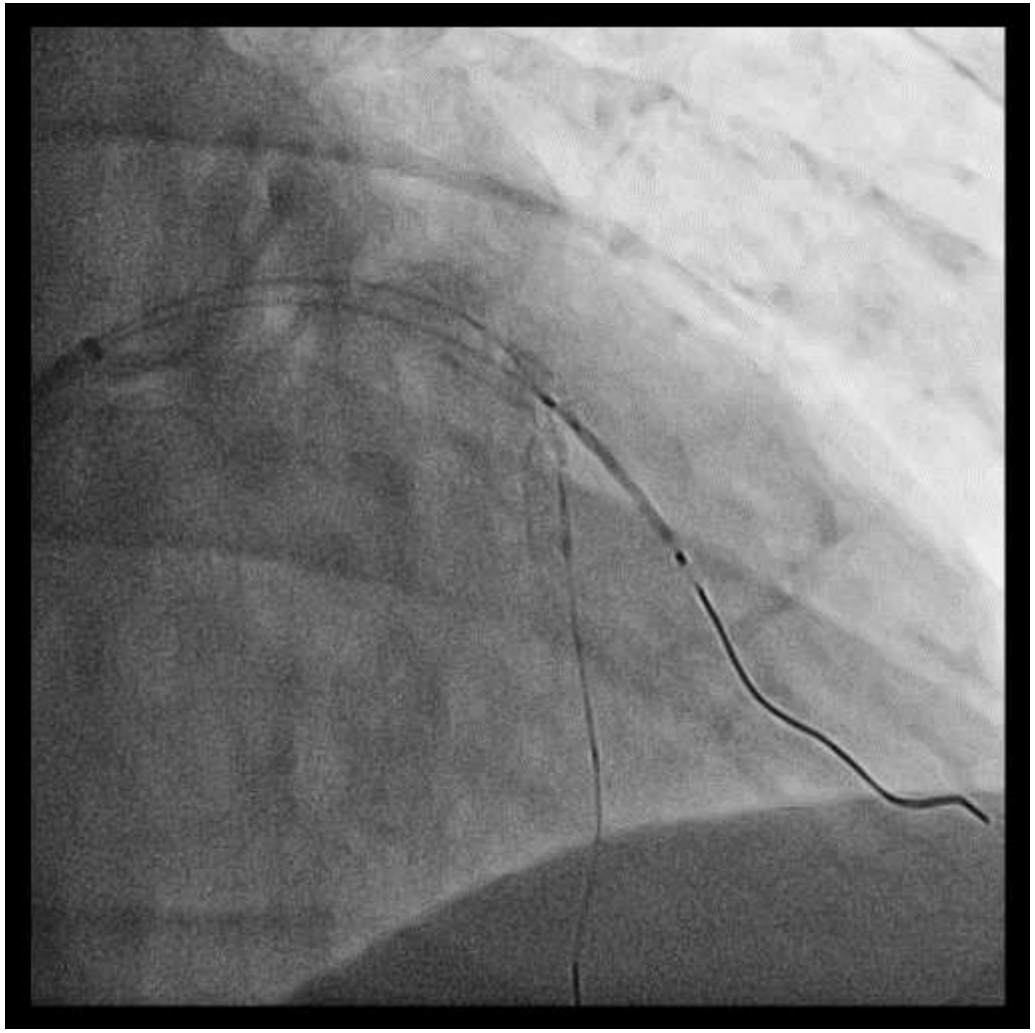


POT → Provisional T-stenting

*POT with 3.5 * 15mm NC balloon*

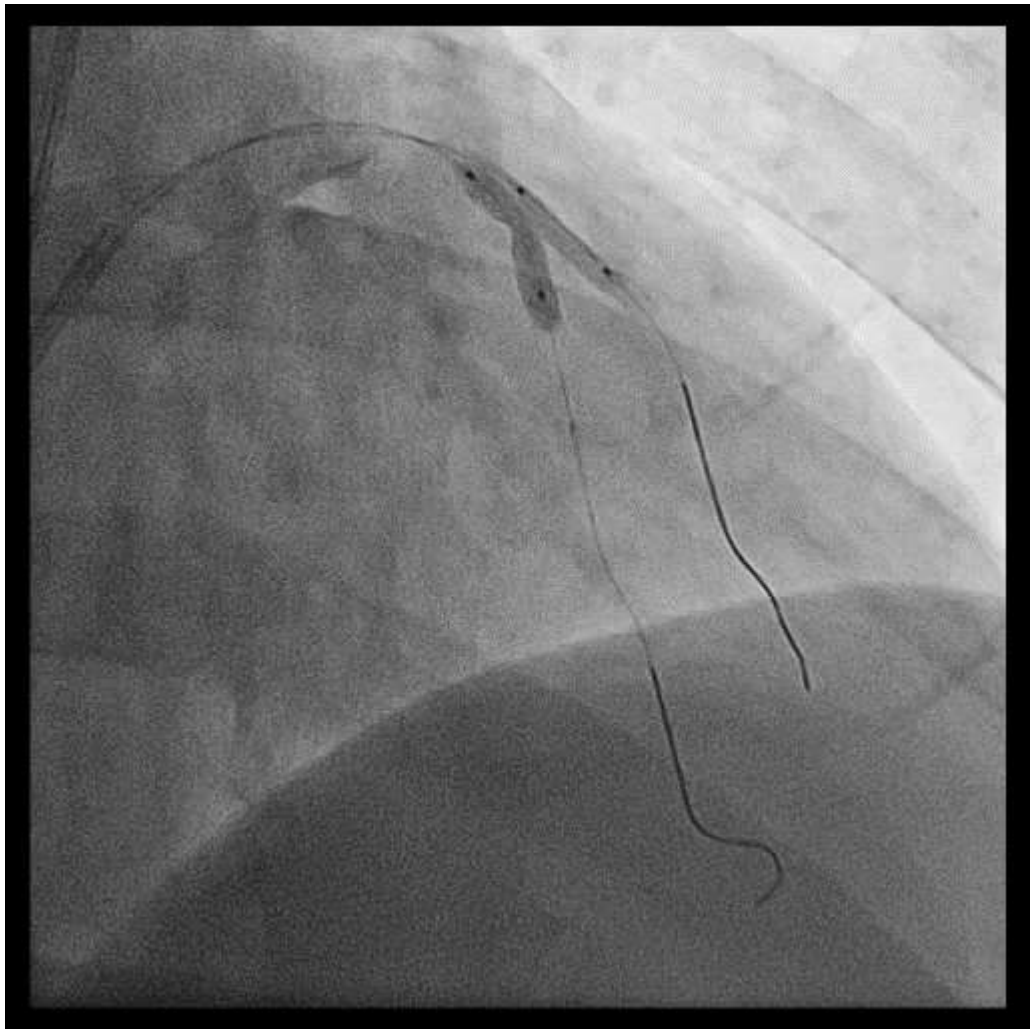


*Resolute Onyx 2.5 * 12mm*

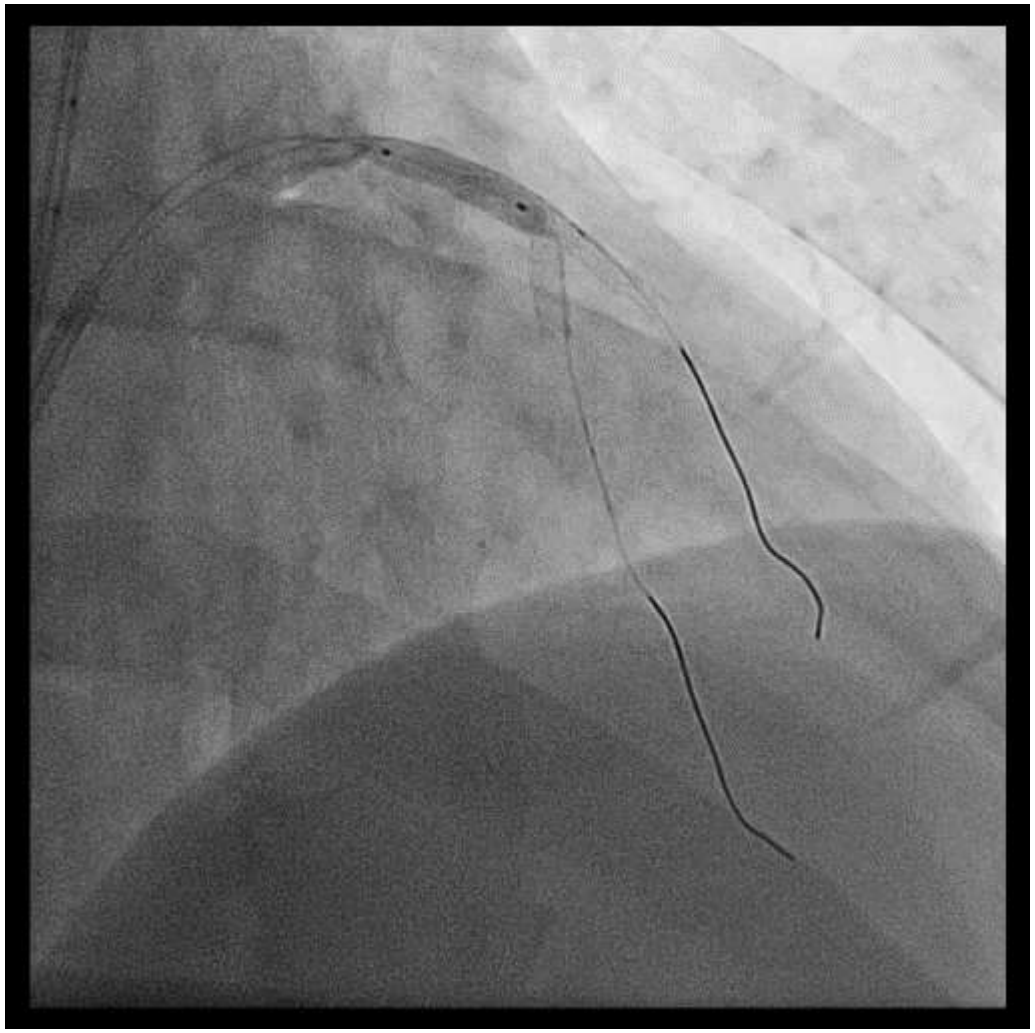


Kissing balloon inflation → rePOT

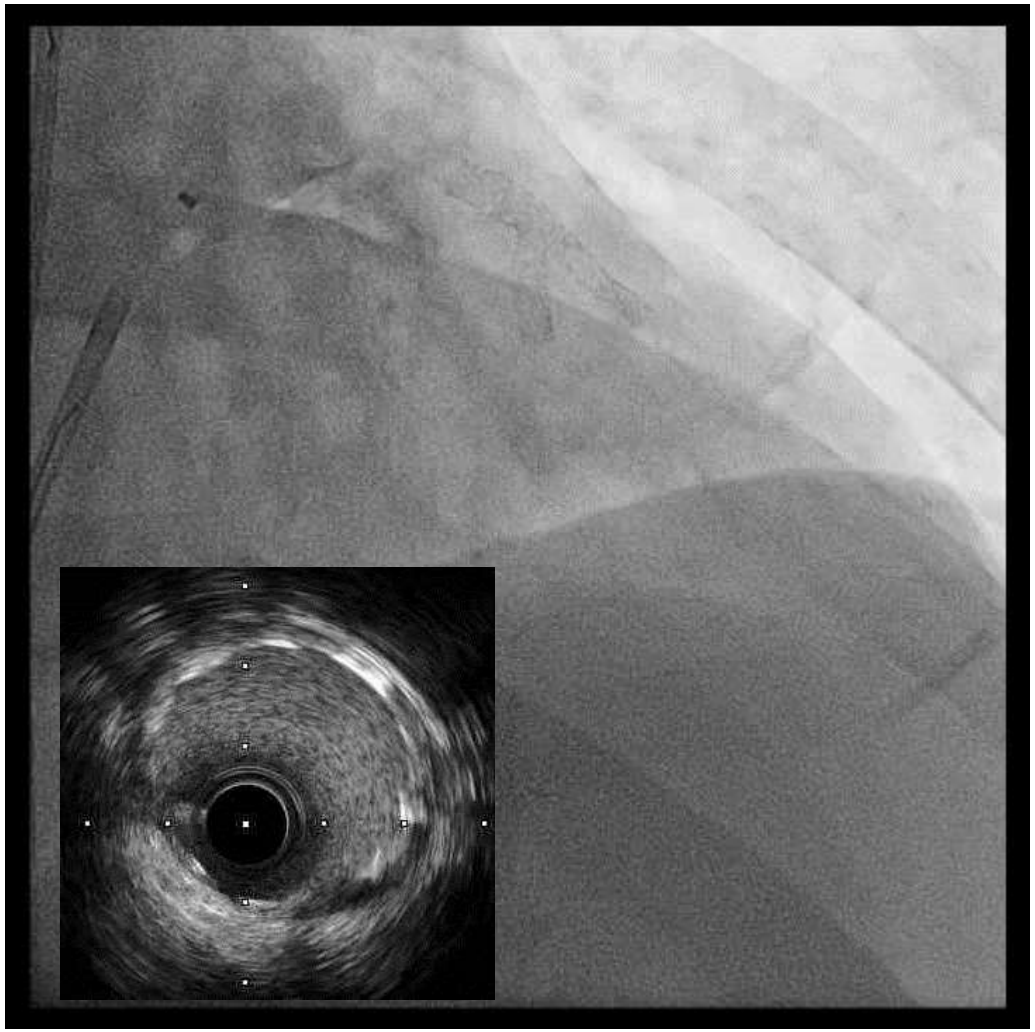
*KBI with 3.5 * 15mm, 2.5 * 12mm NC balloons*



*Final POT with 3.5 * 15mm NC balloon*



Final angiography

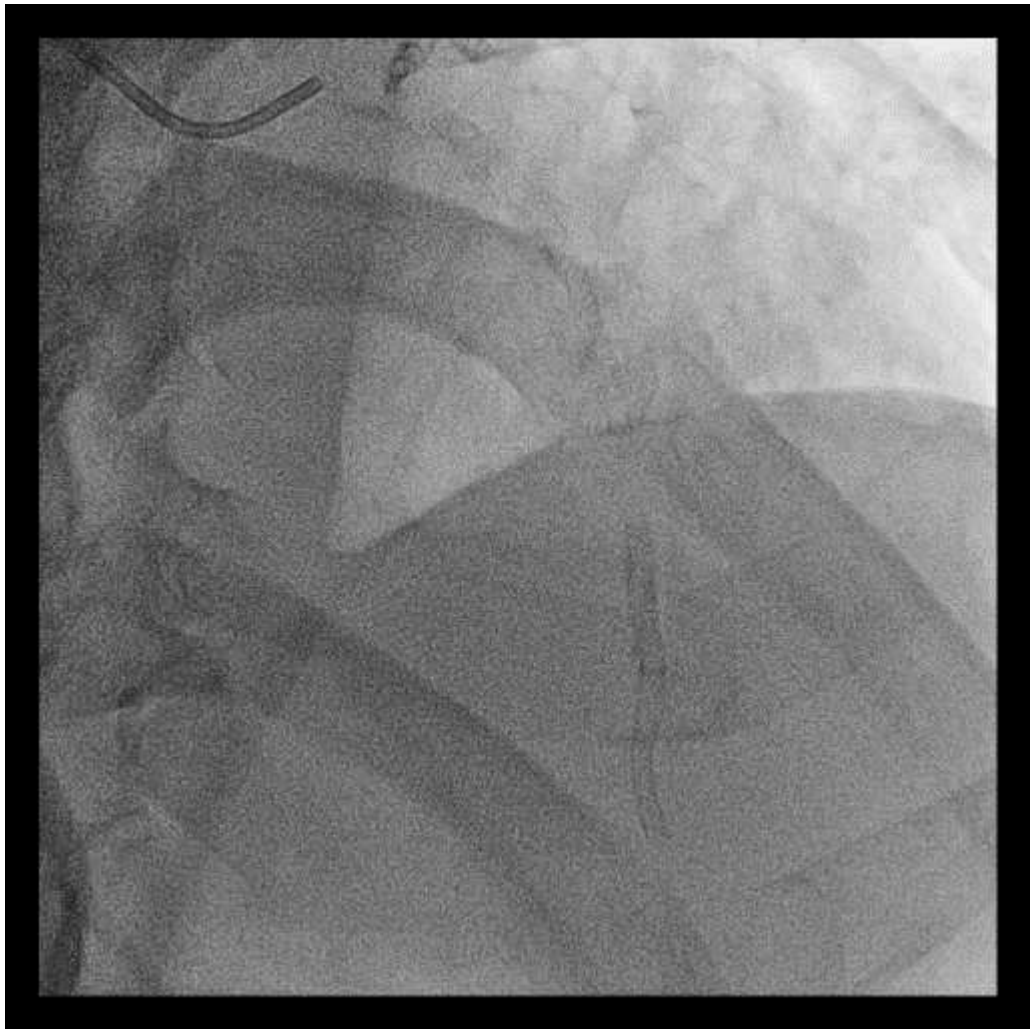


M/58

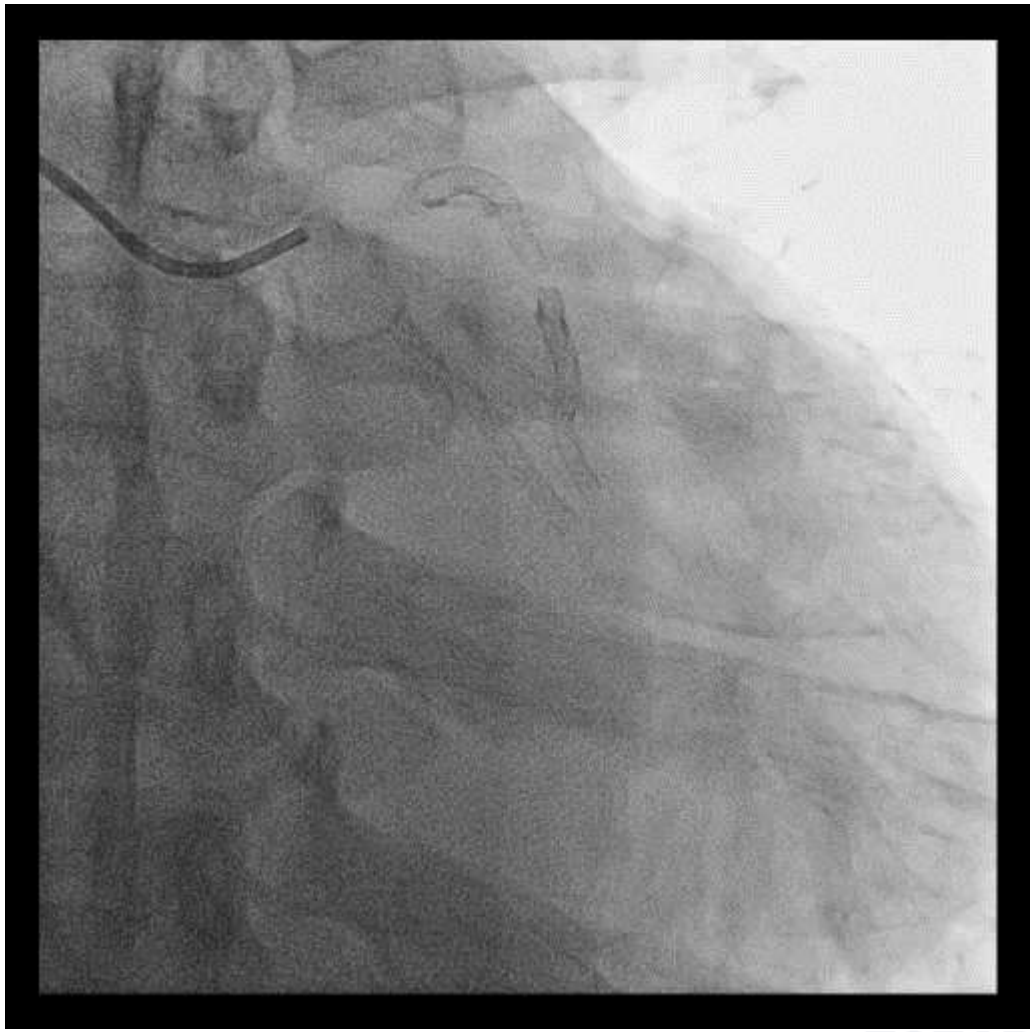
- Chest pain, dyspnea for 2 hours
- Known 3VD
  s/p PCI to LAD, LCx (‘11, ‘14, ‘15)
- HTN, DM on insulin
- CKD stage 3
- Elevated CK-MB, Troponin-T

Initial CAG

Total occlusion of previous LAD stent

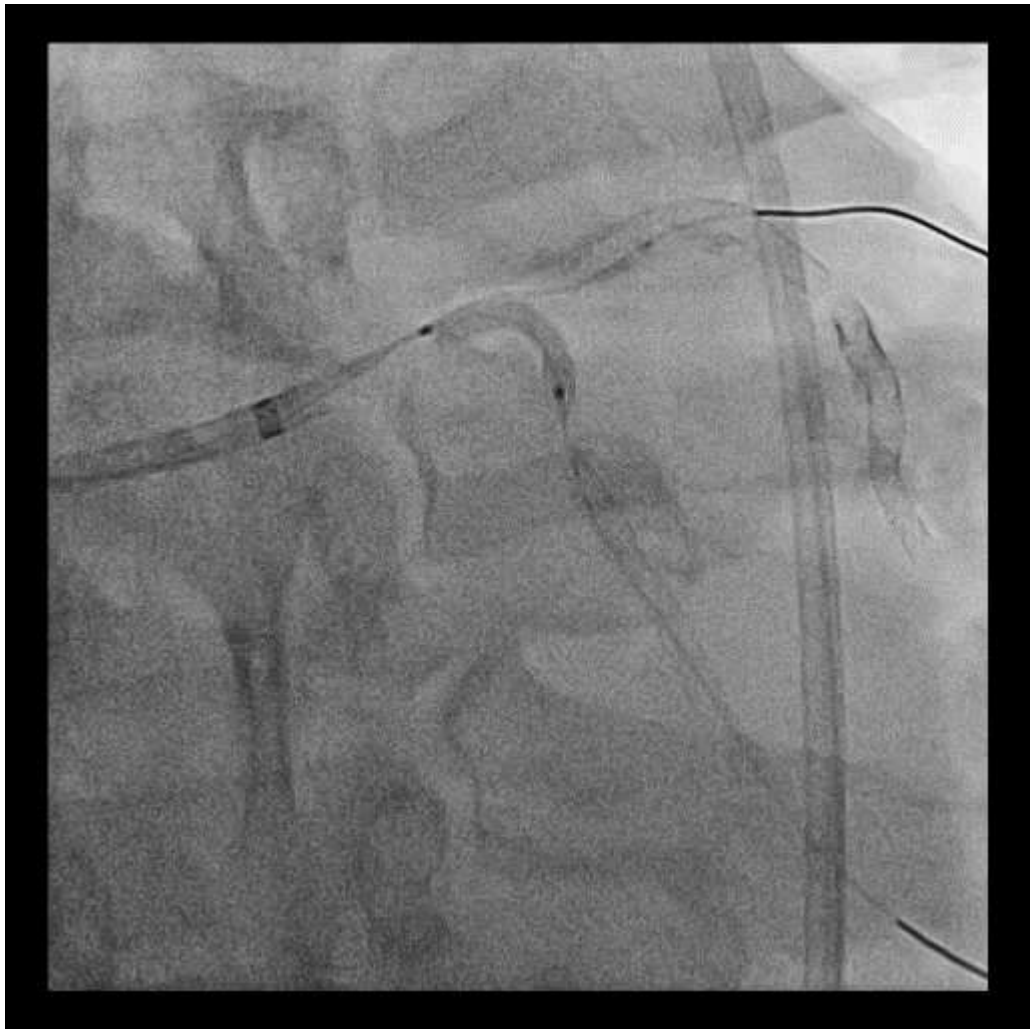


LM bifurcation (medina 1,1,1)

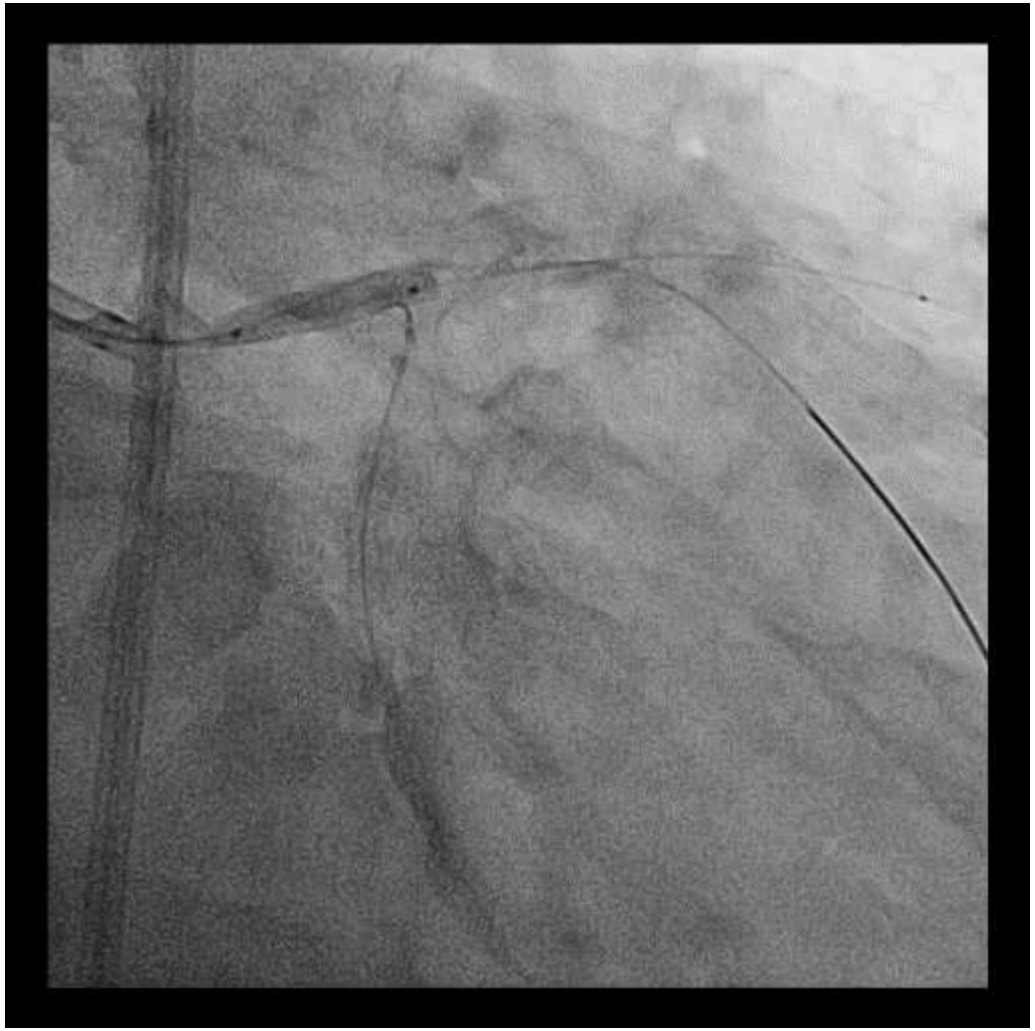


LM PCI → staged PCI for total ISR

*2.5 * 15mm NC balloon*

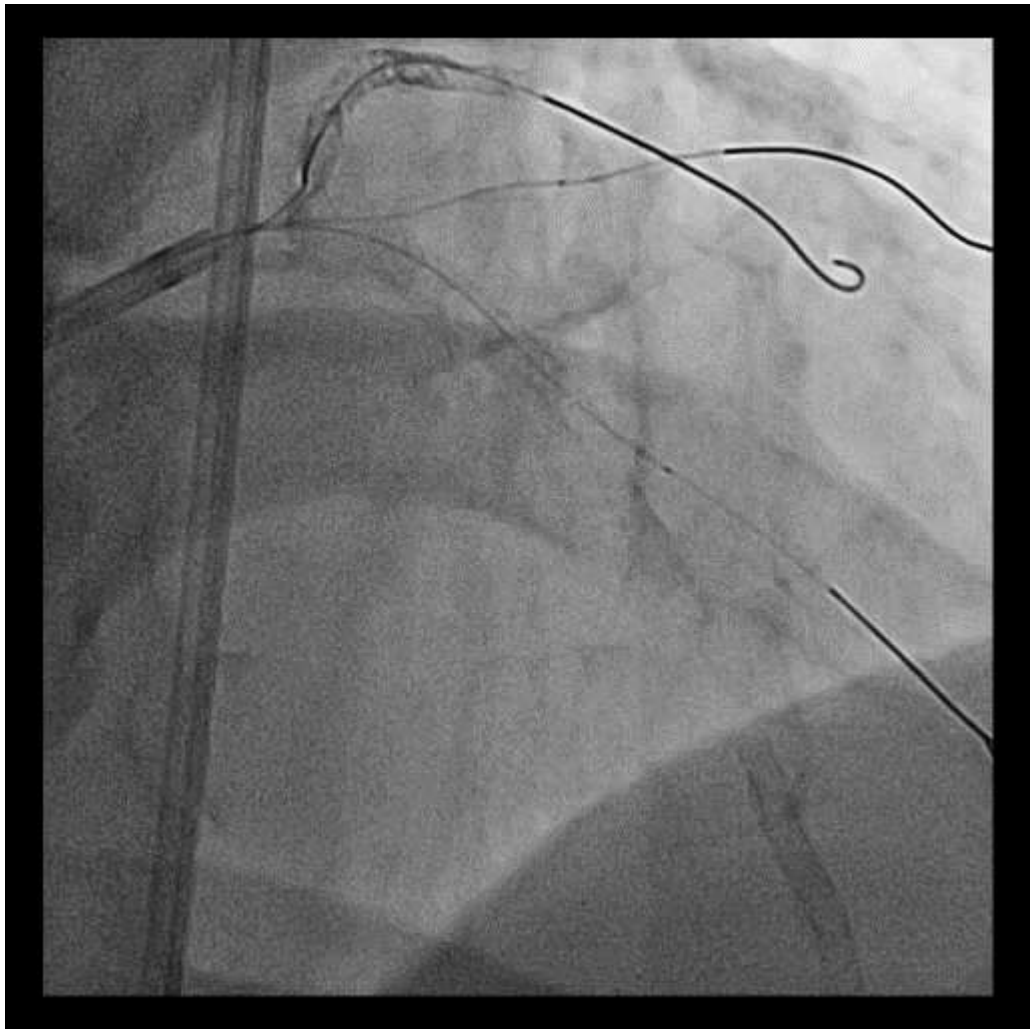


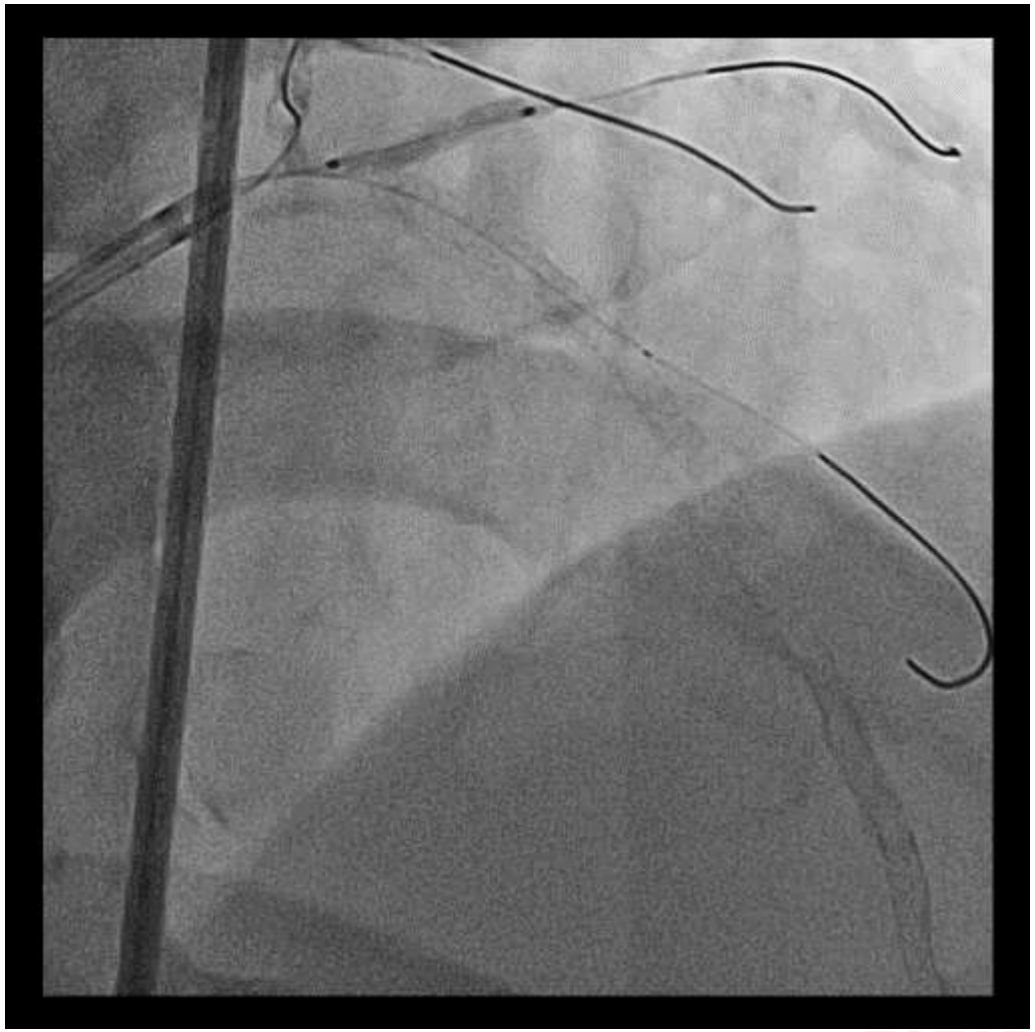
*3.5 * 15mm NC balloon*



POBA to big early Dg branch

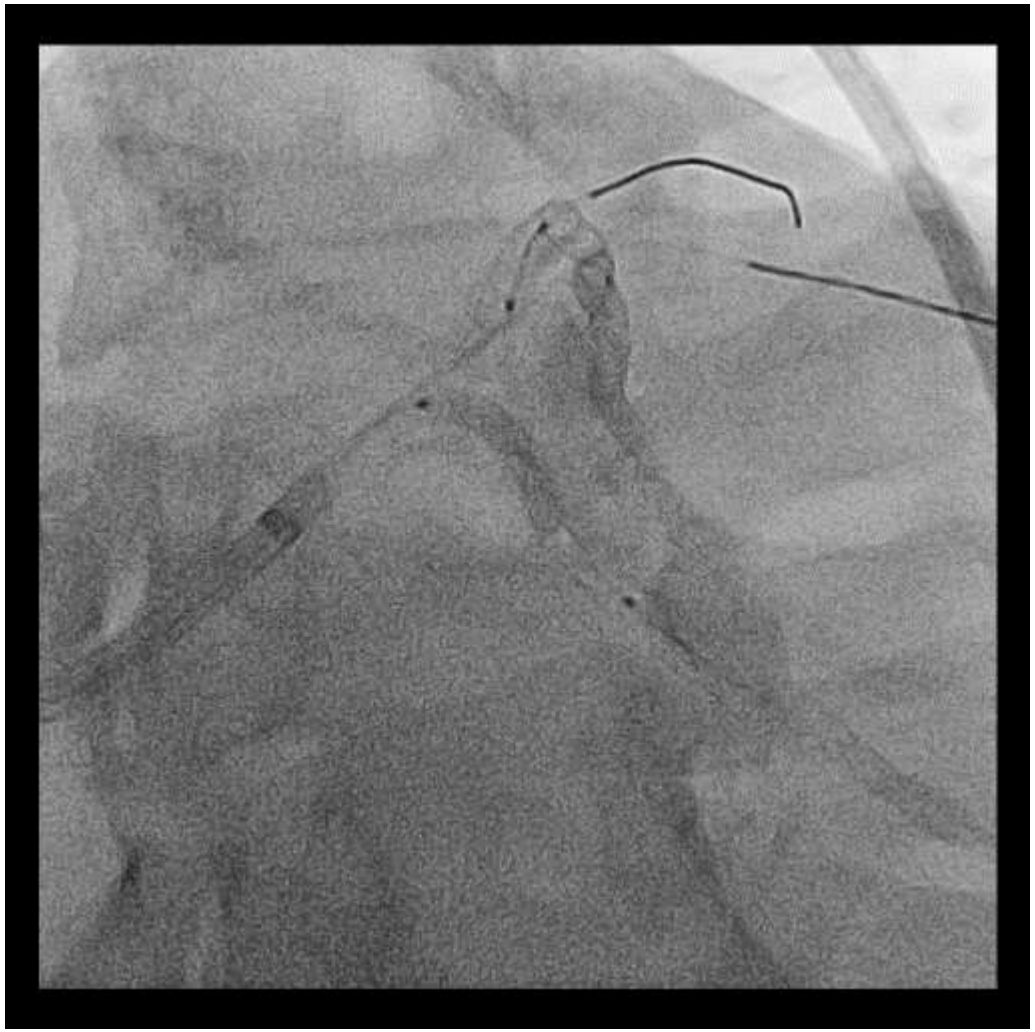
2.5 * 15mm NC balloon





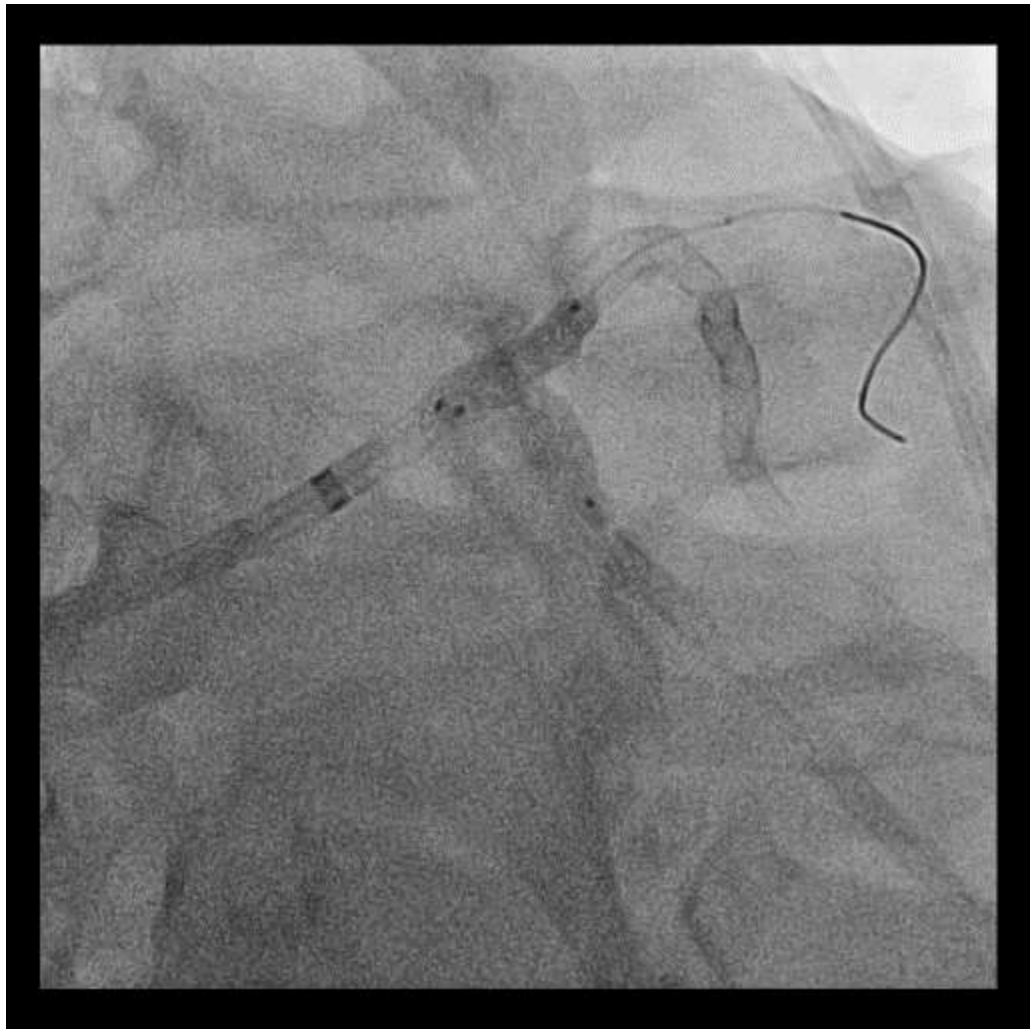
LCx stenting with Resolute Onyx 2.5 * 18mm

DK crush technique



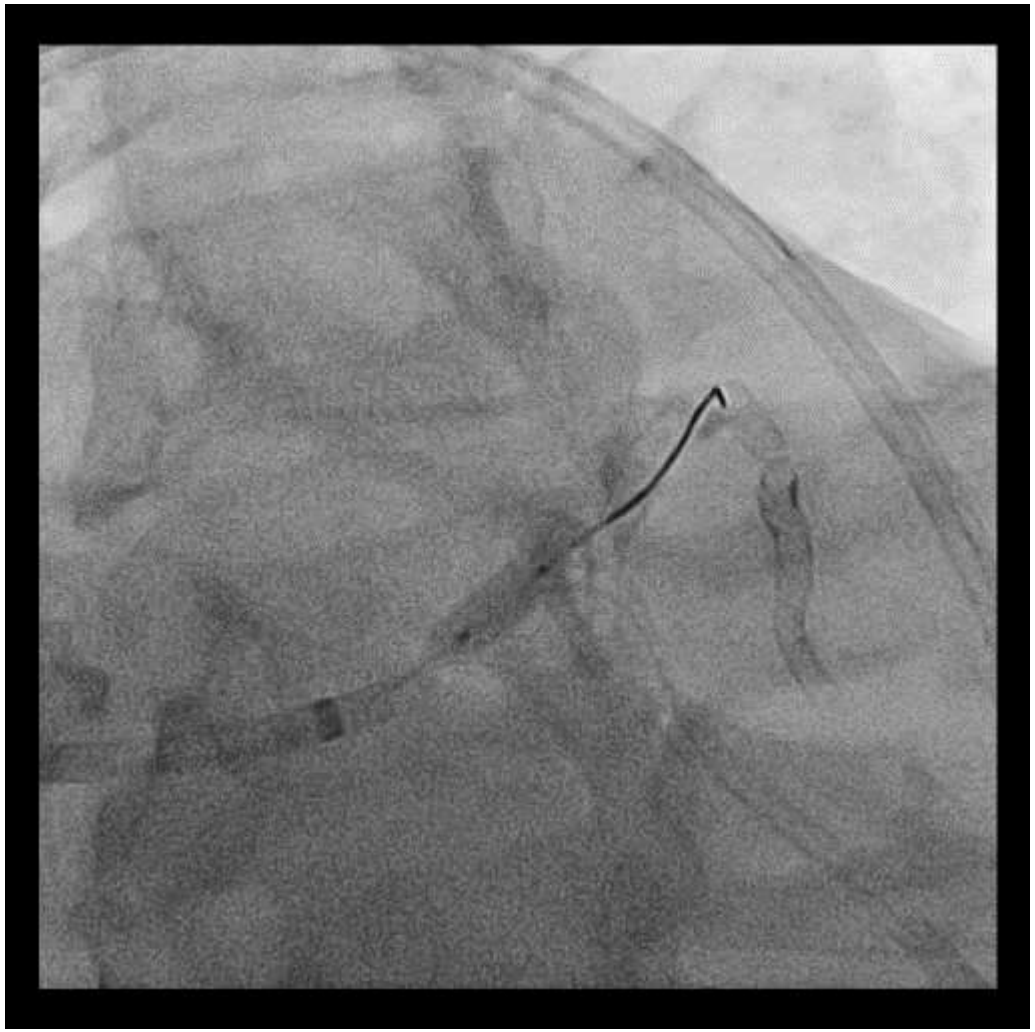
LM-LAD with Resolute Onyx 3.5 * 22mm

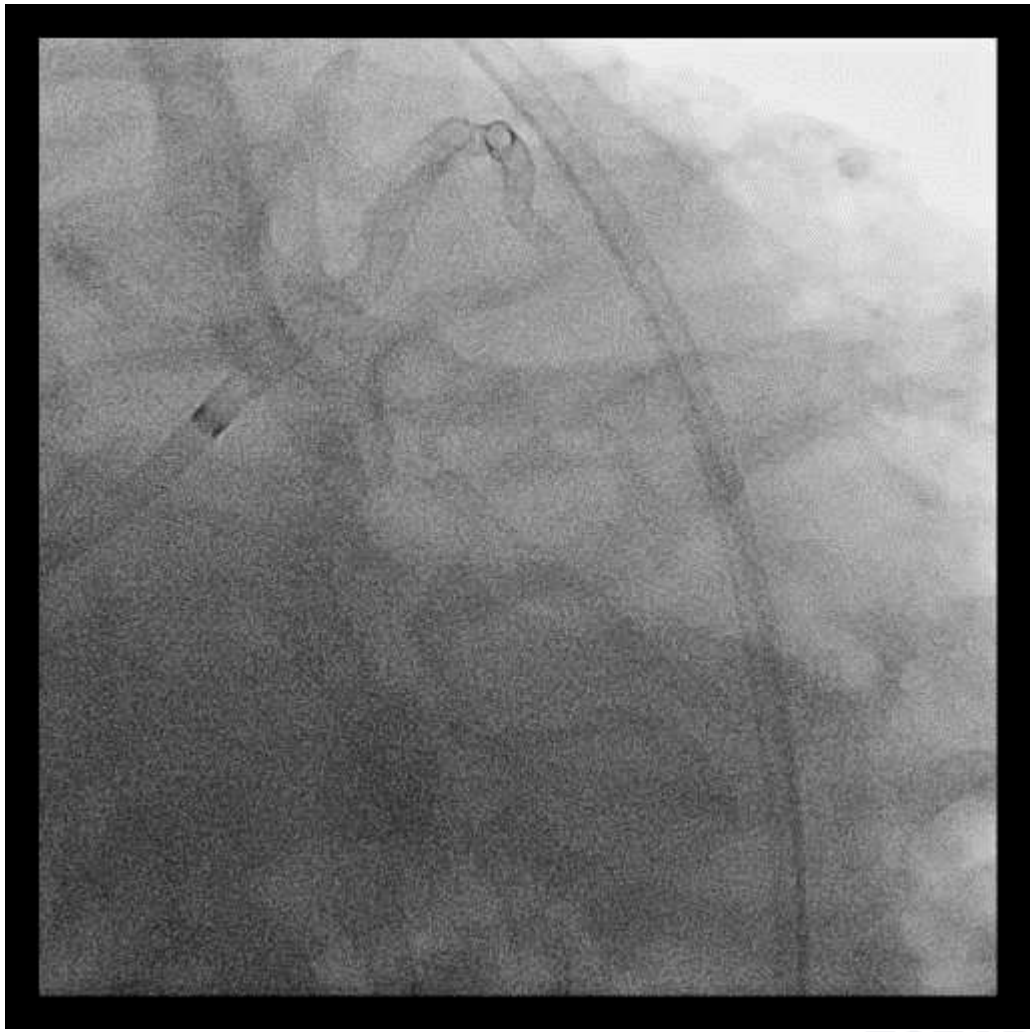
Kissing balloon inflation with 3.5 * 15mm / 2.5 * 15mm NC balloons



Final POT / angiography

*4.0 * 8mm NC balloon*





Conclusion

- Resolute Onyx stent design helps us achieve optimal results in bifurcation PCI

- When you perform complex PCI
  - Always plan ahead (A well prepared PCI is half done!)
  - Be aware of unexpected situations
  - Be comfortable of 2+ bifurcation PCI techniques

Thank You for your attention.