Imaging that Changed My Strategy in Complex PCI

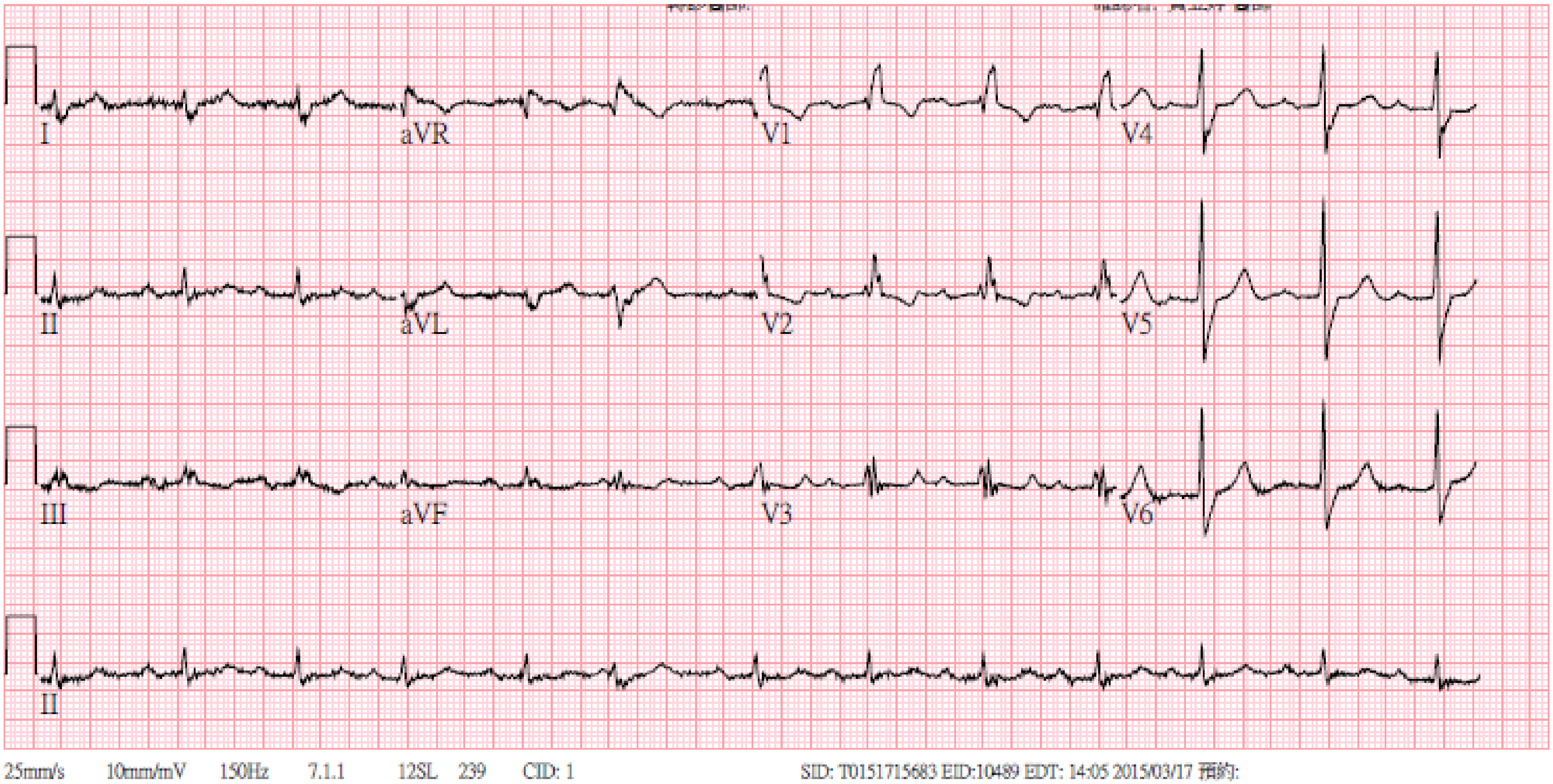
Chien-Lin Lee [1] **/Yi-Chih Wang** [2]**/Juey-Jen Hwang** [2]

1. Far Eastern Memorial Hospital, New Taipei City, Taiwan
2. National Taiwan University Hospital, Taipei, Taiwan.

Case

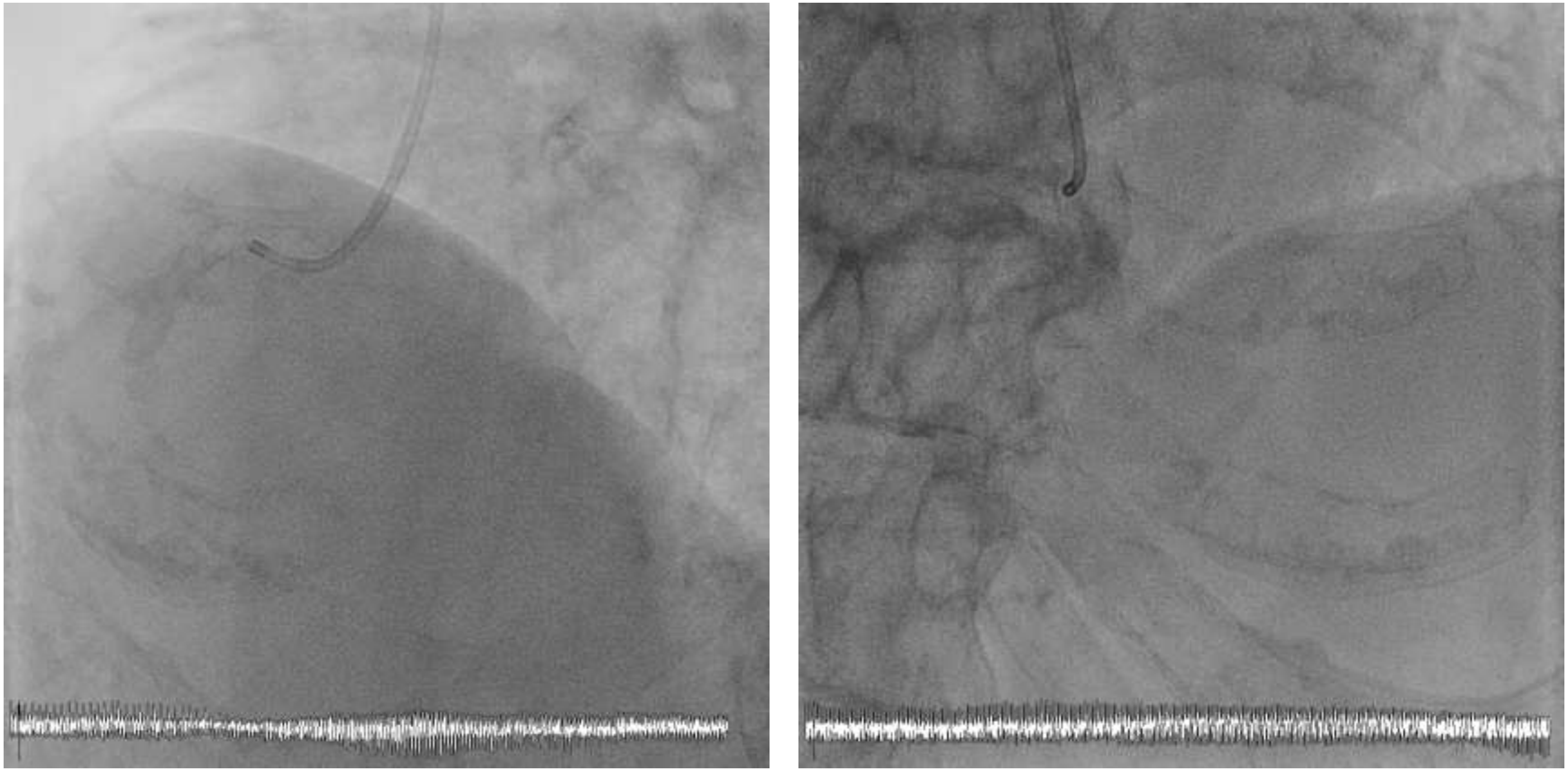
- 86 y/o man
- HTN
- Hyperlipidemia
- Hypothyroidism under eltroxin
- Chest pain while swimming for 3 months
- MDCT showed 3VD including LAD/RCA total occlusion

ECG


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
25mm/s 10mm/mV 150Hz 7.1.1 12SL 239 CID: 1
SID: T0151715683 EID:10489 EDT: 14:05 2015/03/17 預約:

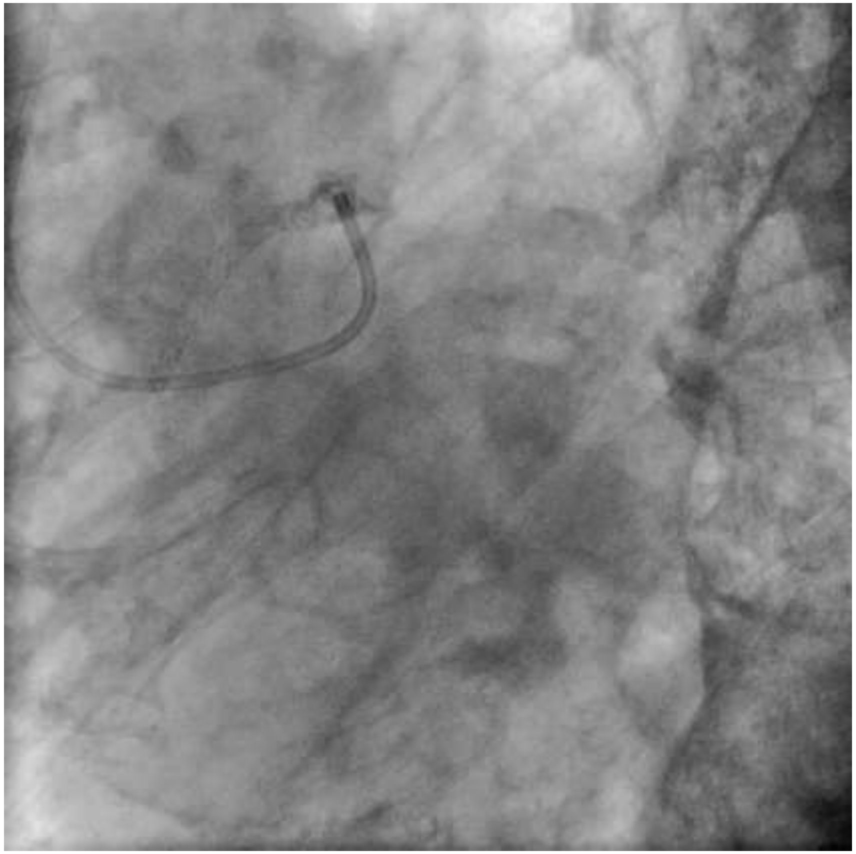
CAG--LCA

CAG--RCA

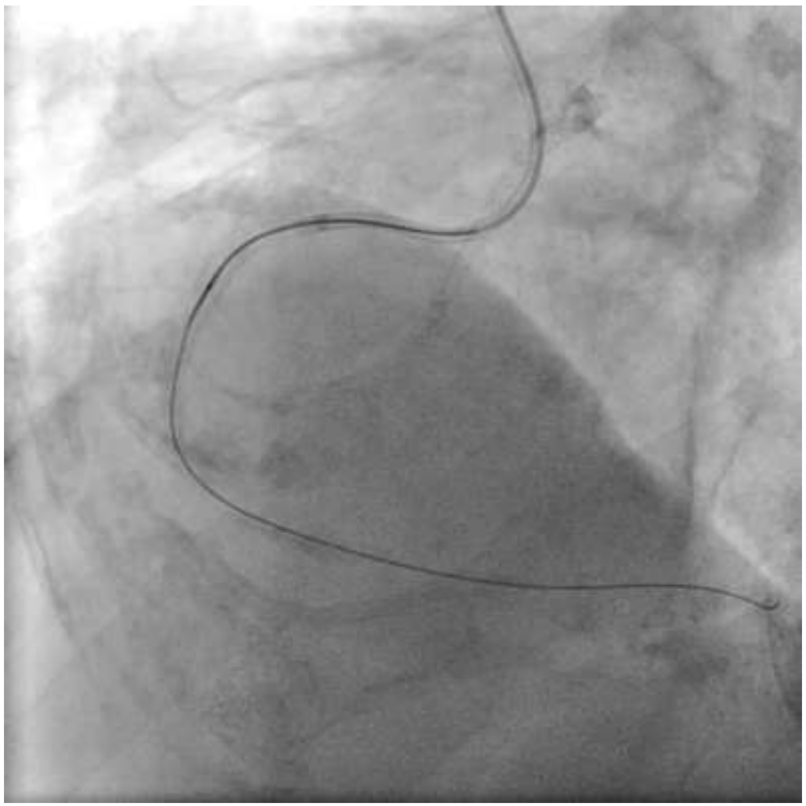


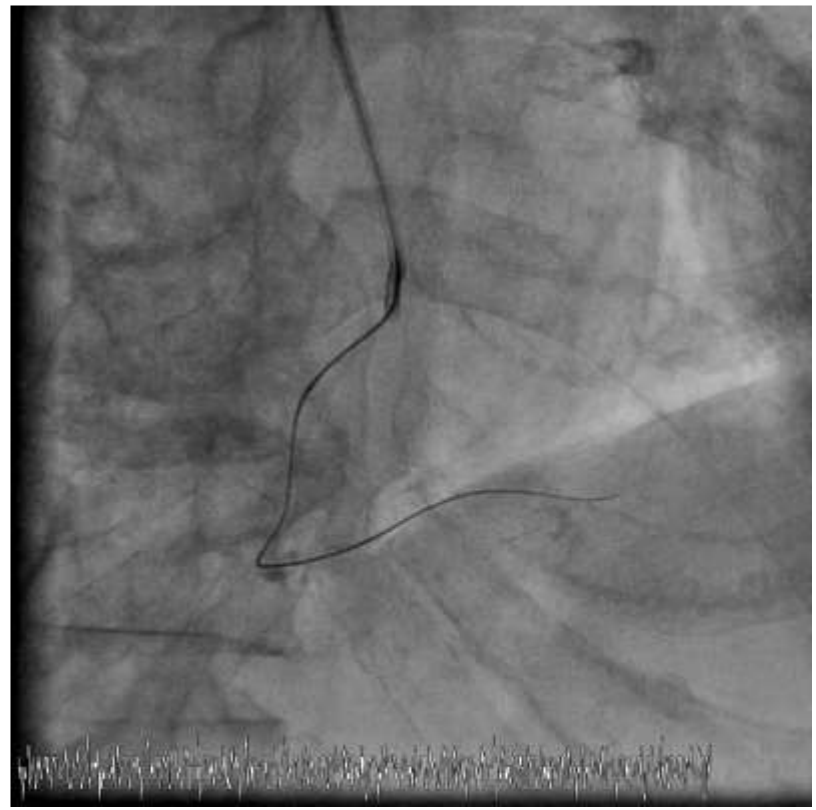
Target RCA PCI 6 weeks later after POBAS at LAD

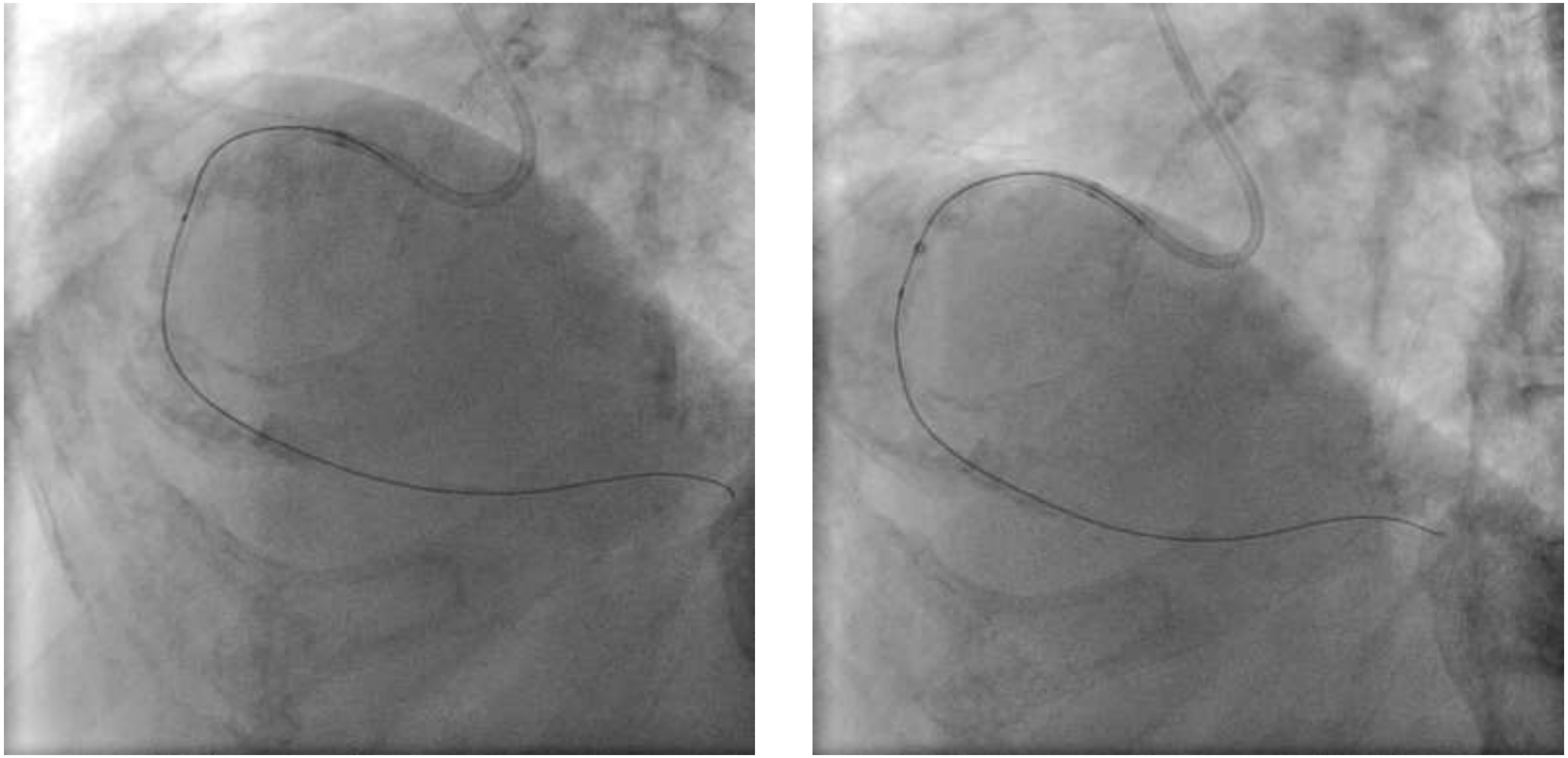
LCA at RCA intervention



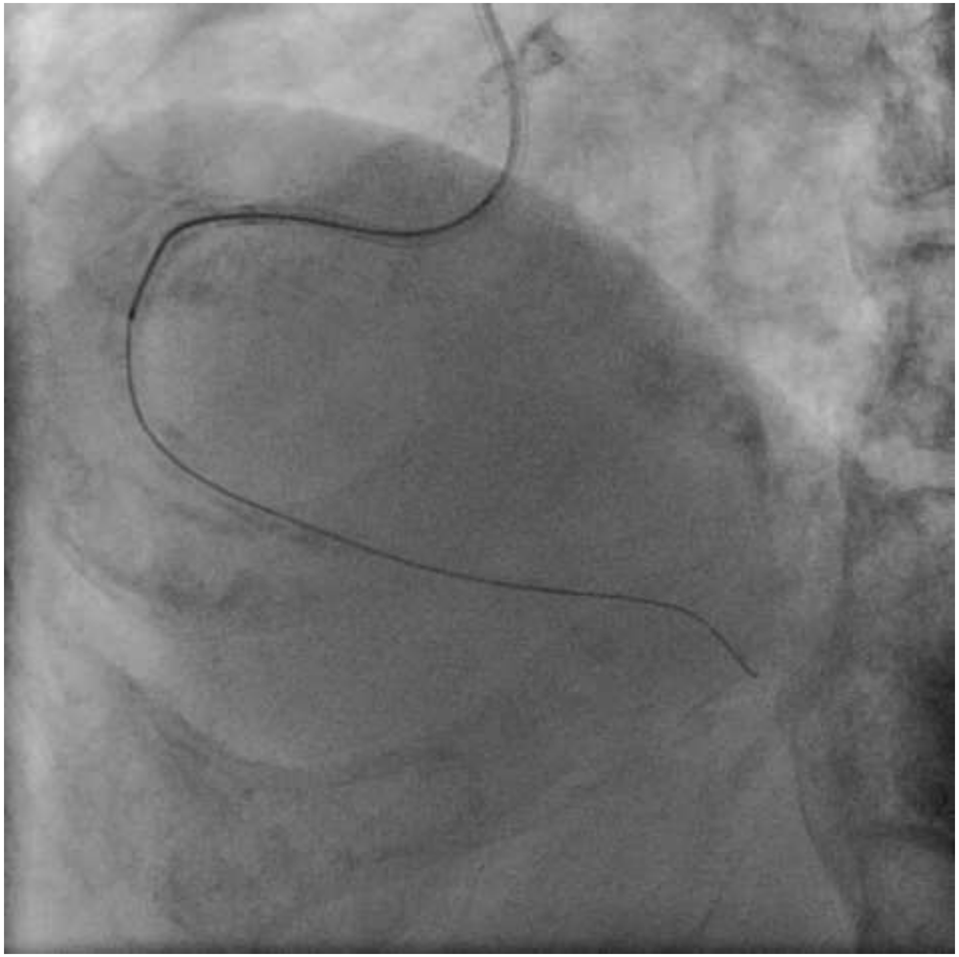
Guiding: 6Fr AL1 via LRA
Guide Wire: Fielder FC → Fielder XT
MC: Corsair 135cm



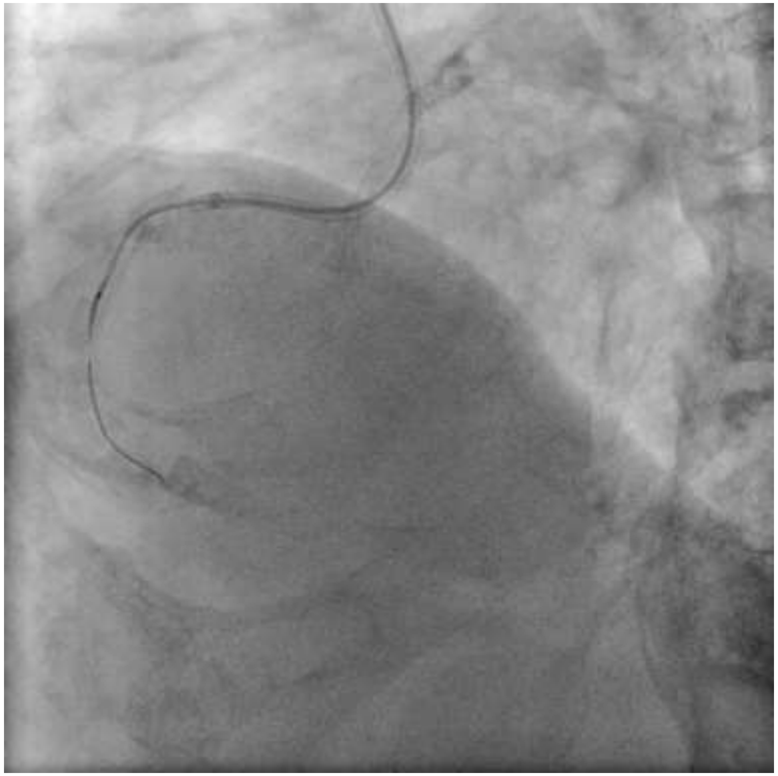




Corsair failed to enter into the lesion. Emerge 1.2X8mm and Sapphire 1.0X5mm balloons also failed to enter into the lesion even by the aid of Guideliner.

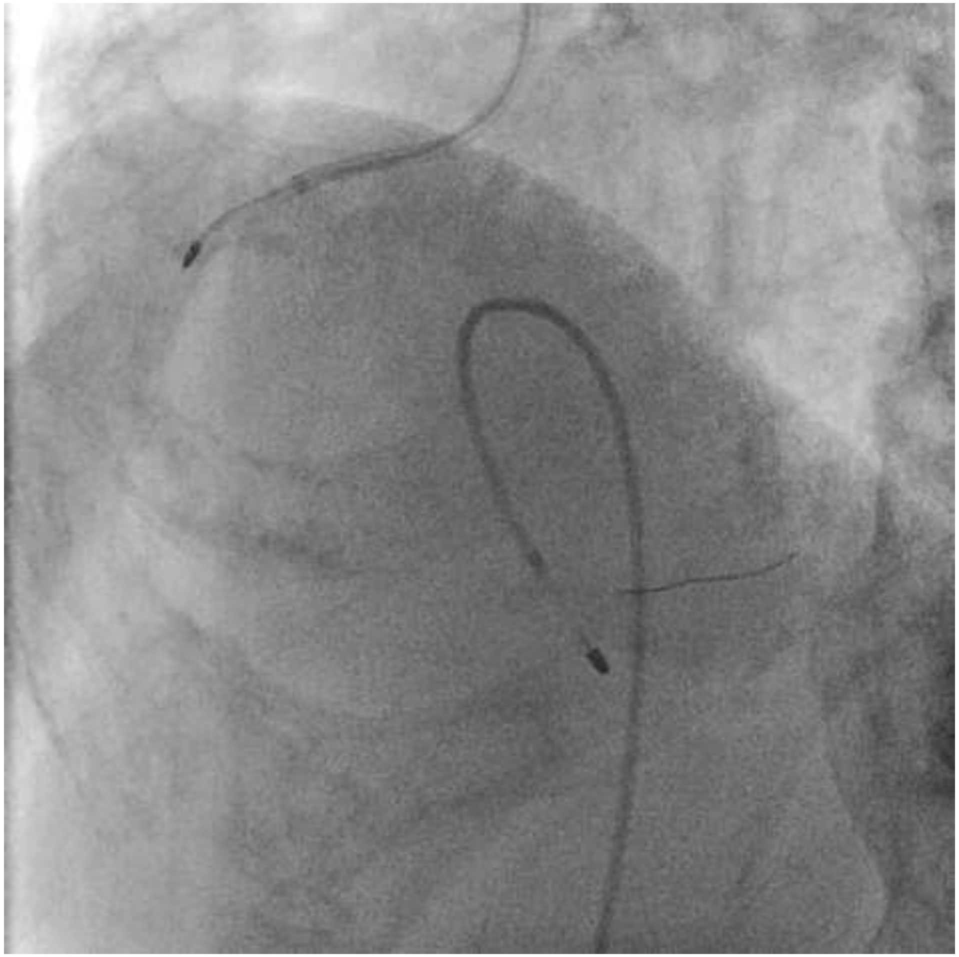


Tornus 88 still failed to enter into the lesion

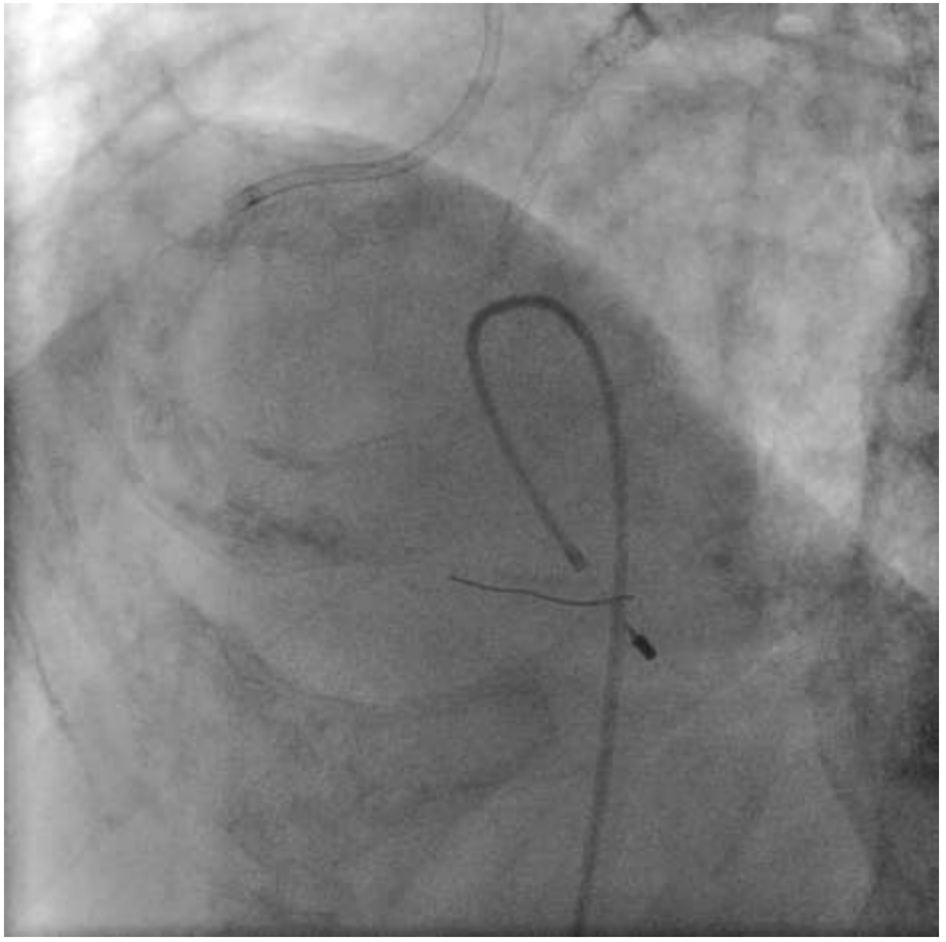


Wiring the Rotawire floppy to cross the lesion.

The most distal point I could get, but it’s enough for rotablation.



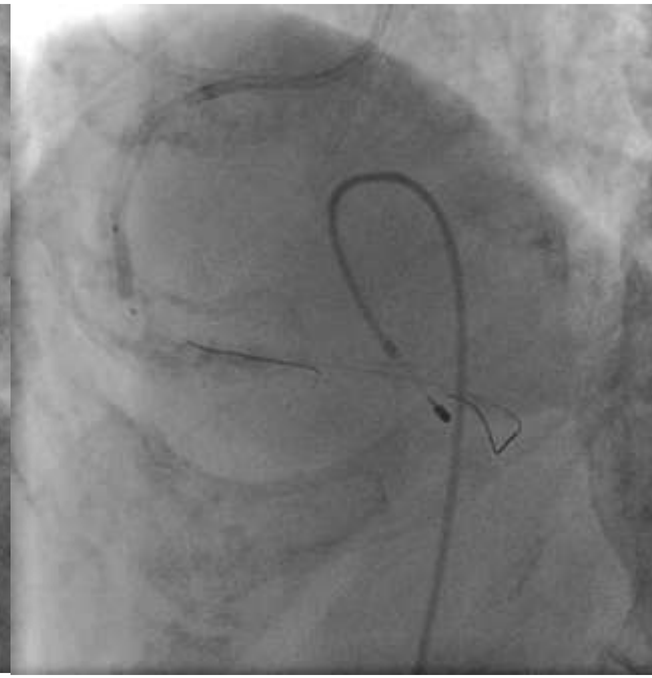
Rotablation with 1.25mm Burr.



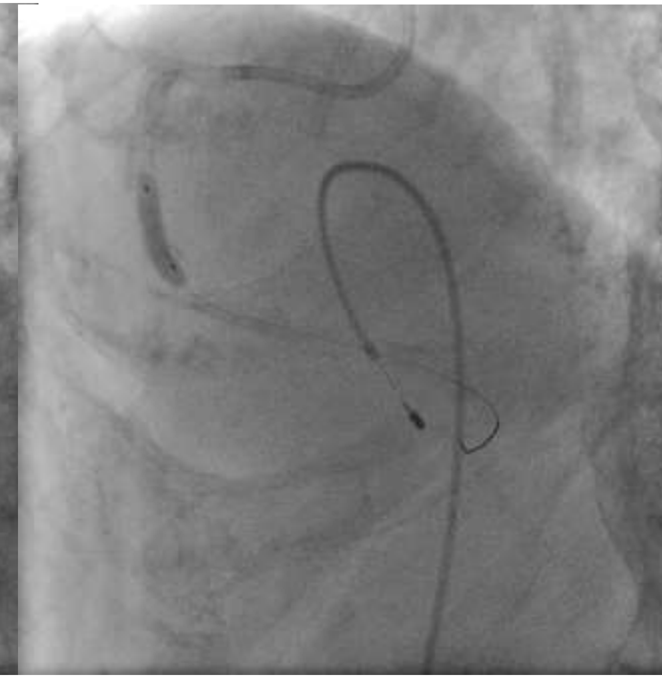
After rotablation

Fielder FC could cross the lesion easily after rotablation

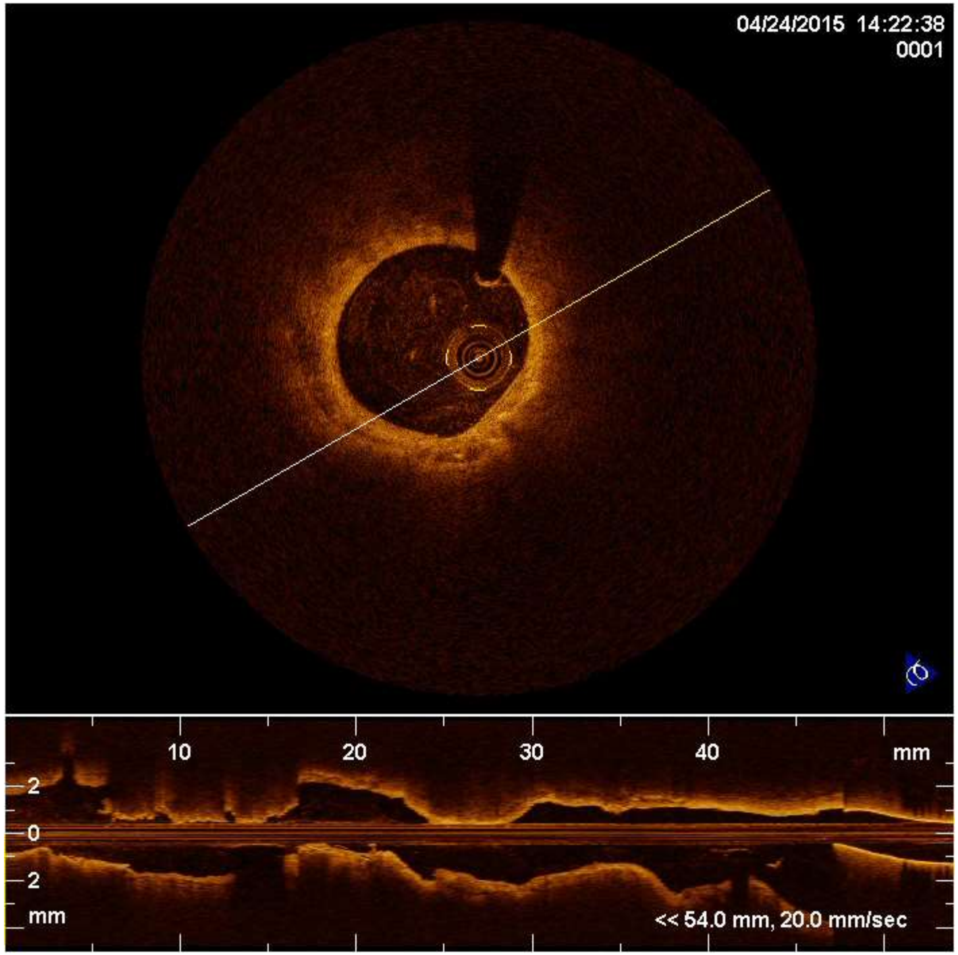
Emerge 1.2X8mm



Trek 3X15mm



NC Trek 3.5X15mm



OCT after balloon dilatation

Stenting?

Table 2. Procedural Characteristics and Angiographic and IVUS Findings

	Stent Thrombosis (n = 15)	Matched Control Group (n = 45)	p Value
Shortest ACT (s)	306 ± 100	315 ± 92	0.7
Glycoprotein IIb/IIIa inhibitor used	2 (13%)	7 (16%)	0.8
Total stent number	1.9 ± 0.9	1.7 ± 0.7	0.4
Total stent length (mm)	33.6 ± 12.3	29.8 ± 15.3	0.4
Stent diameter (mm)	3.03 ± 0.40	2.92 ± 0.26	0.2
Maximum inflation pressure (atm)	16.2 ± 5.9	15.8 ± 2.8	0.8
Angiographic analyses			
Reference vessel diameter (mm)	2.73 ± 0.39	2.73 ± 0.38	1.0
Pre-MLD (mm)	0.93 ± 0.38	1.03 ± 0.38	0.5
Post-MLD (mm)	2.49 ± 0.43	2.54 ± 0.38	0.8
Lesion length (mm)	18.7 ± 9.4	15.5 ± 6.1	0.1
IVUS analyses			
Reference (most normal looking segment)			
Lumen CSA (mm^2)	6.8 ± 2.2	7.4 ± 2.0	0.3
EEM CSA (mm^2)	12.4 ± 4.1	12.4 ± 3.4	1.0
Reference (minimum lumen segment)			
Lumen CSA (mm^2)	3.9 ± 1.6	5.3 ± 1.7	0.007
EEM CSA (mm^2)	10.8 ± 4.2	9.9 ± 3.2	0.4
Plaque burden (%)	62 ± 13	46 ± 9	<0.001
Significant residual stenosis	10 (67%)	4 (9%)	<0.001
Stent segment			
Minimum stent CSA (mm^2)	4.3 ± 1.6	6.2 ± 1.9	<0.001
Stent expansion	0.65 ± 0.18	0.85 ± 0.14	<0.001
Dissection	0 (0%)	3 (7%)	0.3
Malapposition	2 (13%)	7 (16%)	0.8
Plaque protrusion	0 (0%)	1 (2%)	0.6

ACT = activated clotting time; CSA = cross-sectional area; EEM = external elastic membrane; MLD = minimum lumen diameter; IVUS = intravascular ultrasound.

J. Am. Coll. Cardiol. 45 (2005) 995–998.

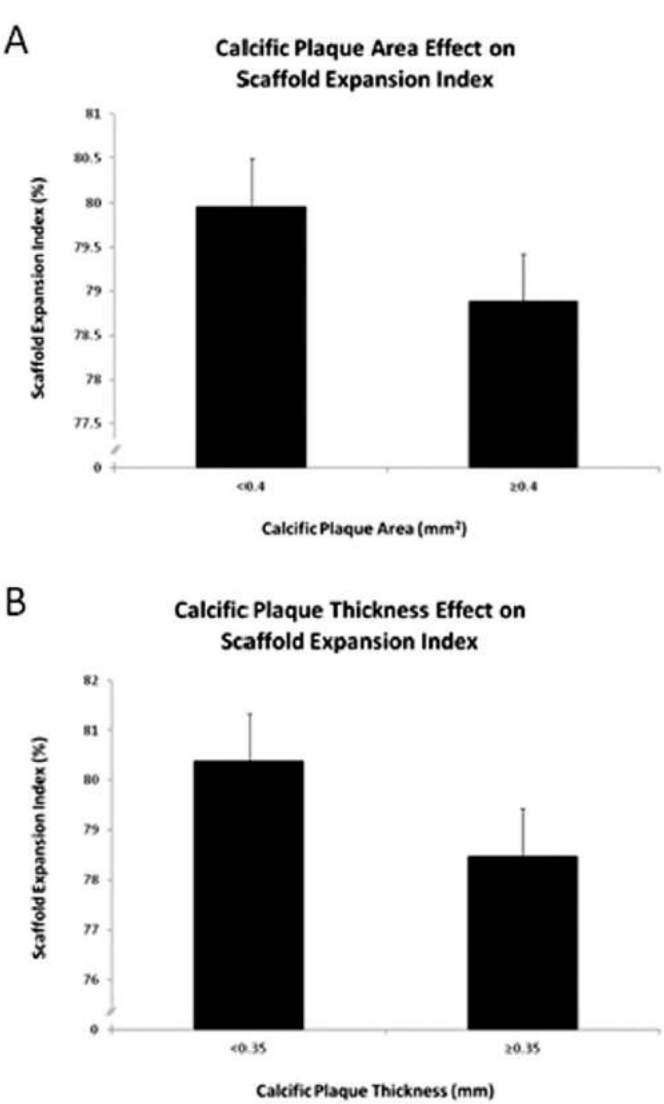
Stenting?

Table 3. Optical Coherence Tomography Measurements

	Thrombus (n = 14)	Nonthrombus (n = 39)	p Value
Average number of struts	232 ± 131	174 ± 103	0.10
Average number of incompletely apposed struts	9 ± 10	5 ± 7	0.11
Frequency of incompletely apposed struts, %	3.6 ± 3.9	3.4 ± 6.1	0.94
Average number of uncovered stent struts	17 ± 16	8 ± 11	0.03
Frequency of uncovered stent struts, %	8.0 ± 5.1	6.1 ± 8.3	0.43
Average stent area, mm^2	7.34 ± 1.41	7.56 ± 2.04	0.72
Minimum stent area, mm^2	5.67 ± 1.63	6.04 ± 2.06	0.54
Average neointimal thickness, μm	74 ± 44	70 ± 49	0.82
Average SEI	0.89 ± 0.04	0.92 ± 0.03	0.001
Average NUS	2.22 ± 0.24	2.00 ± 0.33	0.03

Values are presented as mean ± SD or n (%).
NUS = neointimal unevenness score; SEI = stent eccentricity index.

J. Am. Coll. Cardiol. Intv. 2 (2009) 459–466.



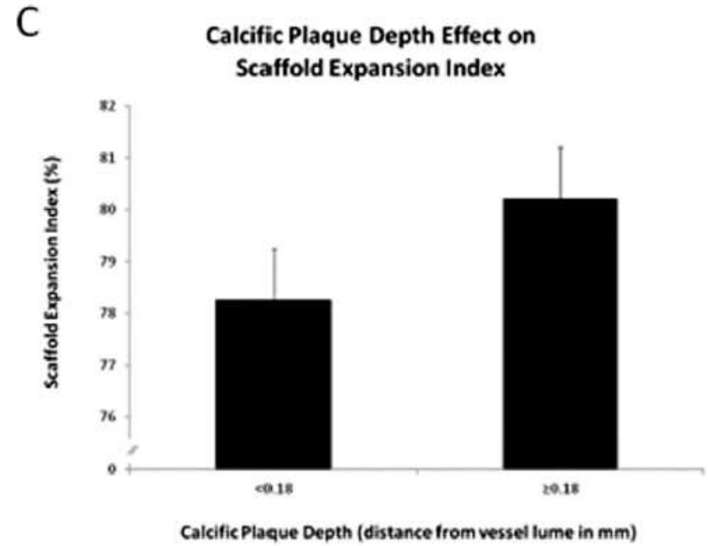


Fig. 2. Histograms demonstrating calcific plaque effect on scaffold expansion. (A) Greater calcific plaque area is associated with reduced scaffold expansion. (B) Thicker calcific plaque is associated with reduced scaffold expansion. (C) Superficial calcific plaque is associated with reduced scaffold expansion.

International Journal of Cardiology 184 (2015) 230–236

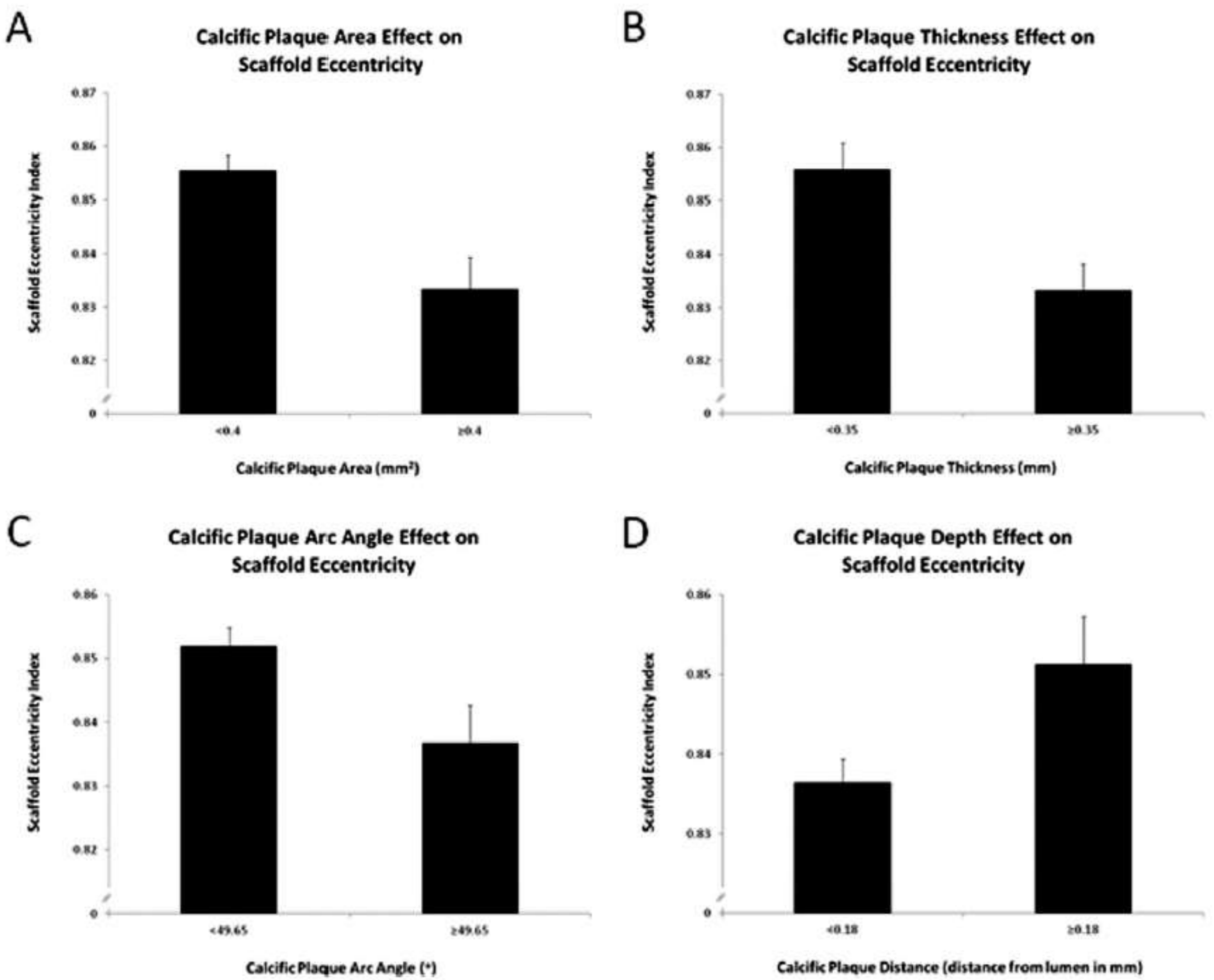
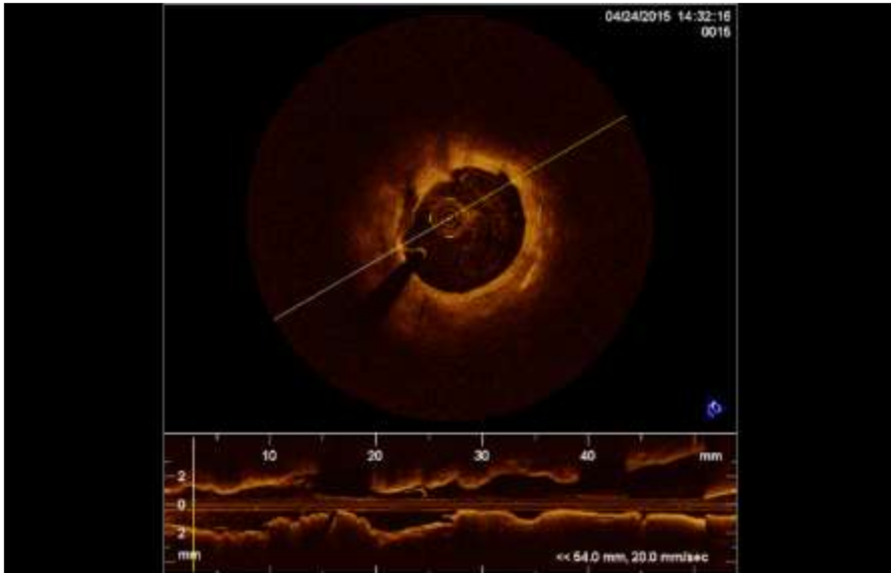
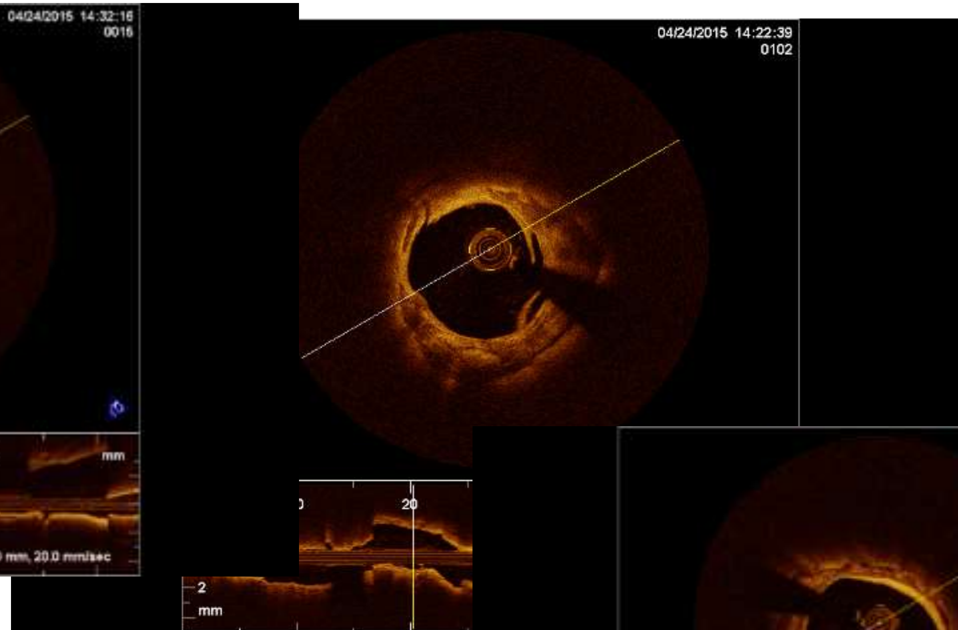


Fig. 3. Histograms demonstrating calcific plaque effect on scaffold eccentricity. (A) Greater calcific plaque area is associated with increased scaffold eccentricity (reduced scaffold eccentricity index). (B) Thicker calcific plaque is associated with increased scaffold eccentricity. (C) Greater calcific plaque arc angle is associated with increased scaffold eccentricity. (D) Superficial calcific plaque is associated with increased scaffold eccentricity.

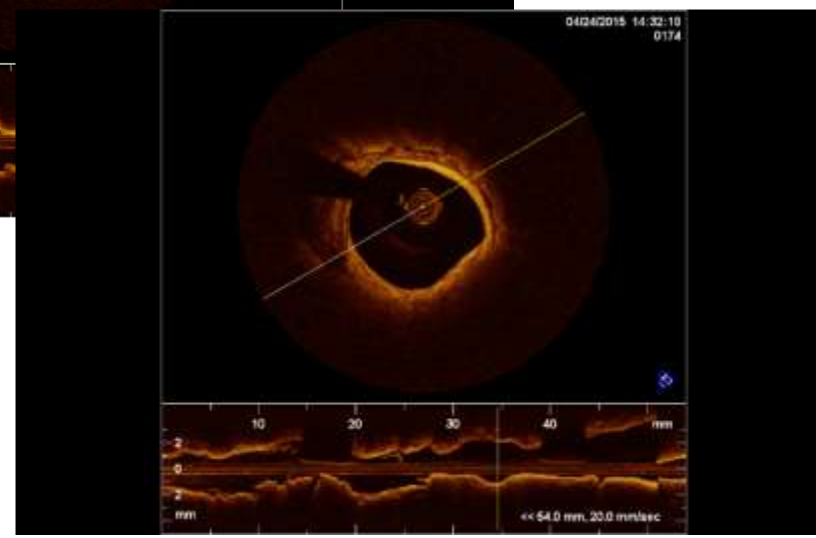
International Journal of Cardiology 184 (2015) 230–236



distal



lesion



proximal.

Great calcific plaque area/thickness/arc angle, and superficial distribution would lead to poor stent expansion and symmetry.

Stenting?

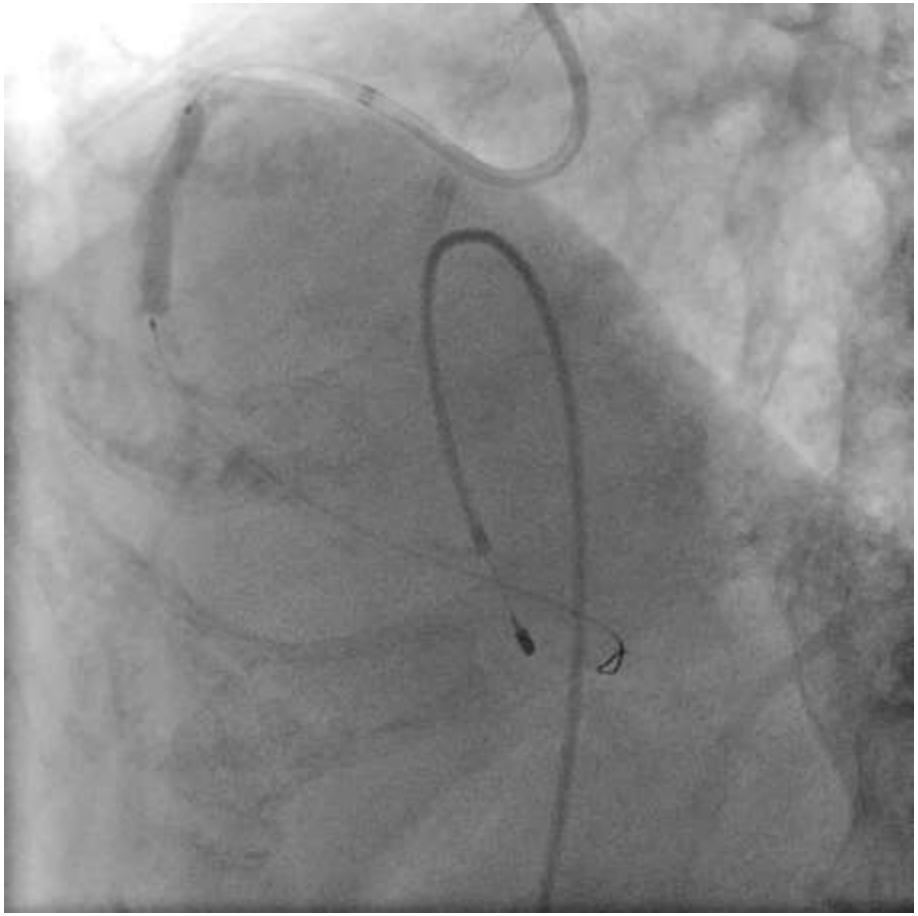
- The MUSIC trial demonstrated that stent minimal lumen area ≥90% of average reference lumen area and eccentricity index ≥0.7 were correlated with favourable clinical and angiographic outcomes.
- Metallic stent expansion parameters such as eccentricity and symmetry have a known association with adverse clinical outcomes.

J. Am. Coll. Cardiol. Intv. 2 (2009) 459–466.
J. Am. Coll. Cardiol. 45 (2005) 995–998.
Eur. Heart J. 19 (1998) 1214–1223.

euro PCR 2015

Comparison of DCB in De-Novo:
Follow-Up Results

Clinical Results @ FU	Valentine II Study	DELUX (De-Novo Subgroup)	CCM De-Novo Registry
F/U Months	6	12	9
N. Pts/Lesions	103/109	106	65/75
Study DCB	Dior Eurocor	Pantera Lux	Pantera Lux
Cardiac Death	1%	2,1%	1,5%
MI	1%	2,1%	0%
TVF	6,9%	6,1%	5,6%
TLR	2,9%	3,1%	4%
DCB Thrombosis	0%	NA	0%
MACE	8,7%	9,4%	7,6%



DCB SeQuent 3.5X26mm

Final RCA

Summary

- Stenting is not the sole way to treat the stenotic lesion.
- For a potential higher risk of stent thrombosis, DEB is an alternative solution for **a lesion with expected poorer stent symmetry or expansion.**