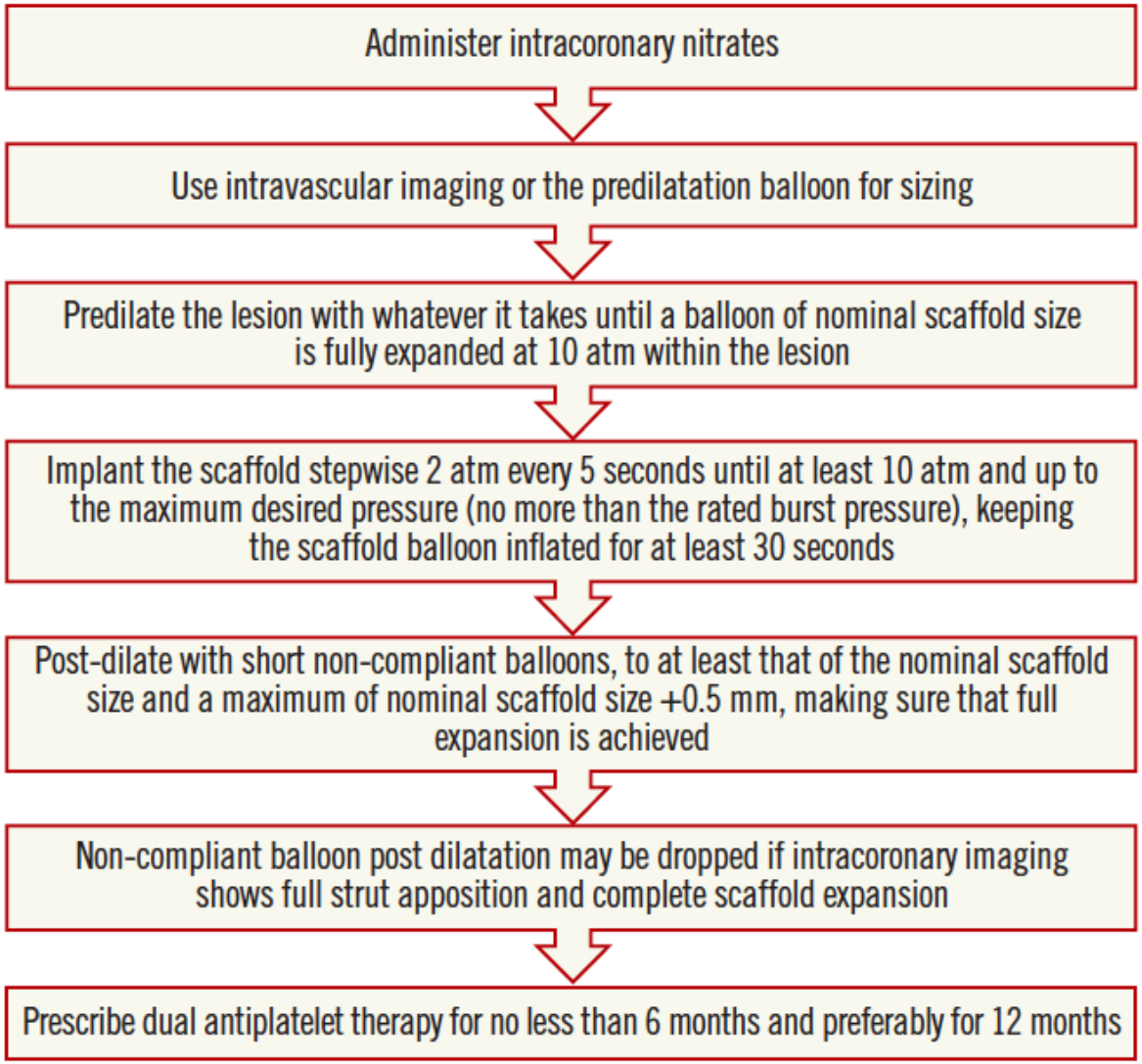
How Do We Optimize BRS-PCI? Expert Knowledge

Corrado Tamburino, MD, PhD

University of Catania, Ferrarotto Hospital, Catania, Italy

Protocols of Absorb implantation



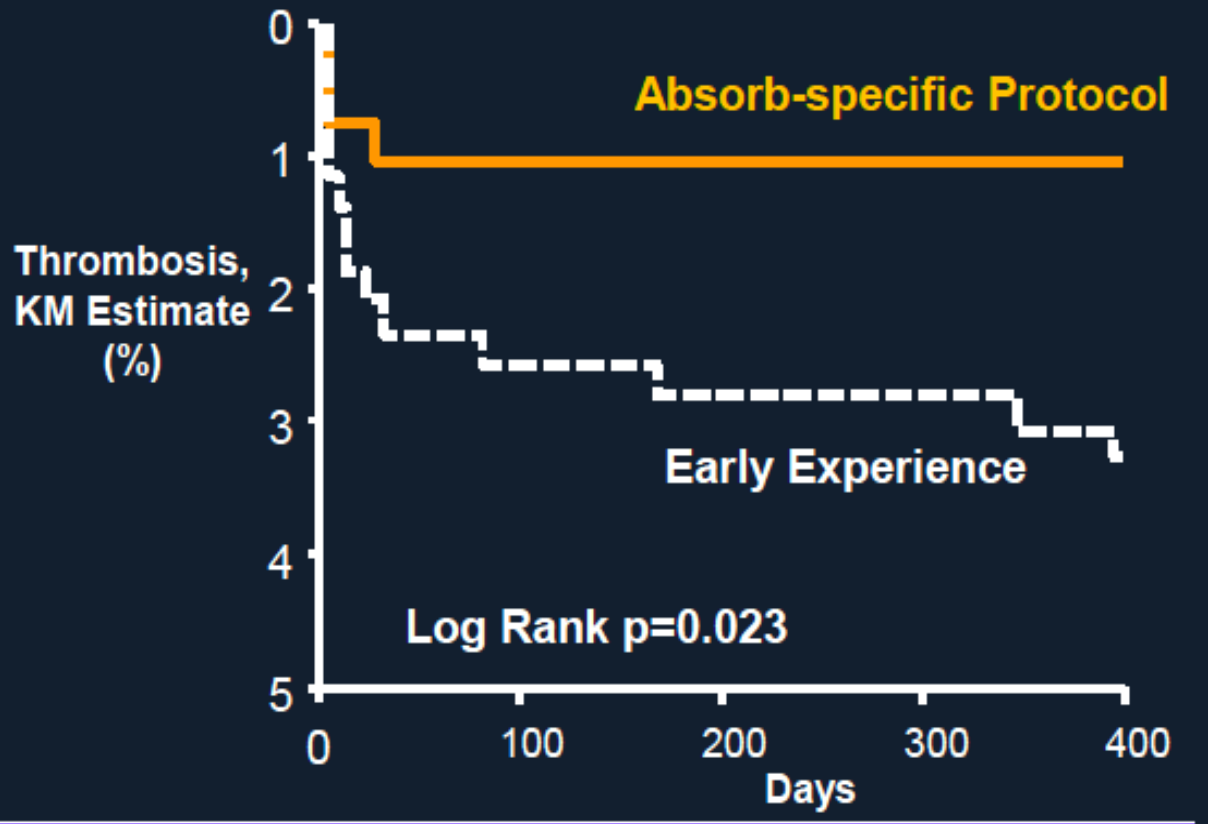
Tamburino C et al. EuroIntervention 2015;11:45-52.

Scaffold thrombosis in 1,305 pts (405 included also in the GHOST-EU)

4 German and Swiss centers

BVS specific protocol

- Nitrates
- Sizing with balloon (1:1:1), 2 angiographic planes
- Low threshold for OCT
- Implant following IFUs
- NC postdilation (+0.5mm)
- Do not accept MLD<2.5/2.9mm MLA<4.9/6.6mm^2



Patients					
Early Experience	369	369	369	369	369
Absorb-specific	292	292	281	217	155

Puricel S et al. J Am Coll Cardiol 2016;67:921-31.

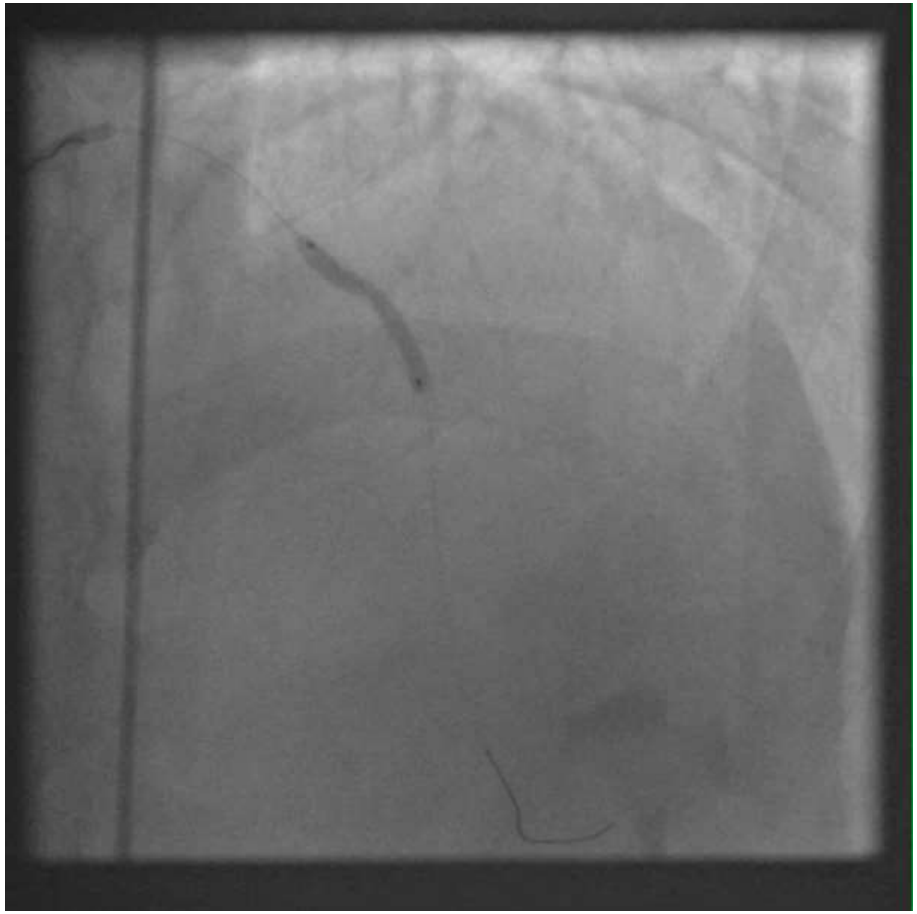
Key steps for safe BVS implantation

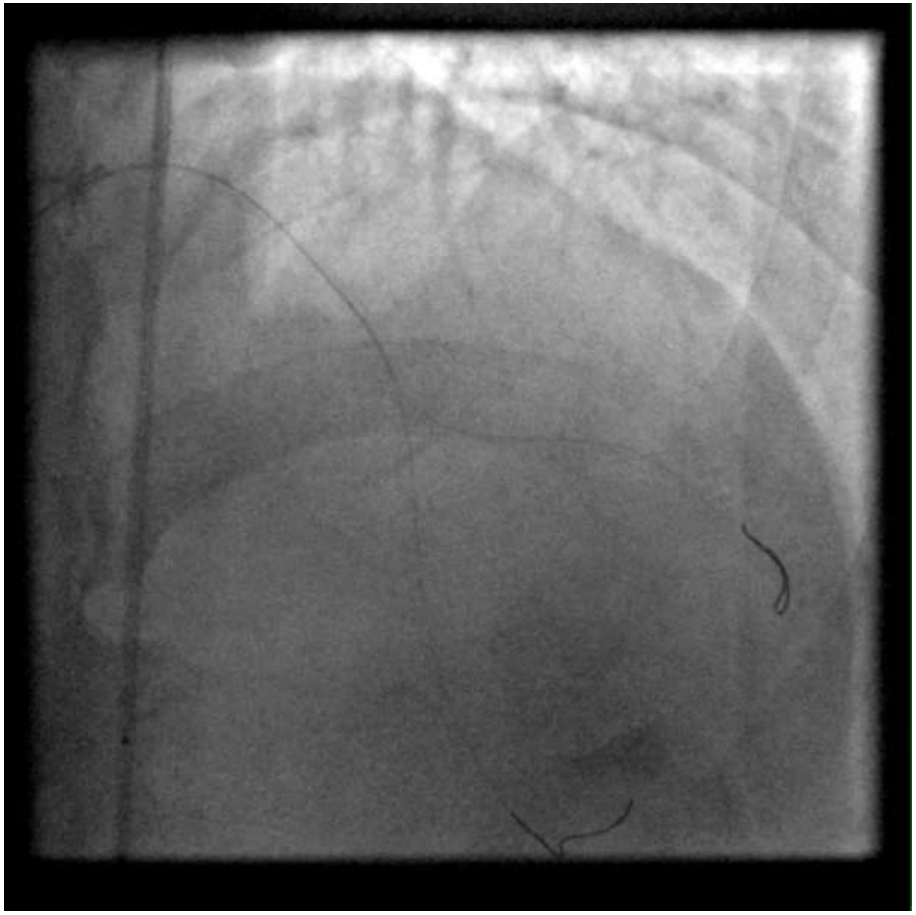
- **P**re-dilatation
- **S**izing
- **P**ost-dilatation
- Minimal Overlapping

Key steps for safe BVS implantation

- **P**re-dilatation
- **S**izing
- **P**ost-dilatation
- Minimal Overlapping

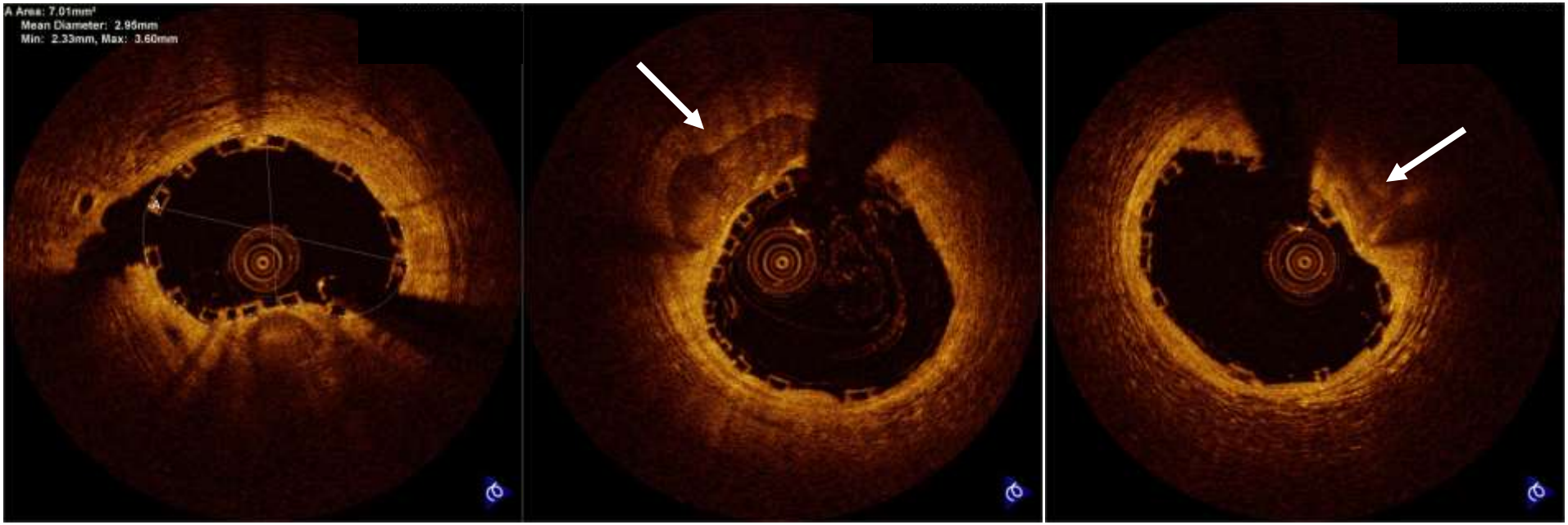
A suboptimal predilatation

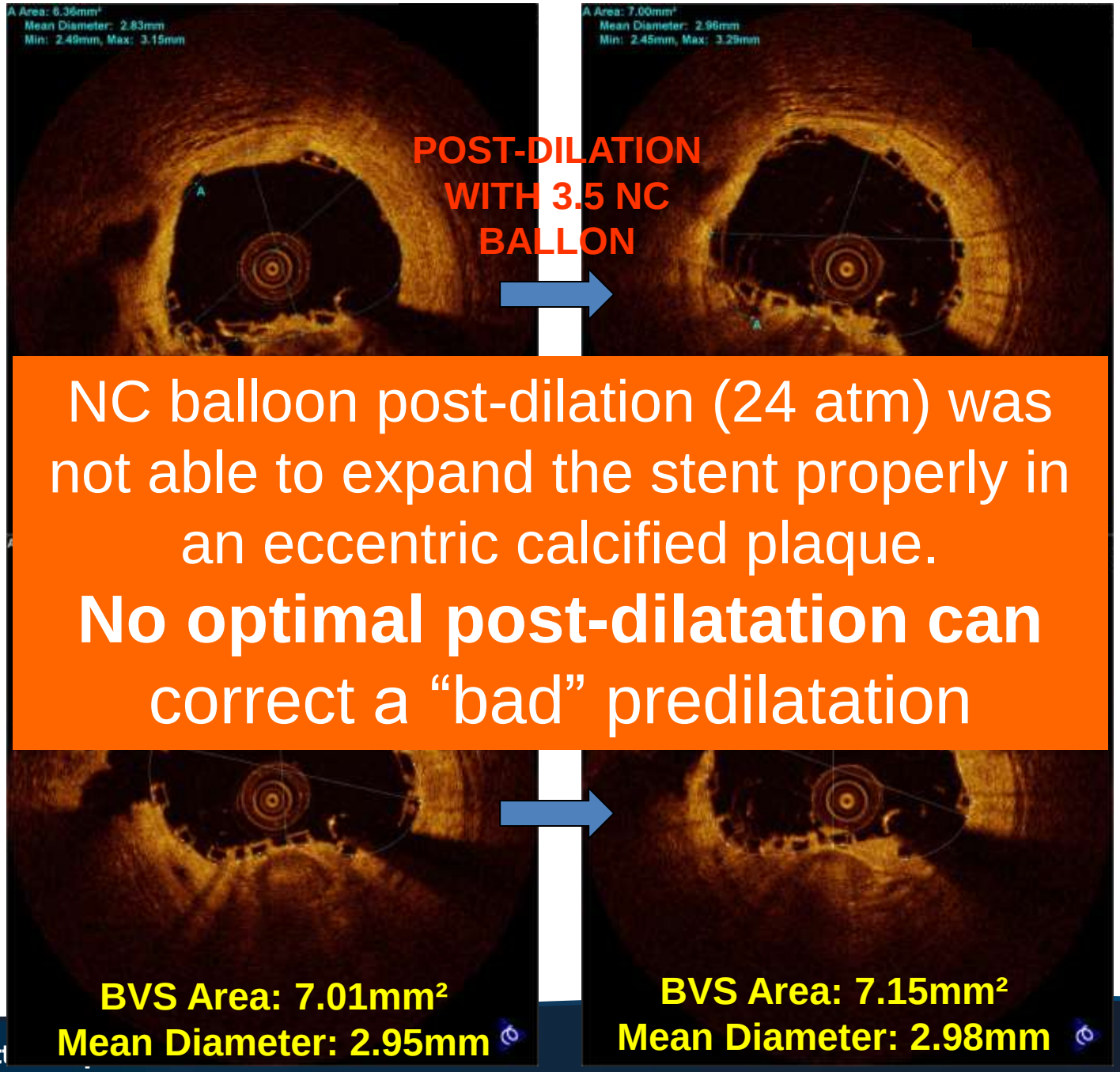


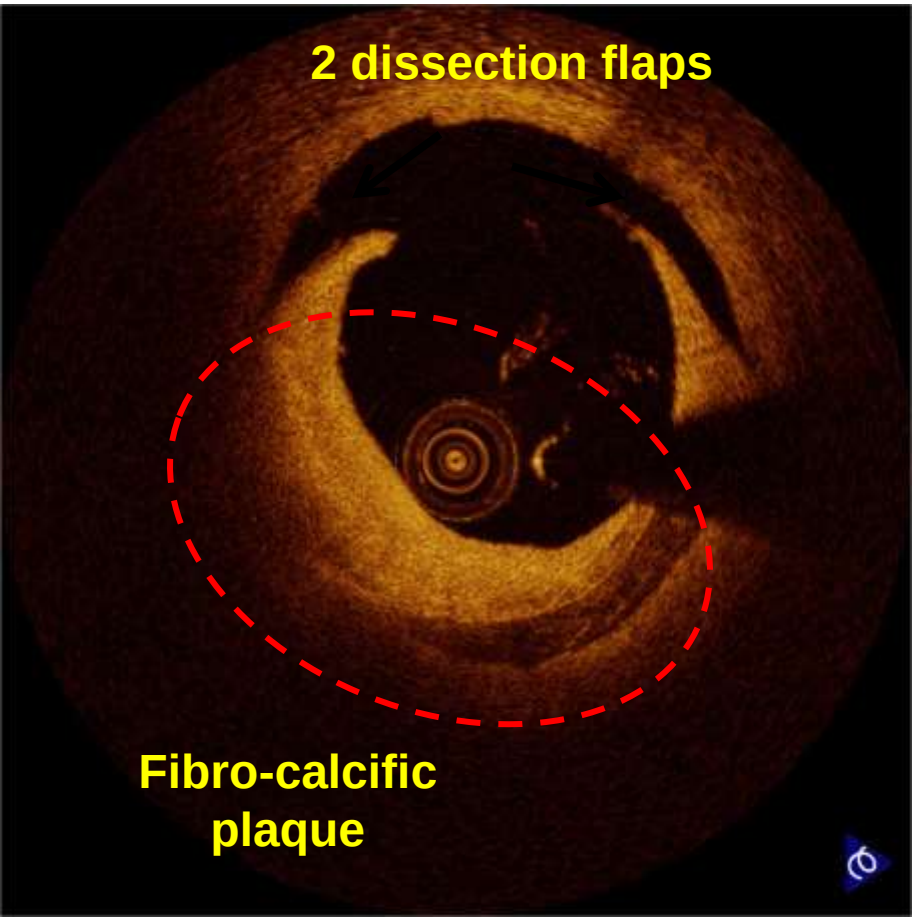


2 BVS 3.0 x 28 mm and 3.5 x 18 mm were implanted after this predilatation

Result of BVS implantation after suboptimal predilatation




A Area: 6.36mm²
Mean Diameter: 2.83mm
Min: 2.49mm, Max: 3.15mm
A Area: 7.00mm²
Mean Diameter: 2.96mm
Min: 2.45mm, Max: 3.29mm
POST-DILATION WITH 3.5 NC BALLON
NC balloon post-dilation (24 atm) was not able to expand the stent properly in an eccentric calcified plaque.
No optimal post-dilatation can correct a “bad” predilatation
BVS Area: 7.01mm²
Mean Diameter: 2.95mm
BVS Area: 7.15mm²
Mean Diameter: 2.98mm



Deeper and long proximal dissection after post-dilatation.

Additional BVS implantation in the proximal edge.

Lesion preparation for BVS

Useful for

- BVS crossability
- BVS sizing
- Optimal BVS expansion

Objectives

- Stent-like result
- **Residual stenosis < 30%**

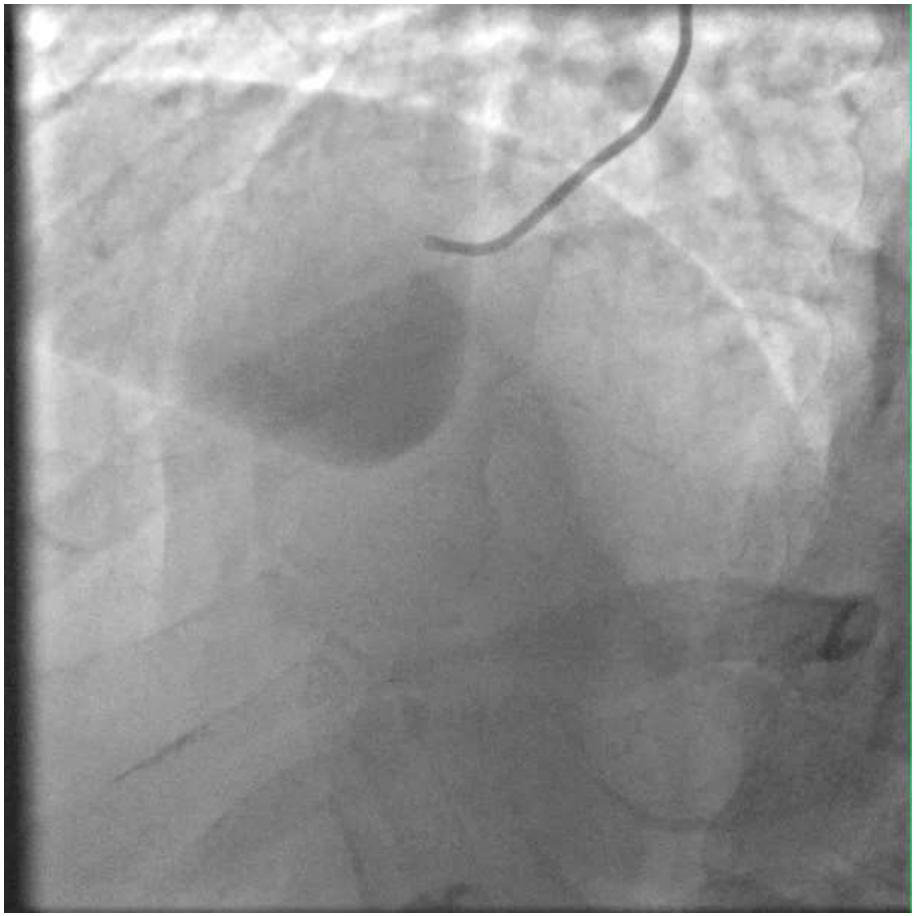
General rules for lesion preparation

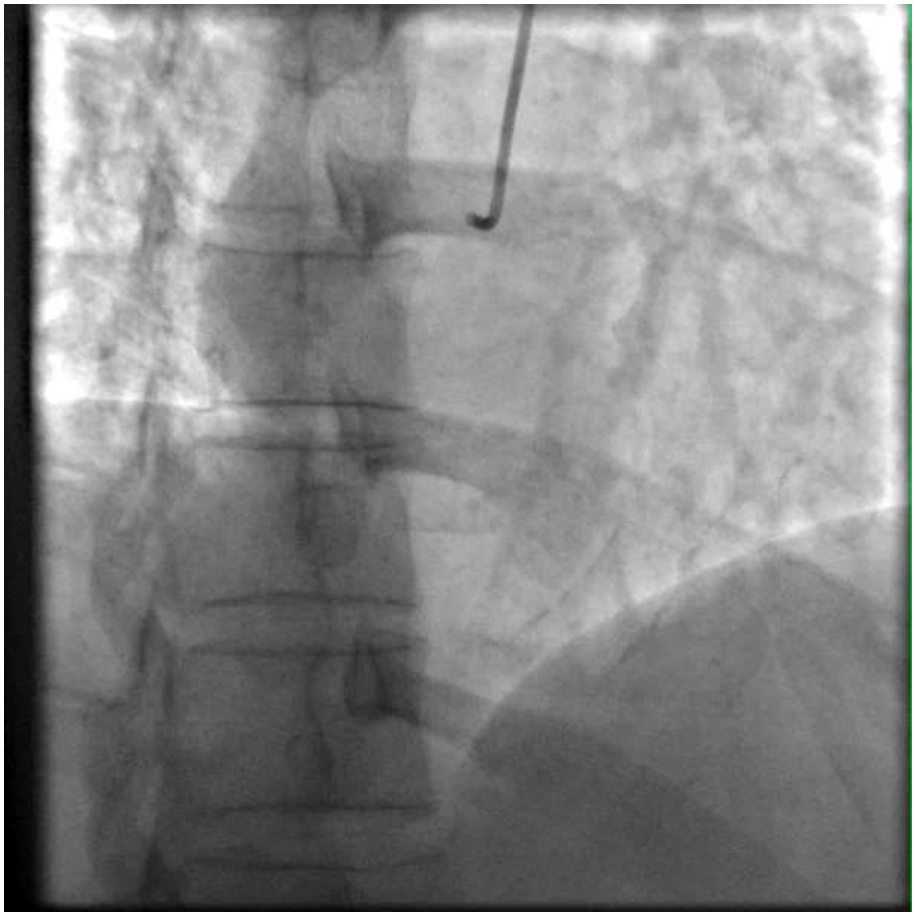
- Predilate with whatever it takes until a NC balloon of nominal scaffold size (vessel-balloon ratio 1:1).
- Gradually upgrade your balloon
- If residual stenosis > 30% with NC balloon 1:1 it is reasonable not using Absorb for that lesion
- Assess residual stenosis in two orthogonal views
- Respect vessel diameters and lesion length to avoid media dissections.

Key steps for safe BVS implantation

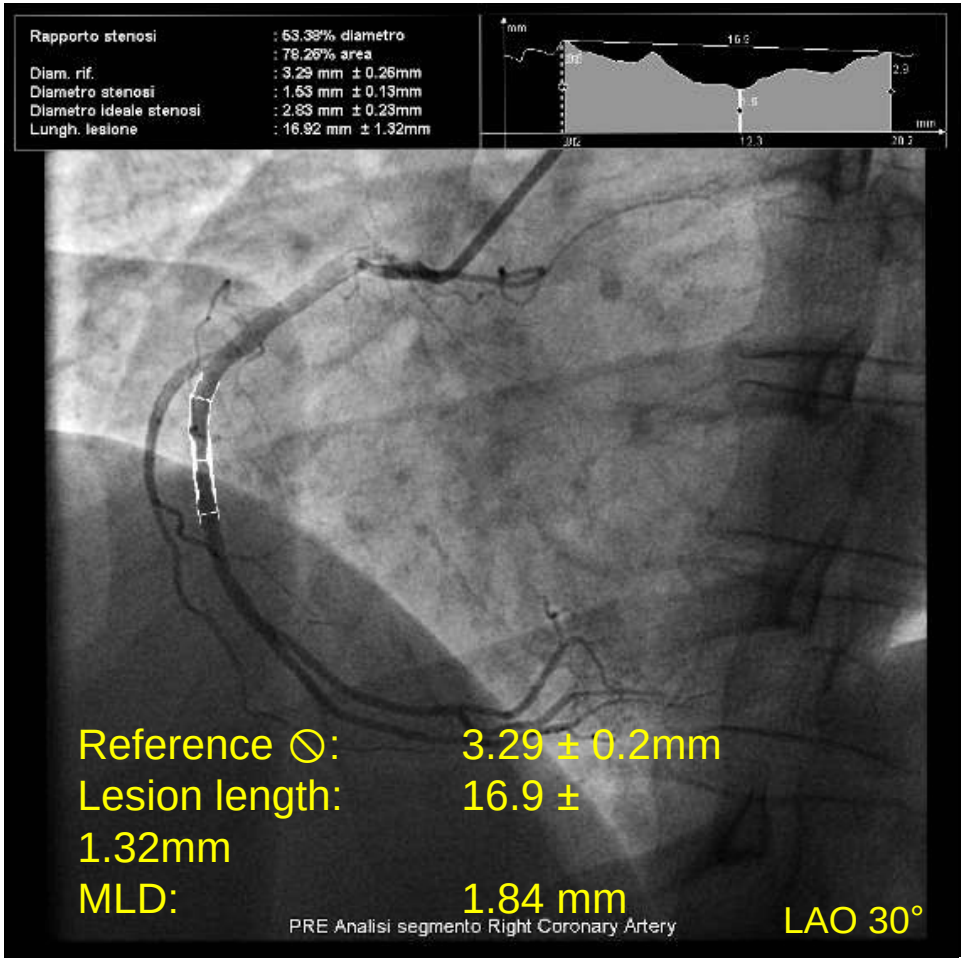
- Pre-dilatation
- Sizing
- Post-dilatation
- Minimal Overlapping

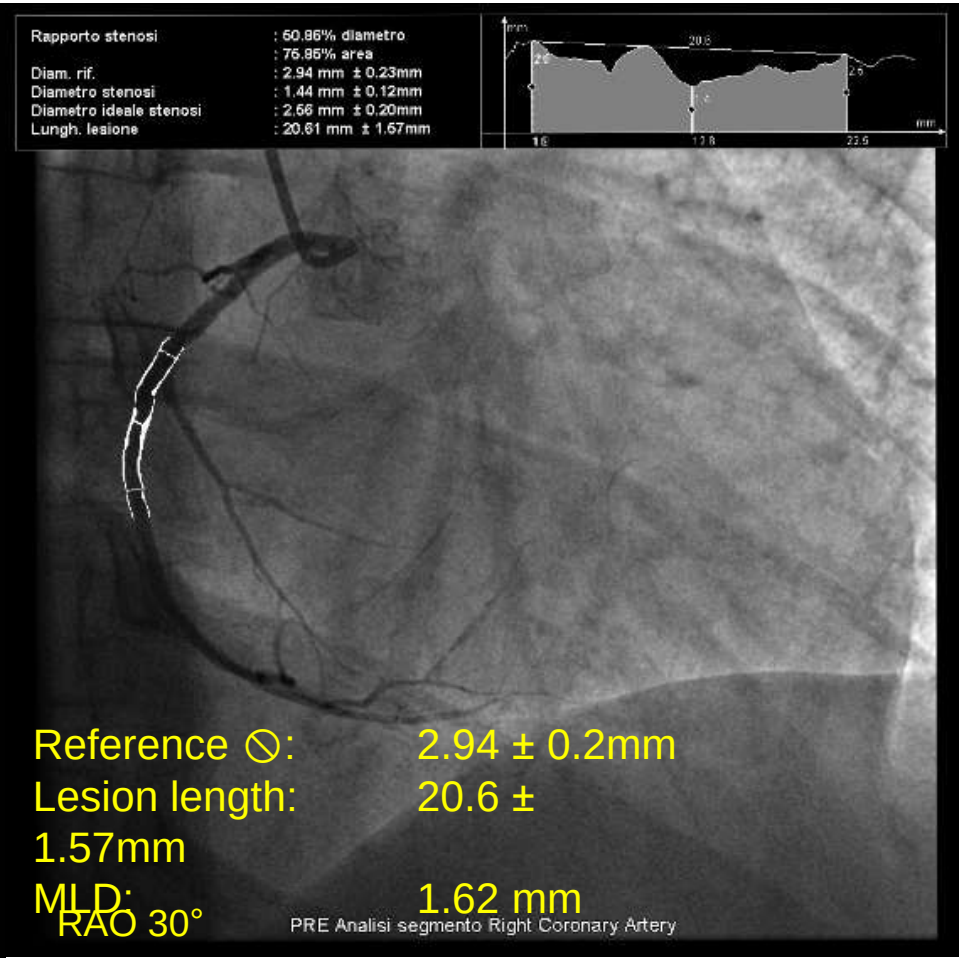
Baseline angiogram in NSTEMI patient

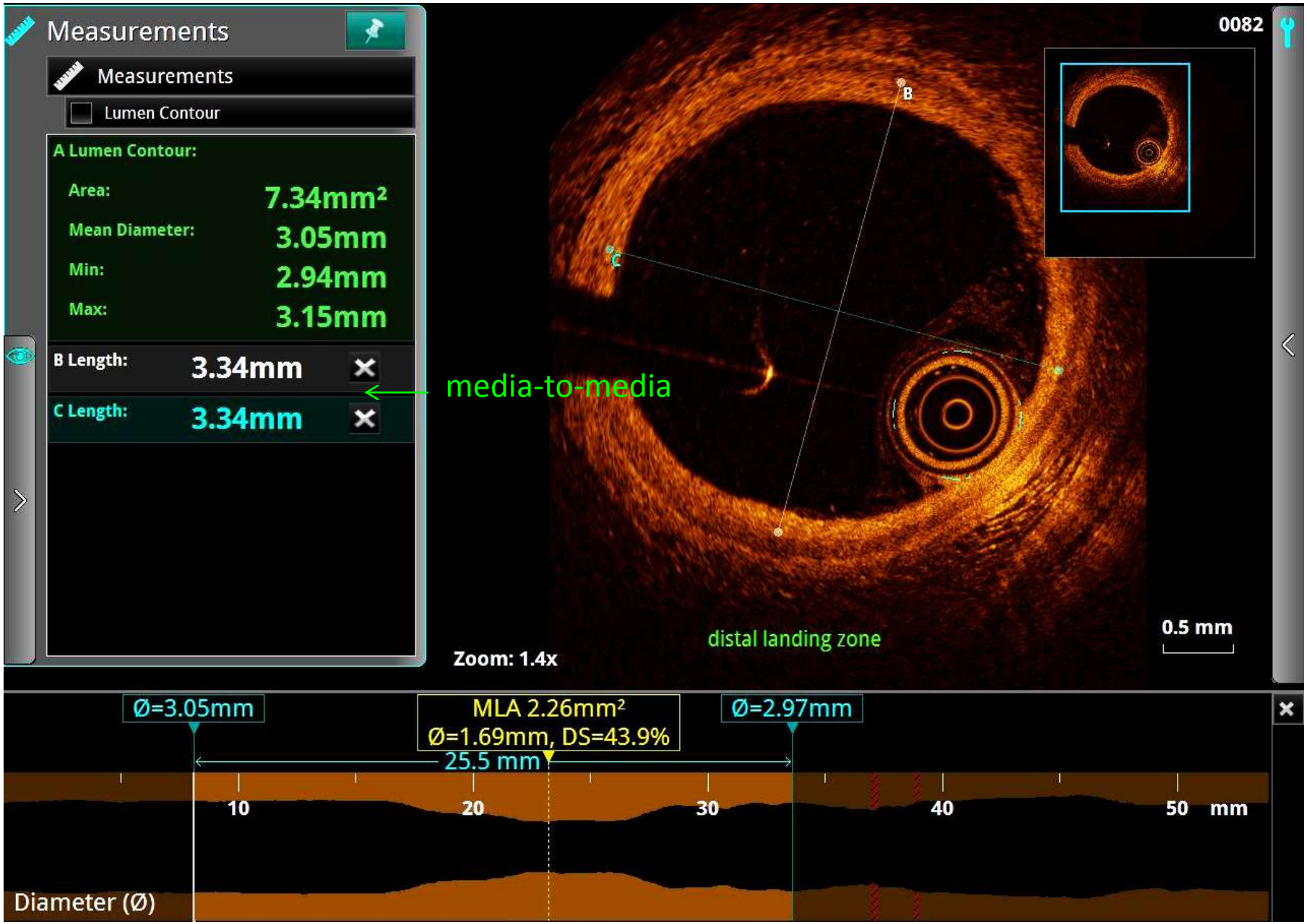


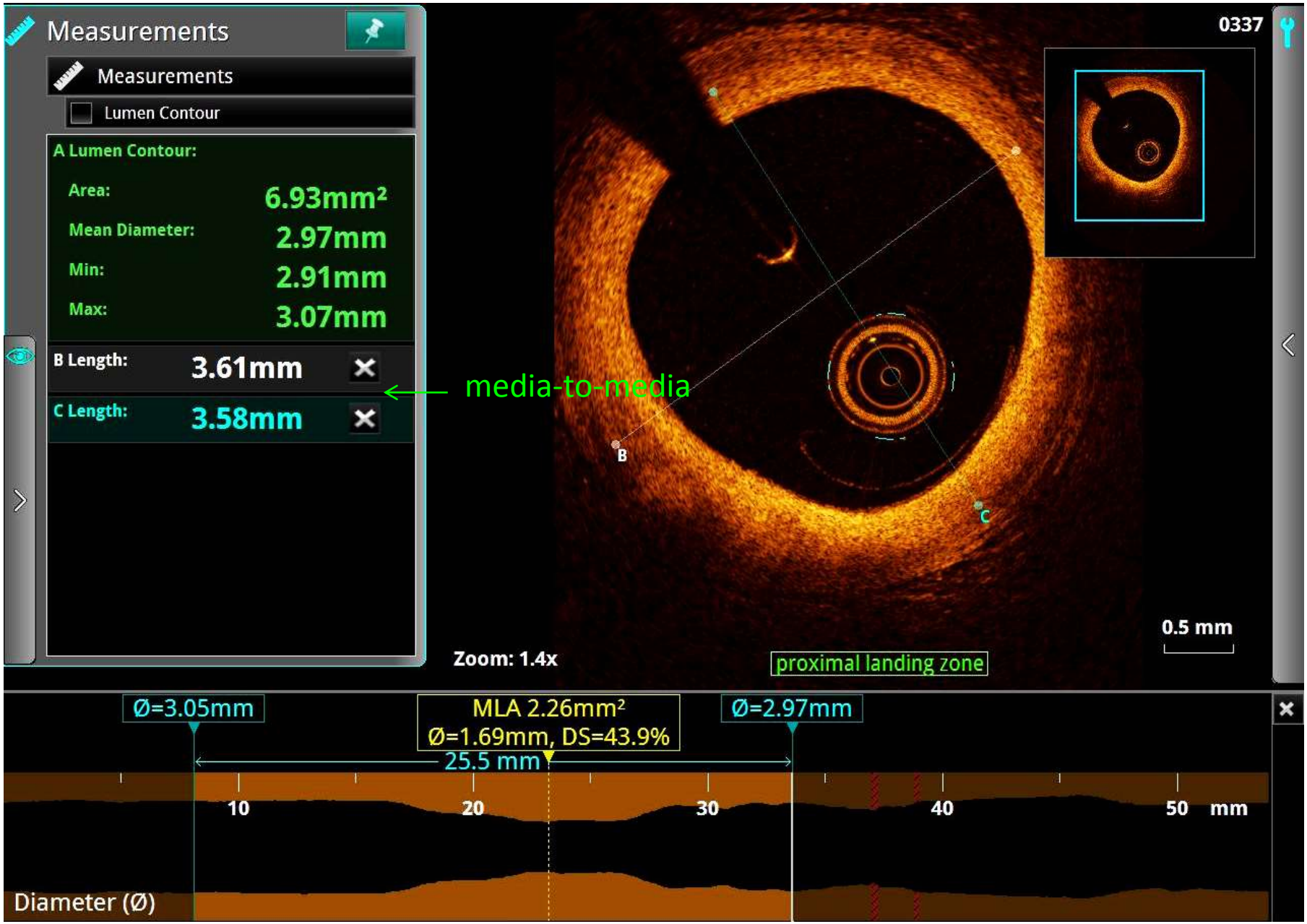


QCA ANALYSIS for sizing






Measurements
Measurements
Lumen Contour
A Lumen Contour:
Area: 7.34mm²
Mean Diameter: 3.05mm
Min: 2.94mm
Max: 3.15mm
B Length: 3.34mm
C Length: 3.34mm
media-to-media
0082
B
C
distal landing zone
0.5 mm
Zoom: 1.4x
Ø=3.05mm
MLA 2.26mm²
Ø=1.69mm, DS=43.9%
Ø=2.97mm
25.5 mm
10
20
30
40
50
mm
Diameter (Ø)


Measurements
Measurements
Lumen Contour
A Lumen Contour:
Area: 6.93mm²
Mean Diameter: 2.97mm
Min: 2.91mm
Max: 3.07mm
B Length: 3.61mm
C Length: 3.58mm
media-to-media
0337
B
C
0.5 mm
Zoom: 1.4x
proximal landing zone
Ø=3.05mm
MLA 2.26mm²
Ø=1.69mm, DS=43.9%
Ø=2.97mm
25.5 mm
10
20
30
40
50
mm
Diameter (Ø)

General rules for sizing

- Administer nitrates before diameter assessment.
- QCA is recommended; use imaging in case of doubts, complex lesions or bifurcations.
- Use NC balloon and assess dilatation in two orthogonal views.
- A slight oversizing (+0.4) is reasonable.

Predilatation

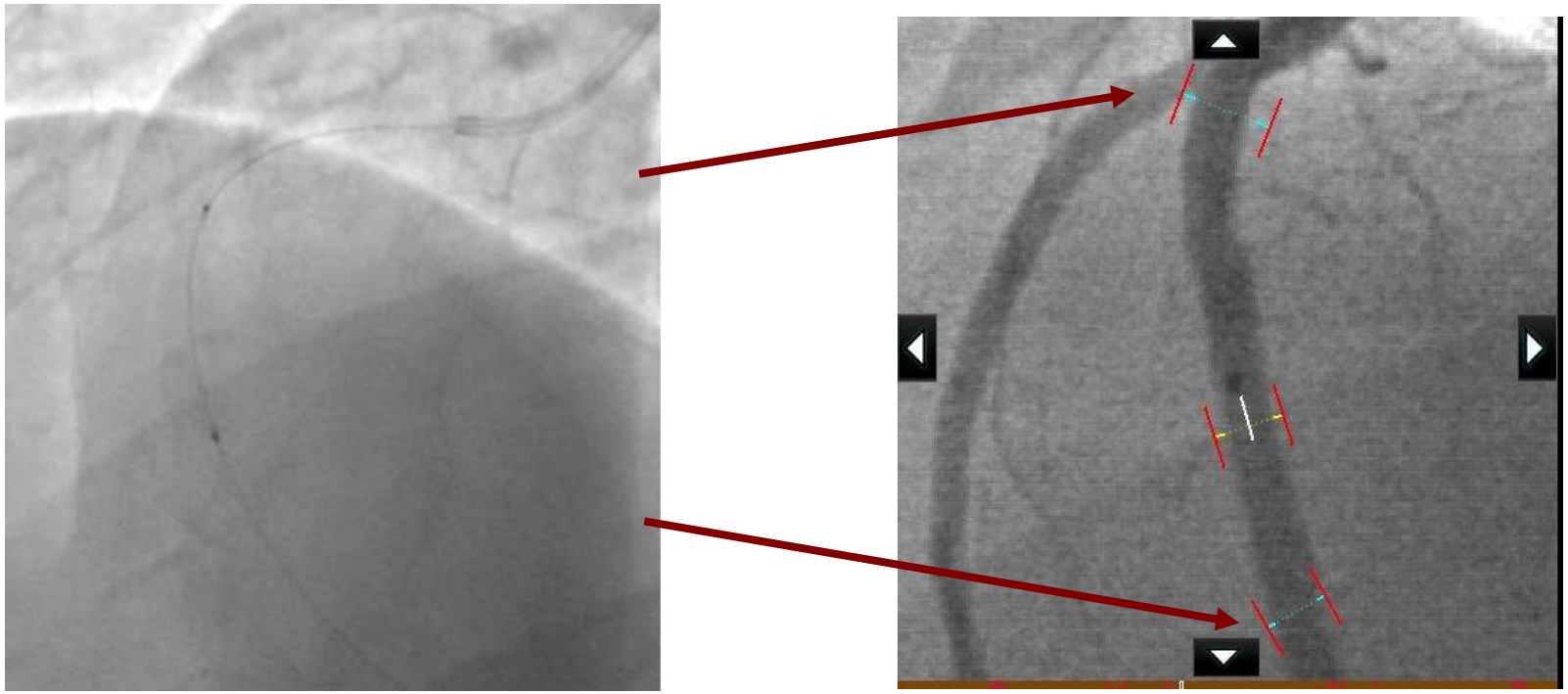
SC Balloon Emerge 3.0/15mm @10 ATM

Result after predilation

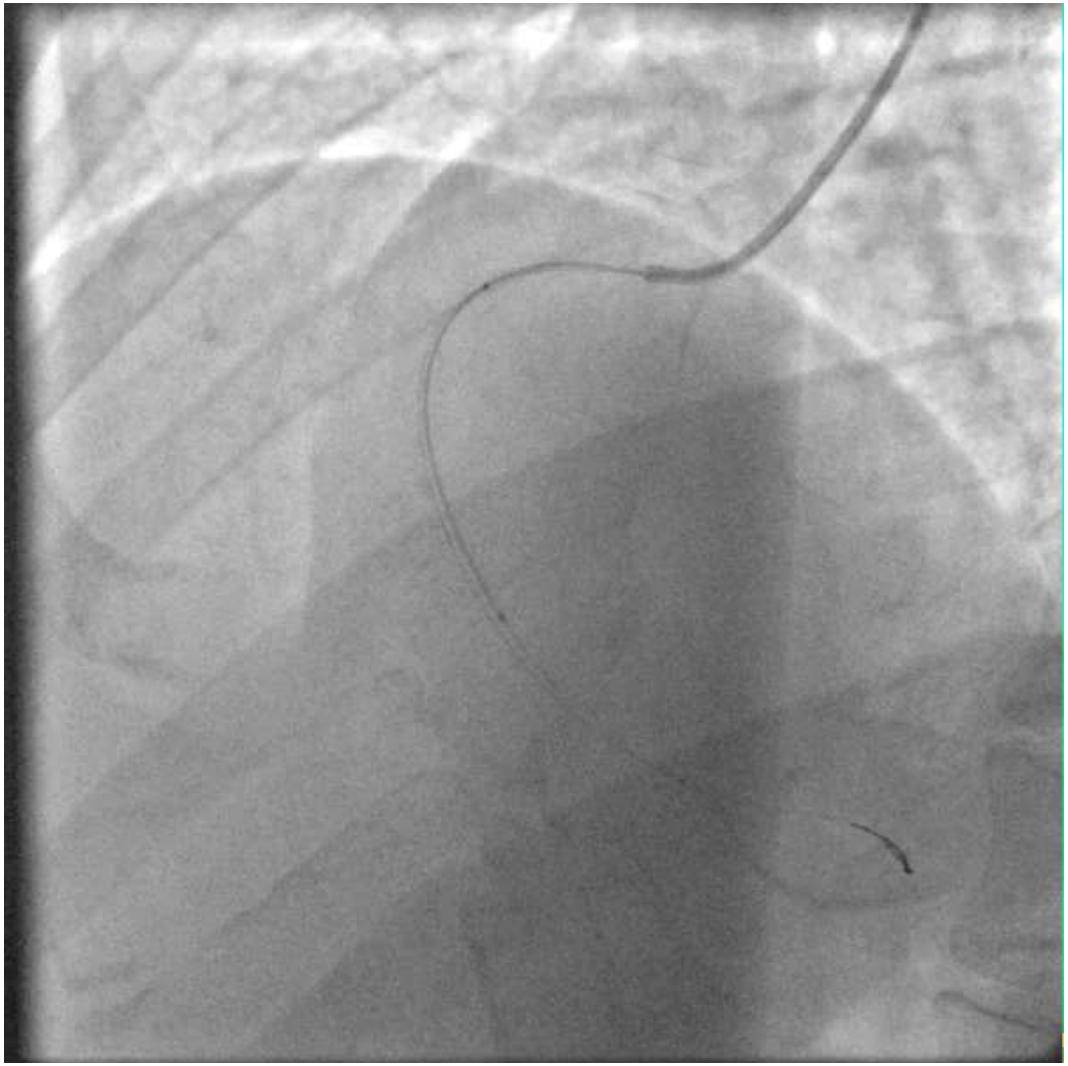
2^ PREDILATATION

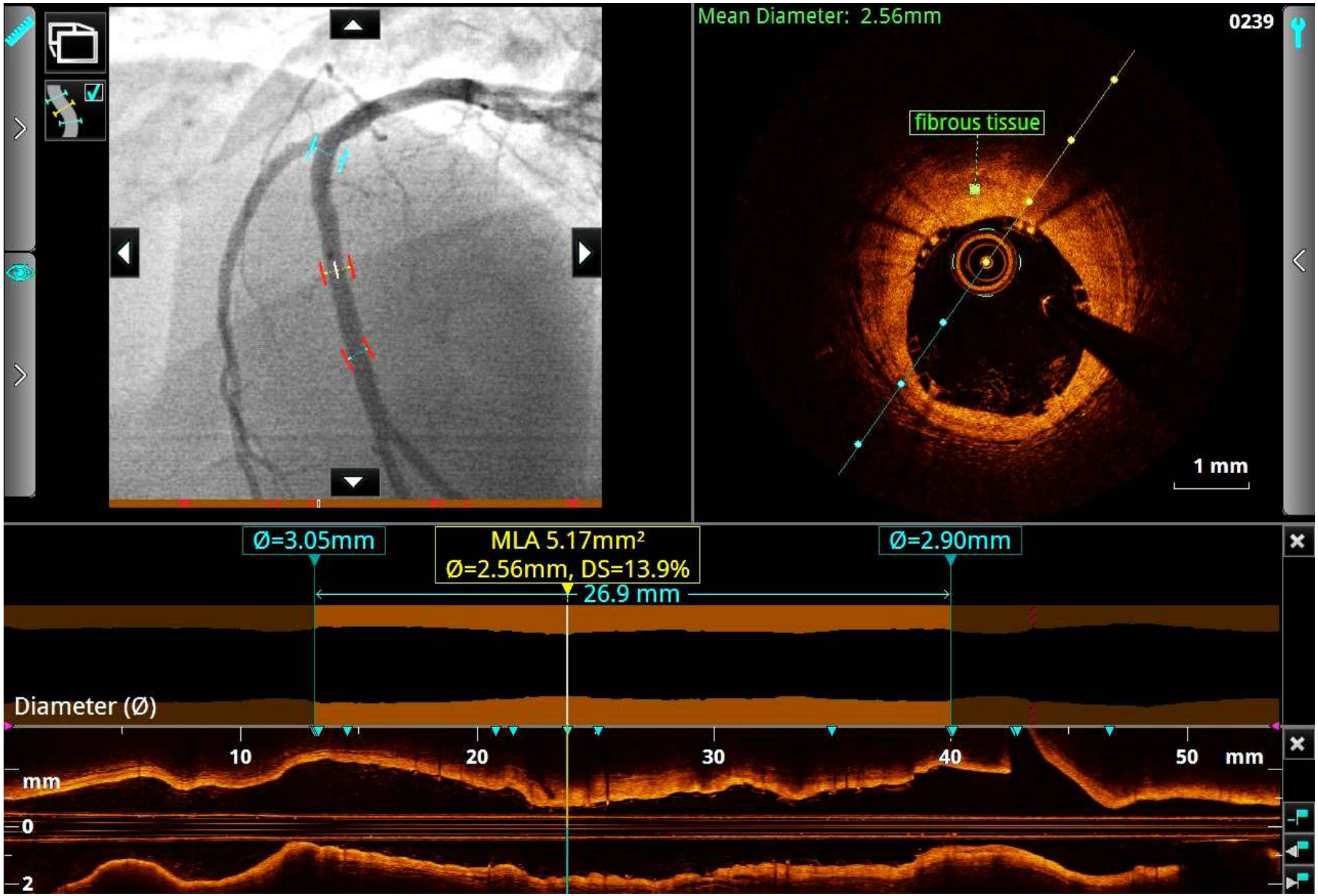
SC Balloon EMERGE 3.0/15mm @16 ATM

BVS 3.5/28mm positioning



OCT after BVS implantation

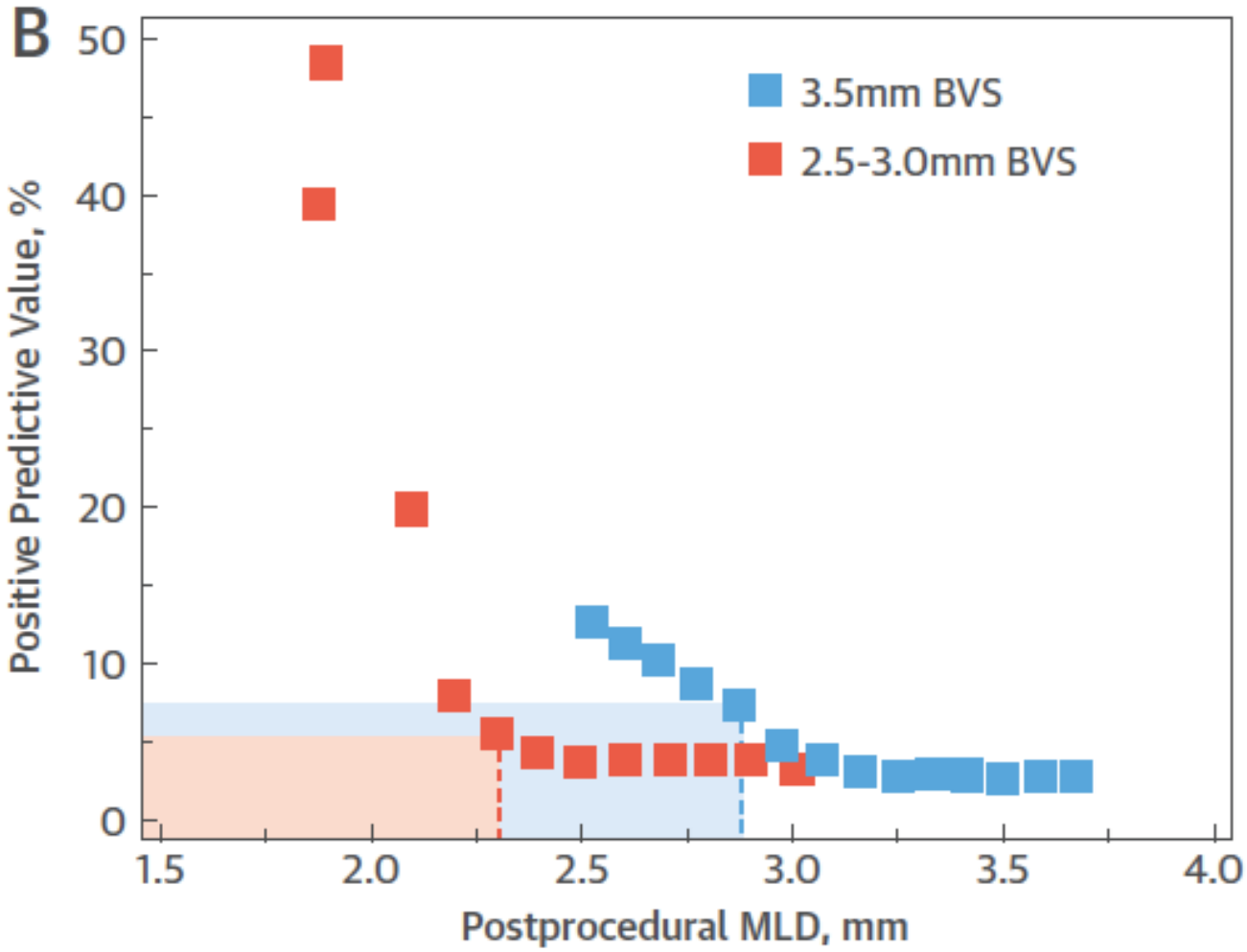



Mean Diameter: 2.56mm
0239
fibrous tissue
1 mm
Ø=3.05mm
MLA 5.17mm²
Ø=2.56mm, DS=13.9%
26.9 mm
Ø=2.90mm
Diameter (Ø)
10
20
30
40
50
mm
mm
0
2

Key steps for safe BVS implantation

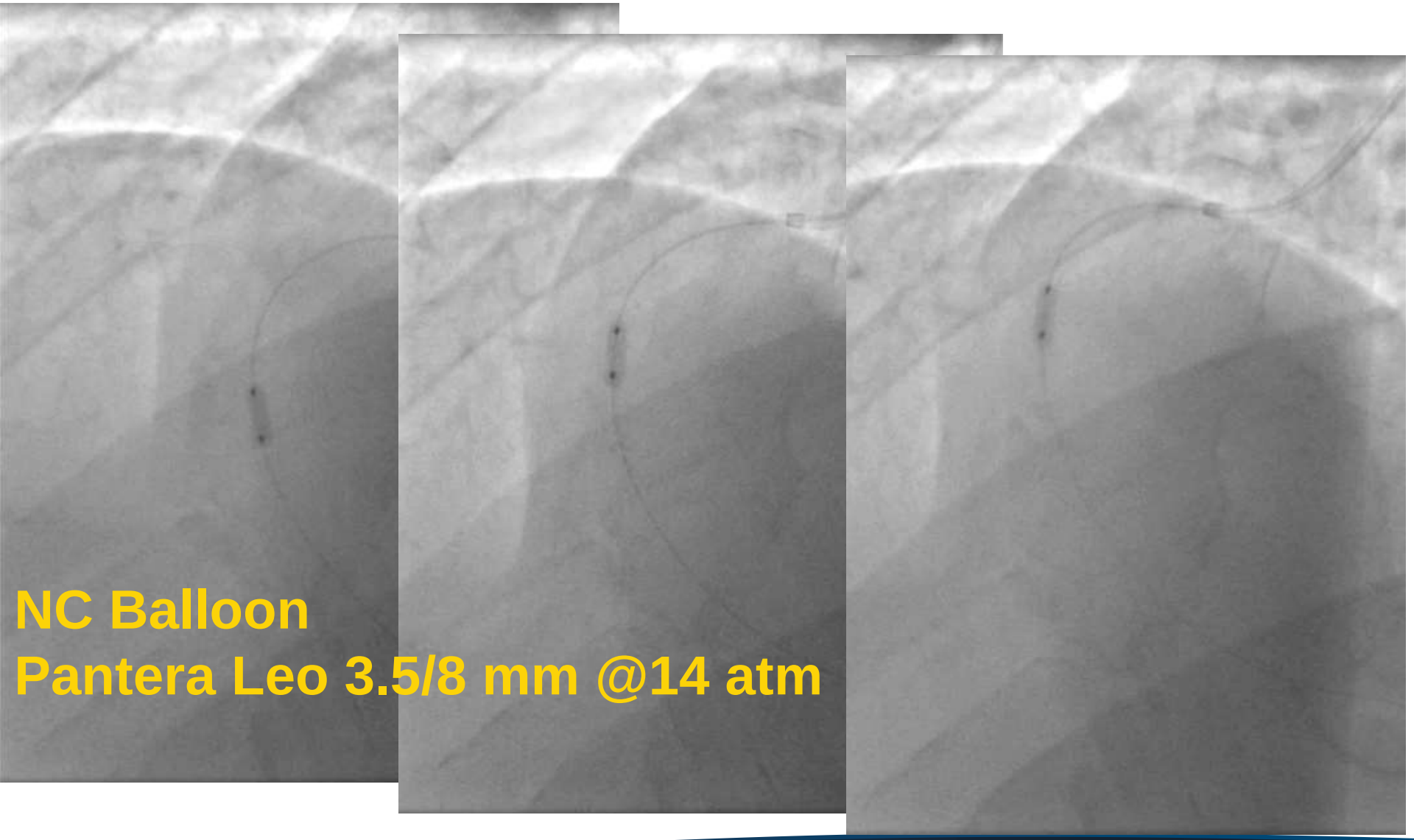
- Pre-dilatation
- Sizing
- Post-dilatation
- Minimal Overlapping

Final MLD and Scaffold thrombosis

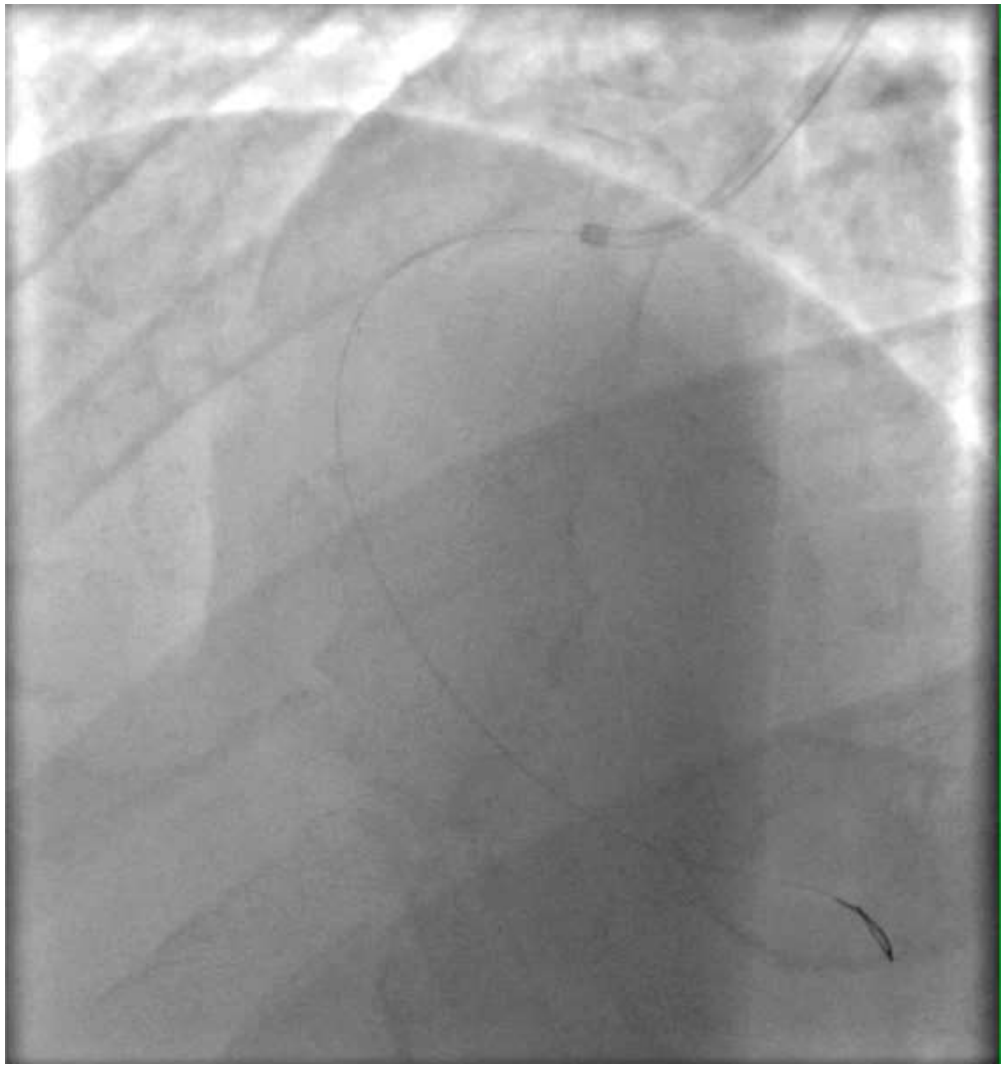


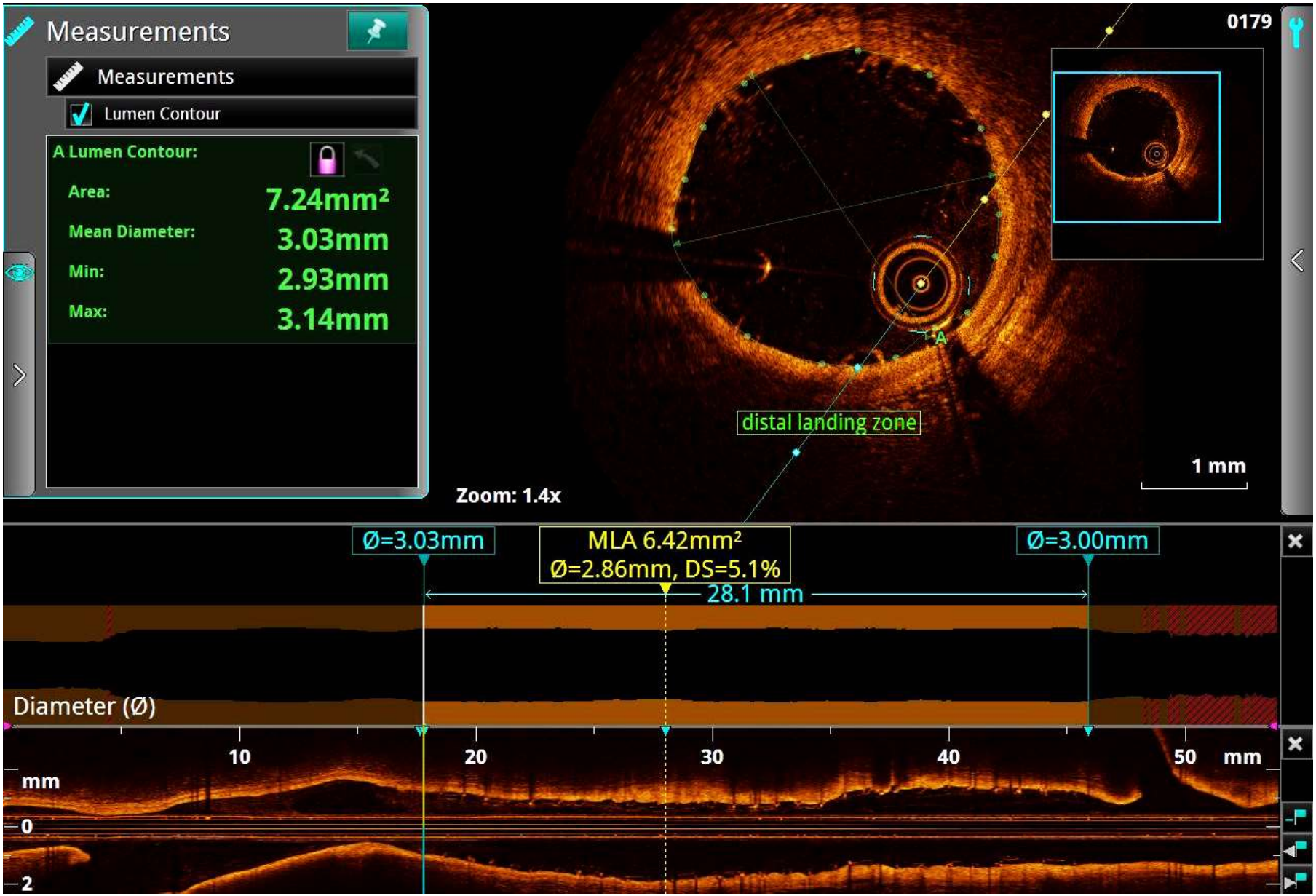
Puricel S et al. J Am Coll Cardiol 2016;67:921-31.

BVS post-dilatation



Final angiography

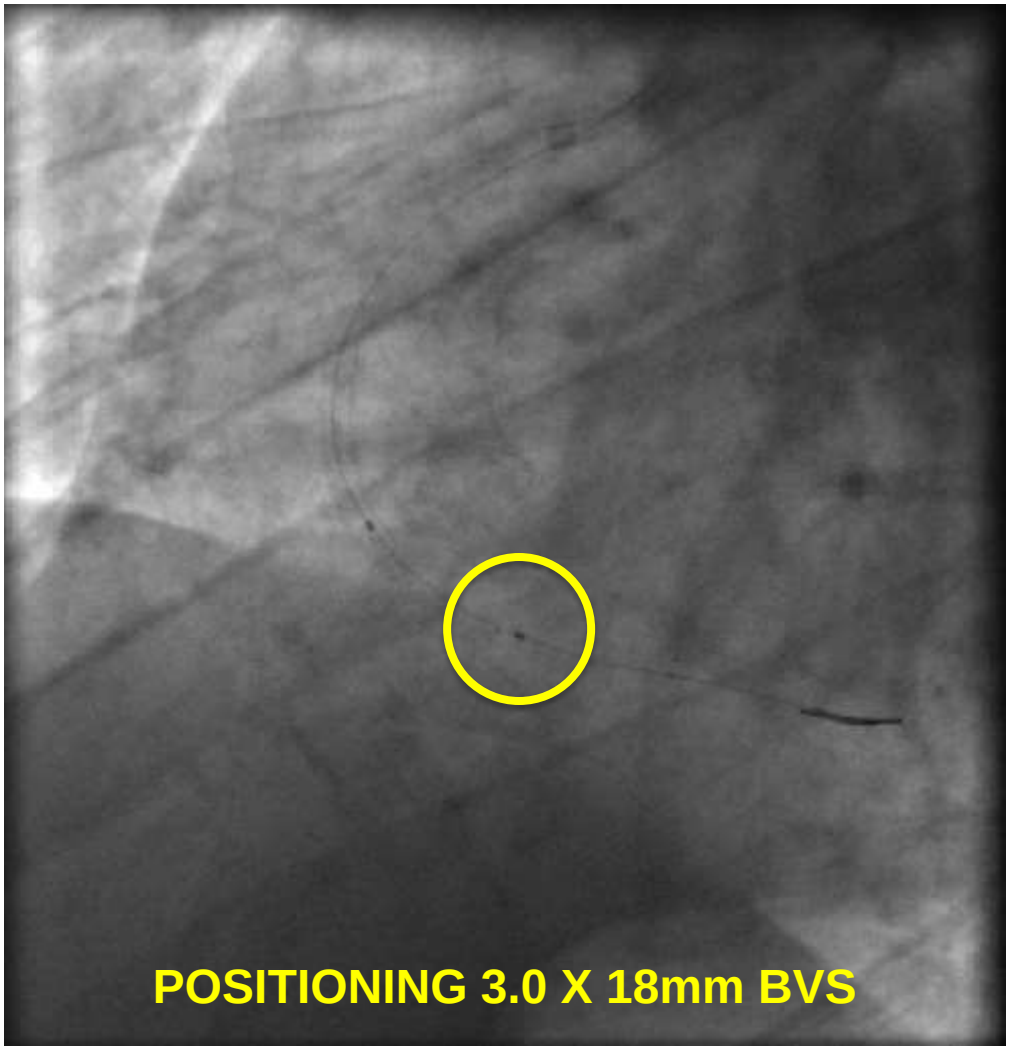



Measurements
Measurements
Lumen Contour
A Lumen Contour:
Area: 7.24mm²
Mean Diameter: 3.03mm
Min: 2.93mm
Max: 3.14mm
0179
A
distal landing zone
1 mm
Zoom: 1.4x
Ø=3.03mm
MLA 6.42mm²
Ø=2.86mm, DS=5.1%
Ø=3.00mm
28.1 mm
Diameter (Ø)
10
20
30
40
50
mm
mm
0
2

Key steps for safe BVS implantation

- Pre-dilatation
- Sizing
- Post-dilatation
- Minimal Overlapping

Scaffolds overlapping



Role of Imaging for BVS implantation

- Plaque characterization to guide strategies
- Definition of the landing zone (multiple vulnerable areas)
- Accurate vessel sizing, guiding choice of balloons/BVS
- Assessment of BVS apposition and expansion guiding implantation optimization
- Detection of residual dissection
- Recommended in case of complex lesions (i.e. bifurcations, CTO, multiple OLP) or in case of doubts at angiography

Closing remarks

- Appropriate pre-dilatation is a key step for safe BVS implantation: apply the **balloon escalation strategy**; aim to stent like results.
- QCA recommended for sizing, use imaging when in doubts or in complex lesions.
- Post-dilatation with NC balloon recommended to optimize the MLD.
- Imaging recommended in complex cases or in case of doubts.