Drug-coated balloons, Imaging and Pressure Gradients

8 min

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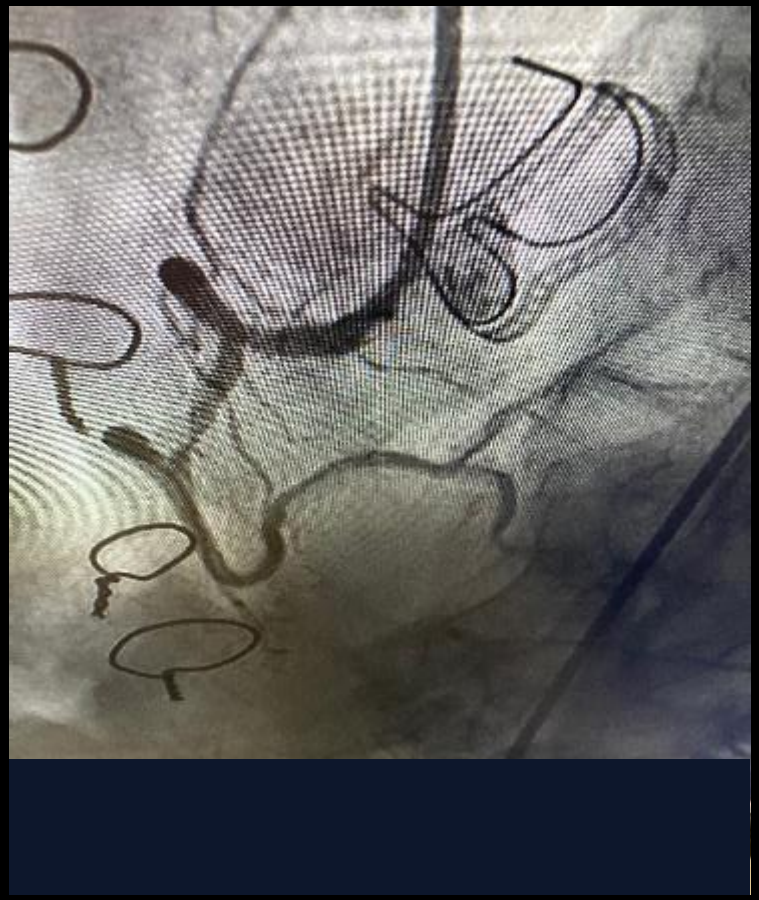
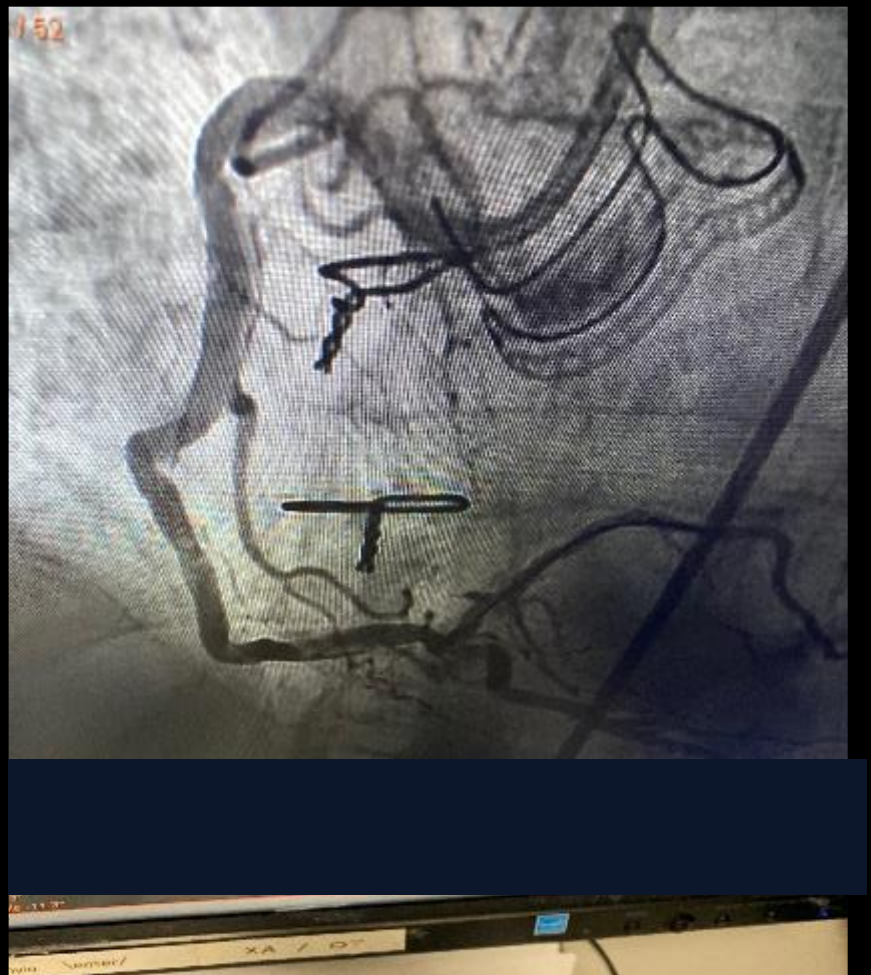
No conflicts to disclose

Results following predilatation fall in 3 groups

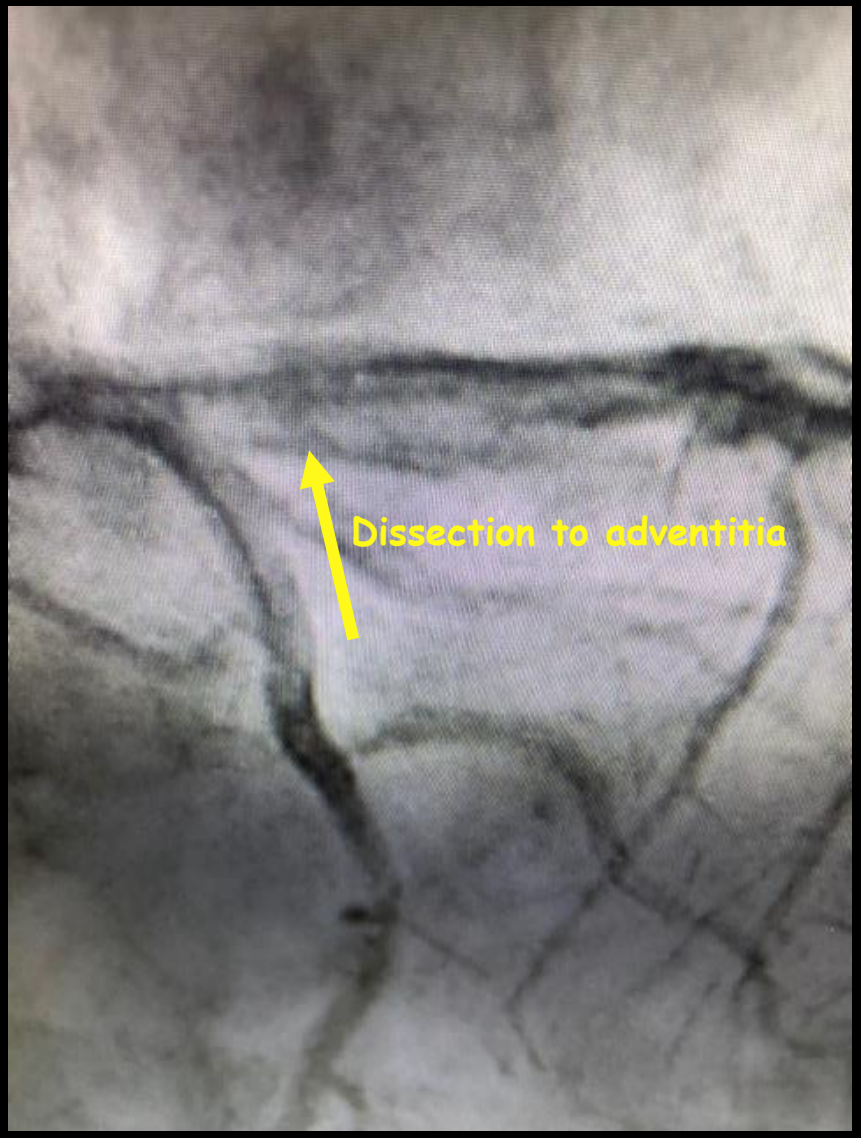
Group 1: optimal result (residual stenosis <30%) without or

with minimal dissection – we suggest DCB





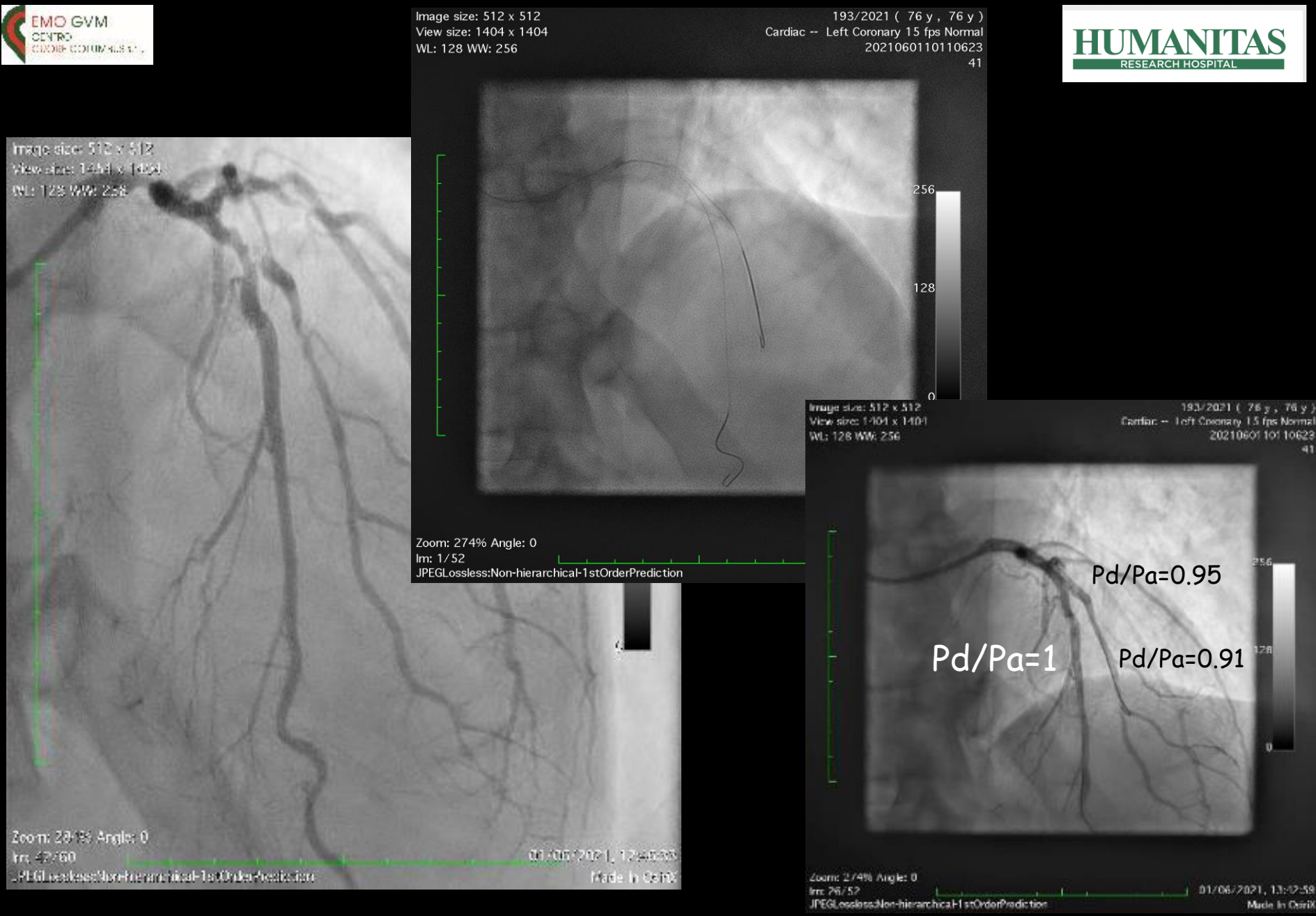
Group 2: poor result with recoil or bad dissection –
we suggest DES



Group 3: intermediate result with good lumen gain with a dissection leading to uncertainty about stability of the result.
In these situations, we suggest evaluation of the pressure in the vessel distal to the lesion (Pd) compared to the aortic pressure (Pa): the Pd/Pa gradient.

Our experience has been positive, with no vessel occlusion, whenever the Pd/Pa gradient is 10 mm Hg or less.

In case of diffuse disease our approach entails starting from the very beginning with a pressure wire to monitor the dilatation procedure via the Pd/Pa gradient. In some long lesions, proximal implantation of a short DES, in combination with DCB angioplasty addressing the remaining disease appears a reasonable solution.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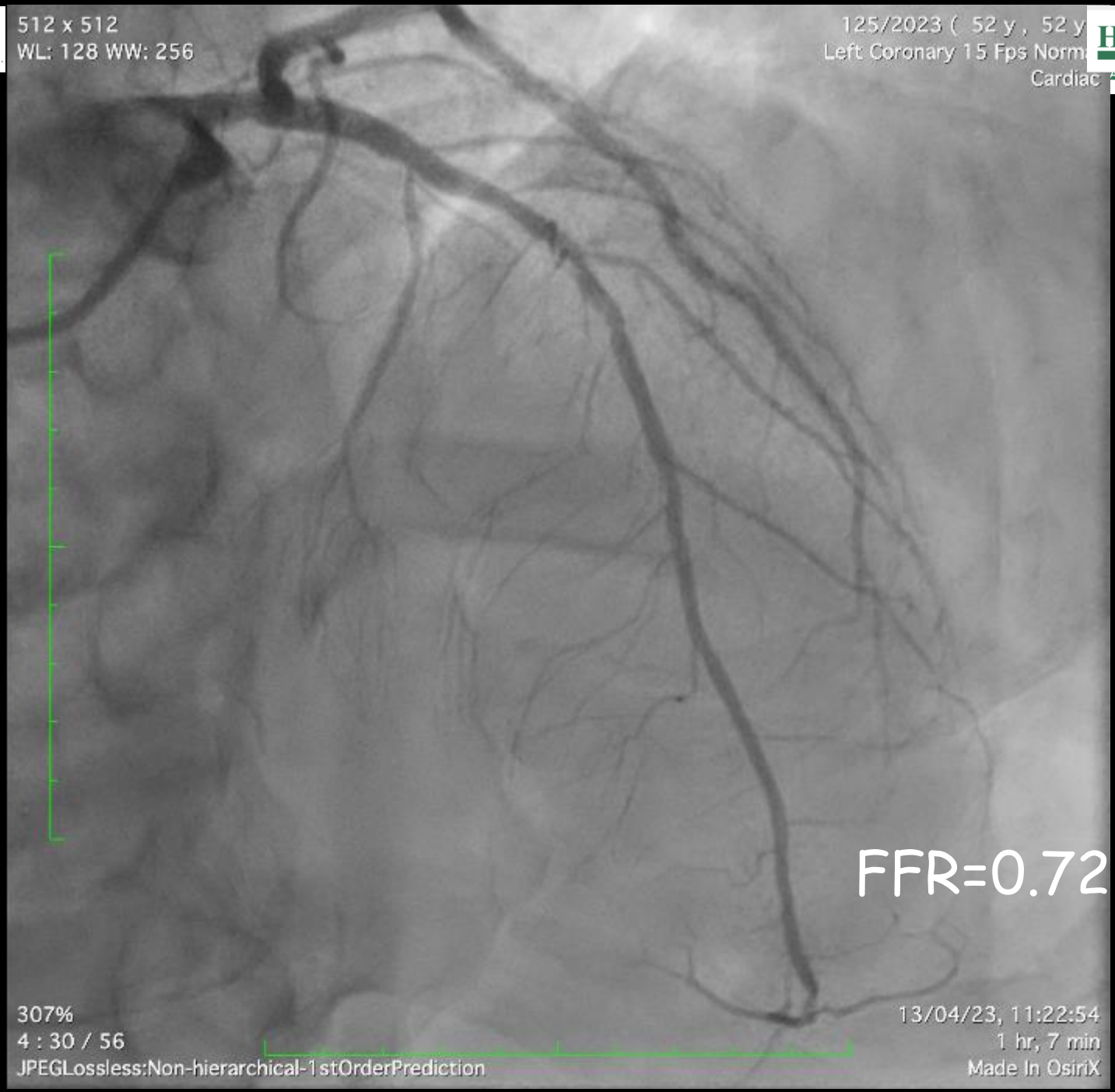
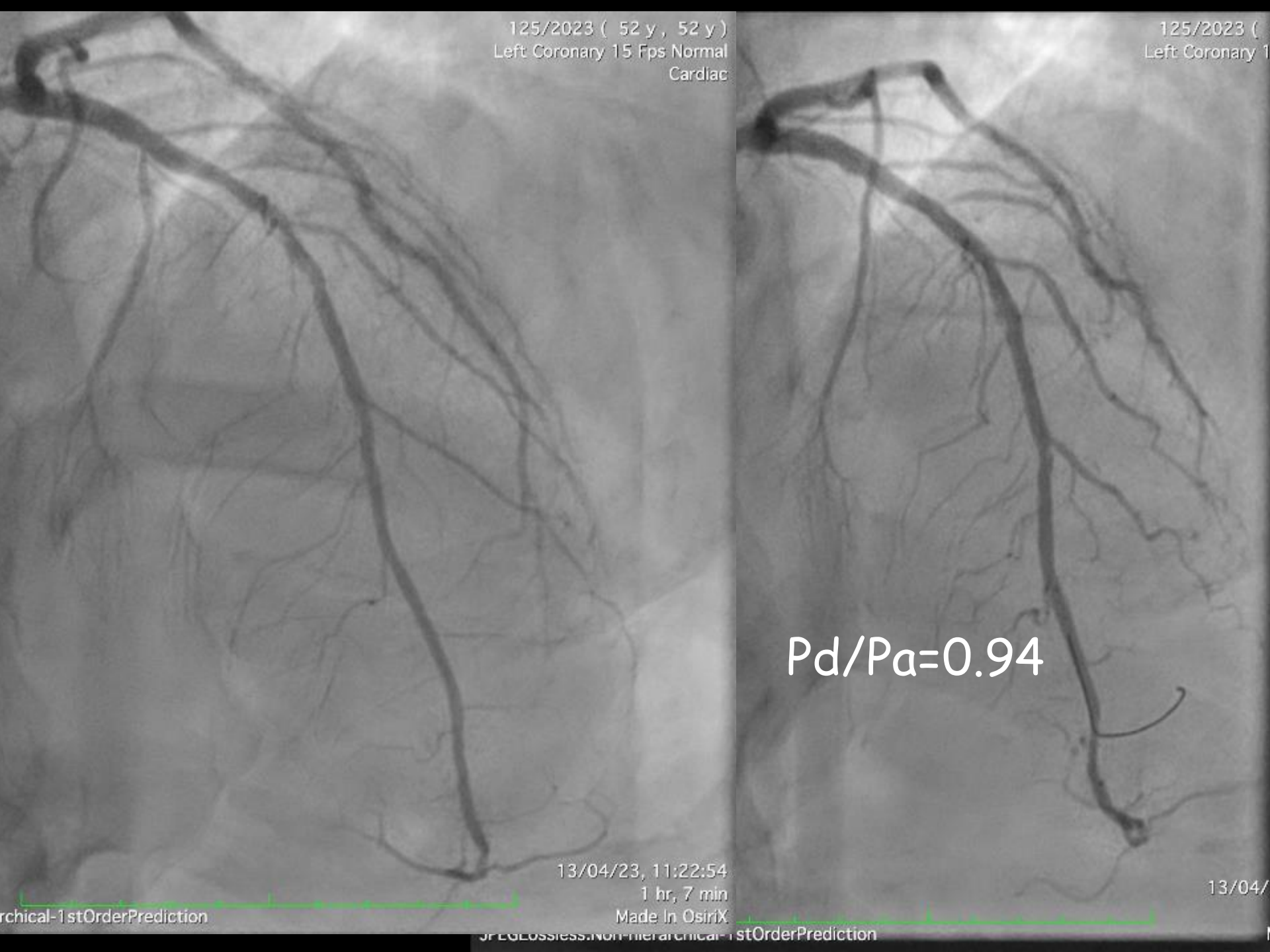
View size: 1404 x 1404
WL: 128 WW: 256
193/2021 (76 y , 76 y)
Cardiac -- Left Coronary 15 fps Normal
2021060110110623
41
256
128
0
Zoom: 274% Angle: 0
Im: 1/52
JPEGLossless:Non-hierarchical-1stOrderPrediction
Pd/Pa=0.95
Pd/Pa=1
Pd/Pa=0.91


EMO GVM
CENTRO
CUORE COLUMBUS s.r.l.
512 x 512
WL: 128 WW: 256
125/2023 (52 y , 52 y
Left Coronary 15 Fps Norm
Cardiac
HUMANITAS
RESEARCH HOSPITAL
FFR=0.72
307%
4 : 30 / 56
JPEGLossless:Non-hierarchical-1stOrderPrediction
13/04/23, 11:22:54
1 hr, 7 min
Made In OsiriX


EMO GVM
CENTRO
CUORE COLUMBUS s.r.l.
HUMANITAS
RESEARCH HOSPITAL
512 x 512
WL: 128 WW: 256
Left Coronary 15 Fps Normal
Cardiac
DCB 3.0-40 mm
307%
26 : 1 / 8
JPEGLossless:Non-hierarchical-1stOrderPrediction
DCB 2.5-30 mm
13/04/23, 12:03:48
1 hr, 7 min
Made In OsiriX
DCB 3.5-20 mm
307%
JPEGLossless:Non-hierarchical-1stOrderPrediction


125/2023 (52 y , 52 y)
Left Coronary 15 Fps Normal
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rchical-1stOrderPrediction
125/2023 (
Left Coronary 1
Pd/Pa=0.94
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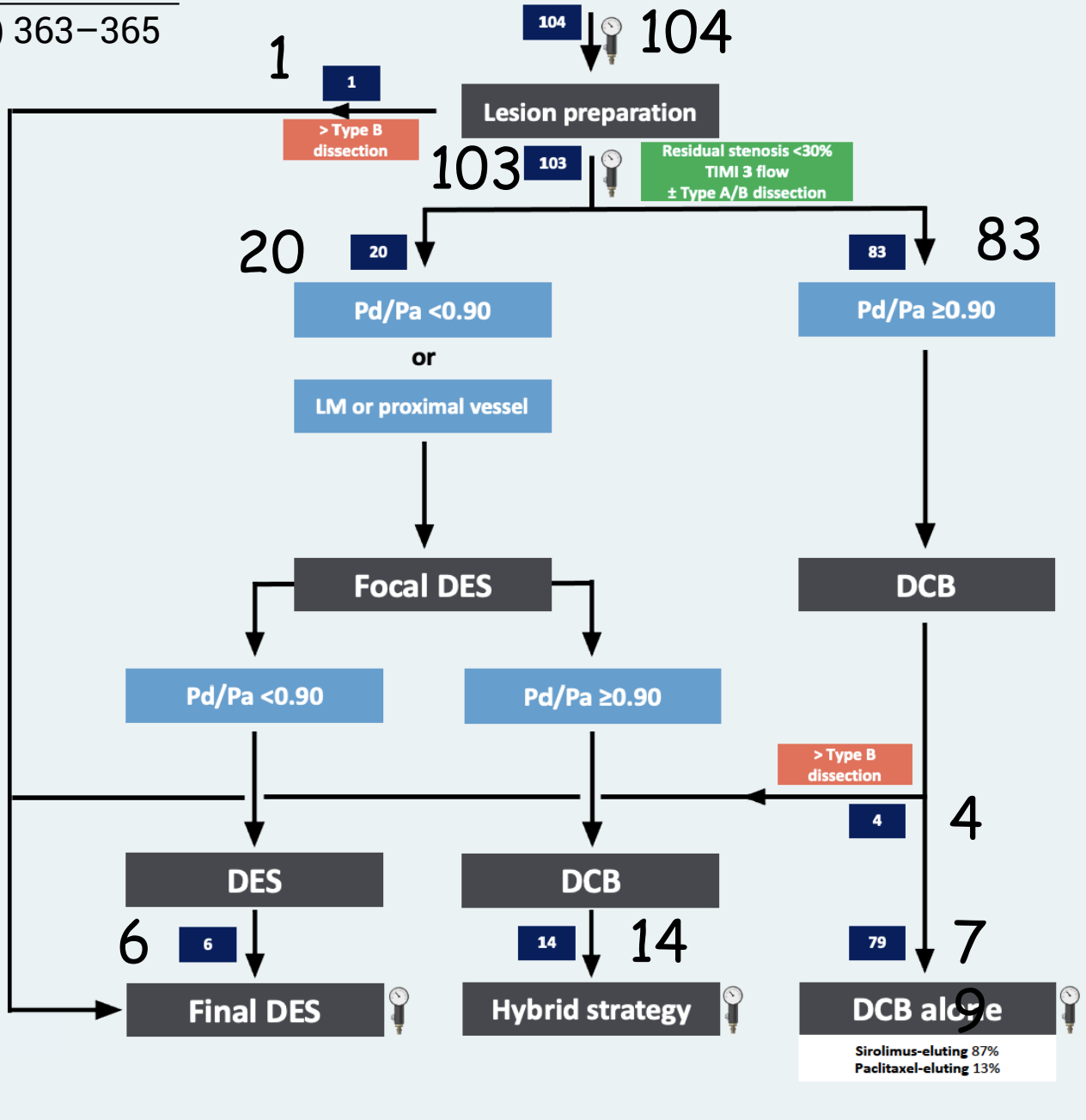
Feb, 16 (3) 363–365



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Procedural characteristics

Lesion preparation	
Pre-dilatation, n (%)	90 (90.0%)
Cutting balloon, n (%)	9 (9.0%)
Rotablator, n (%)	4 (4.0%)
Shockwave, n (%)	6 (6.0%)
Average lesion preparation balloon diameter, mm	3.06 ± 0.36
Drug-coated balloon (DCB)	100 (100%)
Drug-eluting stent	36 (36.0%)
Bail-out stenting	6 (6.0%)
Hybrid strategy	30 (30.0%)
DCB diameter, mm	3.15 ± 0.27
Drug coating on DCB	
Sirolimus	77 (77.0%)
Paclitaxel	23 (23.0%)
Intravascular imaging	
Intravascular imaging use, n (%)	40 (40.0%)
Intravascular ultrasound, n (%)	37 (37.0%)
Optimal coherence tomography, n (%)	3 (3.0%)

Clinical outcomes

Median FU 350 days (IQR 221-563 days); clinical FU 95.7%

	3 months	*6 months*	*9 months*	*12 months*
Target lesion failure	1 (1.1%)	3 (3.6%)	3 (3.6%)	4 (5.1%)
Cardiac death	0	0	0	0
Target vessel MI	0	0	0	0
TLR	1 (1.1%)	3 (3.6%)	3 (3.6%)	4 (5.1%)
All cause death	0	1 (1.3%)	1 (1.3%)	1 (1.3%)
Any MI	0	0	0	0
TVR	1 (1.1%)	3 (3.6%)	5 (6.6%)	5 (6.6%)
TLR per lesion	1 (1.1%)	3 (3.4%)	3 (3.4%)	4 (4.7%)
Definite/probable acute vessel occlusion	0	0	0	0

Event rates are estimated using Kaplan-Meier analysis

Preliminary Conclusions about DCB

DCB are effective for treatment of ISR after optimal lesion preparation

DCB can be used to treat small vessel disease with some advantages compared to DES such as short DAPT

Utilizing an appropriate strategy DCB can be applied to treat long lesions limiting stent length even in large vessels