

Invited Case Presentation & Focus Review: Acute Coronary Syndrom

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Guidelines on myocardial revascularization

The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

Table 9 Indications for coronary artery bypass grafting vs. percutaneous coronary intervention in stable patients with lesions suitable for both procedures and low predicted surgical mortality

Subset of CAD by anatomy	Favours CABG	Favours PCI	Ref.
IVD or 2VD - non-proximal LAD	IIb C	I C	—
IVD or 2VD - proximal LAD	I A	IIa B	30, 31, 50, 51
3VD simple lesions, full functional revascularization achievable with PCI, SYNTAX score ≤ 22	I A	IIa B	4, 30–37, 53
3VD complex lesions, incomplete revascularization achievable with PCI, SYNTAX score > 22	I A	III A	4, 30–37, 53
Left main (isolated or IVD, ostium/shaft)	I A	IIa B	4, 54
Left main (isolated or IVD, distal bifurcation)	I A	IIb B	4, 54
Left main + 2VD or 3VD, SYNTAX score ≤ 32	I A	IIb B	4, 54
Left main + 2VD or 3VD, SYNTAX score ≥ 33	I A	III B	4, 54

Guidelines on myocardial revascularization

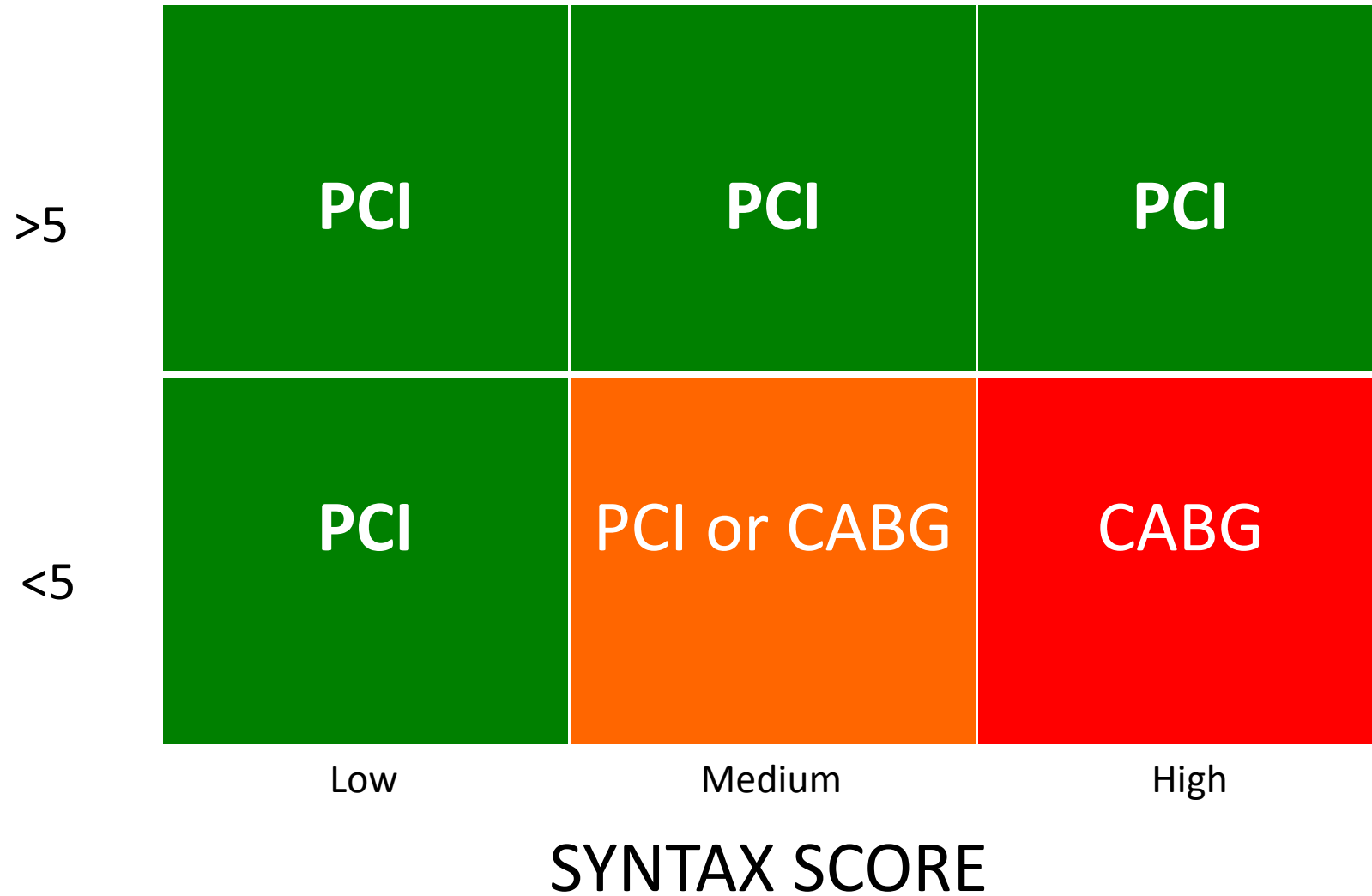
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Decision diagram

Euroscore



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Table 12 Recommendations for revascularization in non-ST-segment elevation acute coronary syndrome

Specification	Class ^a	Level ^b	Ref. ^c
An invasive strategy is indicated in patients with: <ul style="list-style-type: none"> • GRACE score >140 or at least one high-risk criterion. • recurrent symptoms. • inducible ischaemia at stress test. 	I	A	64, 68–70
An early invasive strategy (<24 h) is indicated in patients with GRACE score >140 or multiple other high-risk criteria.	I	A	63, 64, 66, 70–72
A late invasive strategy (within 72 h) is indicated in patients with GRACE score <140 or absence of multiple other high-risk criteria but with recurrent symptoms or stress-inducible ischaemia.	I	A	59, 66, 68
Patients at very high ischaemic risk (refractory angina, with associated heart failure, arrhythmias or haemodynamic instability) should be considered for emergent coronary angiography (<2 h).	IIa	C	—
An invasive strategy should not be performed in patients: <ul style="list-style-type: none"> • at low overall risk. • at a particular high-risk for invasive diagnosis or intervention. 	III	A	59, 68

^aClass of recommendation.

^bLevel of evidence.

^cReferences.

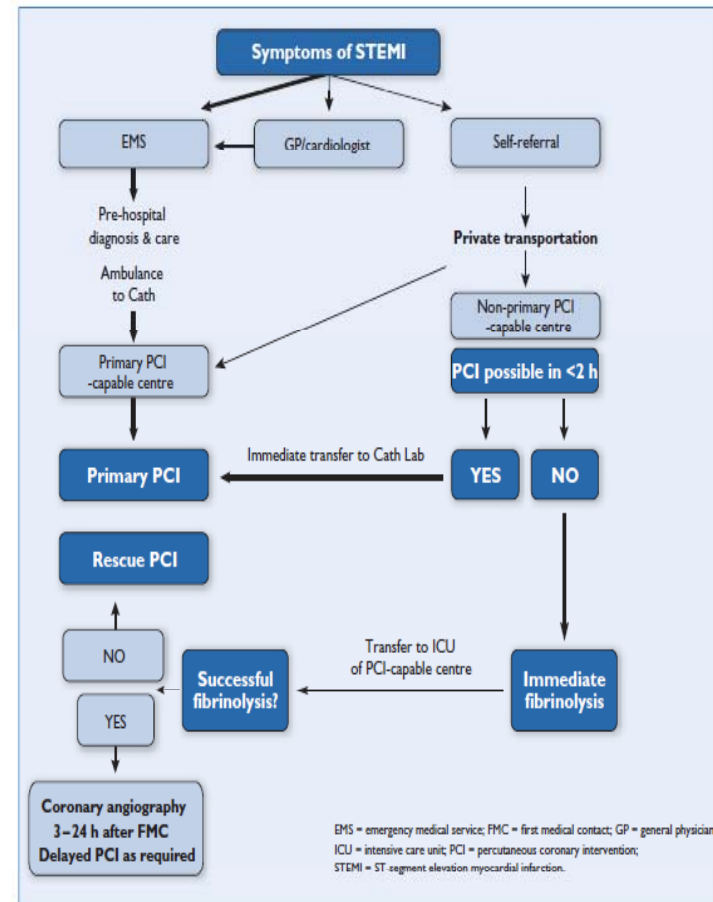


Figure 1 Organization of ST-segment elevation myocardial infarction patient pathway describing pre- and in-hospital management and reperfusion strategies within 12 h of first medical contact.

Table 4 Multidisciplinary decision pathways, patient informed consent, and timing of intervention

		ACS			Stable MVD	Stable with indication for <i>ad hoc</i> PCI ^a
	Shock	STEMI	NSTE - ACS ^b	Other ACS ^c		
Multidisciplinary decision making	Not mandatory.	Not mandatory.	Not required for culprit lesion but required for non-culprit vessel(s).	Required.	Required.	According to predefined protocols.
Informed consent	Oral witnessed informed consent or family consent if possible without delay.	Oral witnessed informed consent may be sufficient unless written consent is legally required.	Written informed consent ^d (if time permits).	Written informed consent ^d	Written informed consent ^d	Written informed consent ^d
Time to revascularization	Emergency: no delay.	Emergency: no delay.	Urgency: within 24 h if possible and no later than 72 h.	Urgency: time constraints apply.	Elective: no time constraints.	Elective: no time constraints.
Procedure	Proceed with intervention based on best evidence/availability.	Proceed with intervention based on best evidence/availability.	Proceed with intervention based on best evidence/availability. Non-culprit lesions treated according to institutional protocol.	Proceed with intervention based on best evidence/availability. Non-culprit lesions treated according to institutional protocol.	Plan most appropriate intervention allowing enough time from diagnostic catheterization to intervention.	Proceed with intervention according to institutional protocol defined by local Heart Team.

^aPotential indications for *ad hoc* PCI are listed in Table 5.

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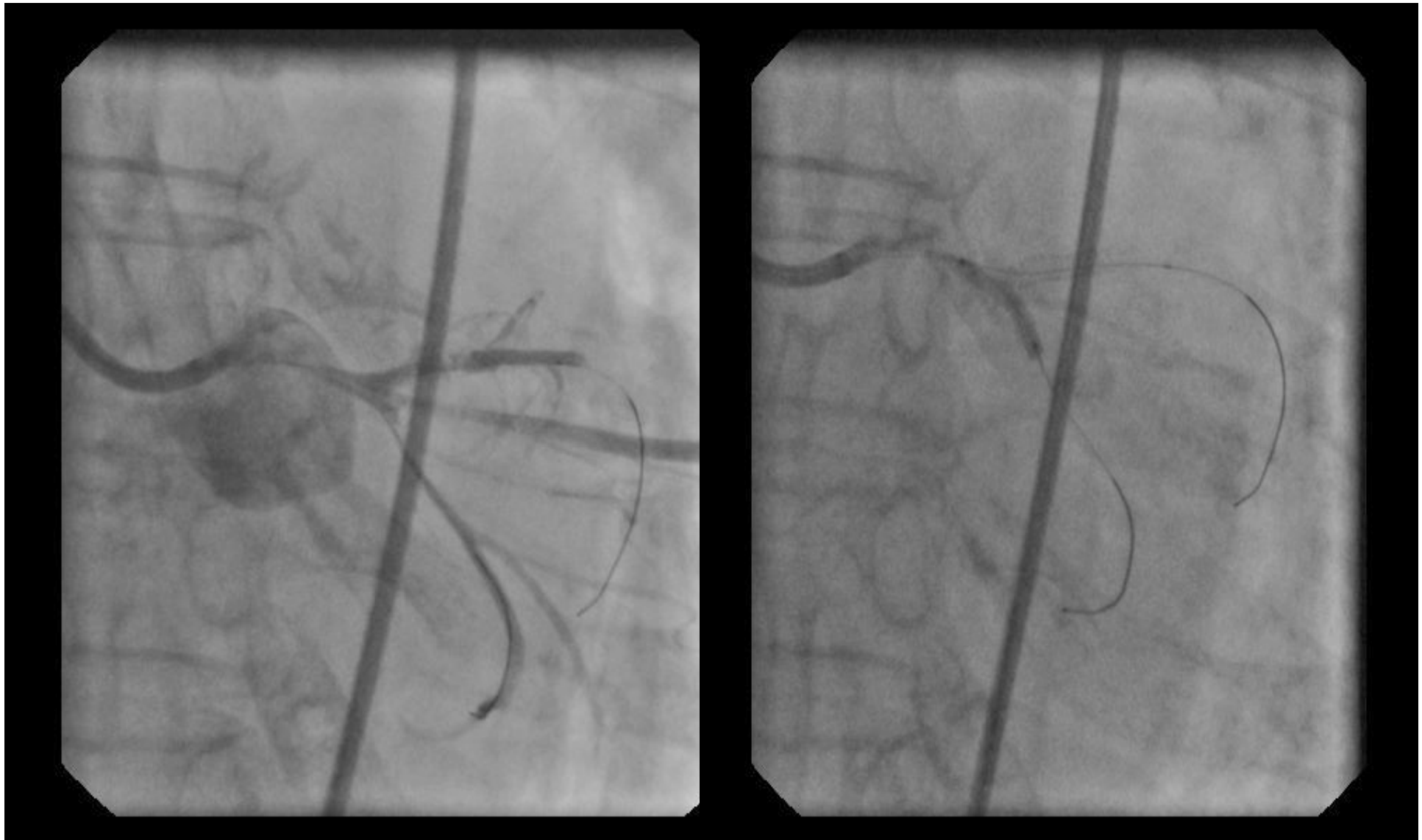
Case No1

- Female, 71 year old
- Unstable angina
- ECG: AF , ST depression in I,II, aVL, V4-6
- PCI: DES implantation to proximal LAD (14 months ago)
- Hypertension,
- Tn I: 0,049 ug/l
- UKG: LV 55/36 mm, EF 50%, MVI (++/+++)

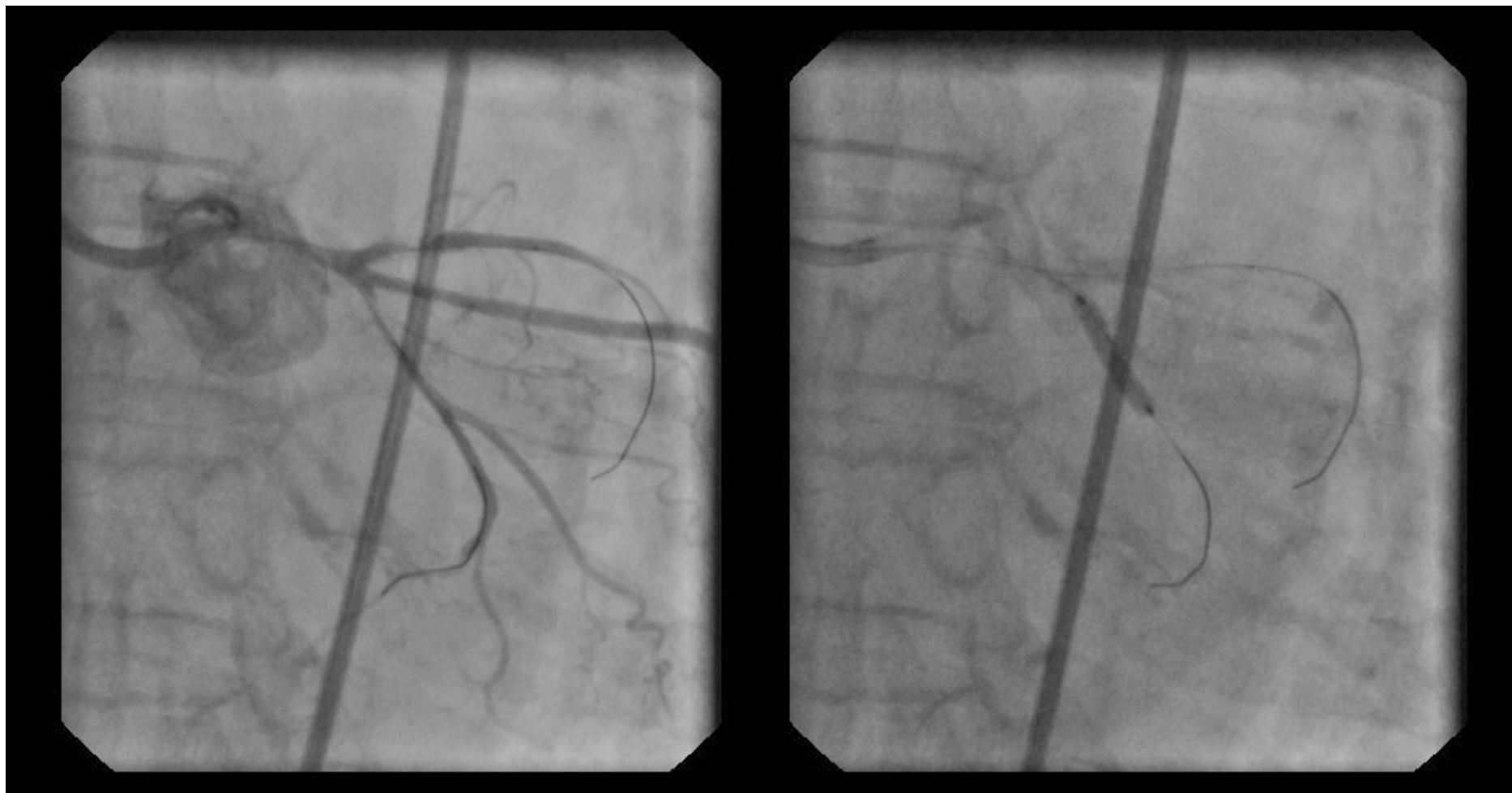
Coronary angiography



Wireing LAD and Cx, predilatation Cx

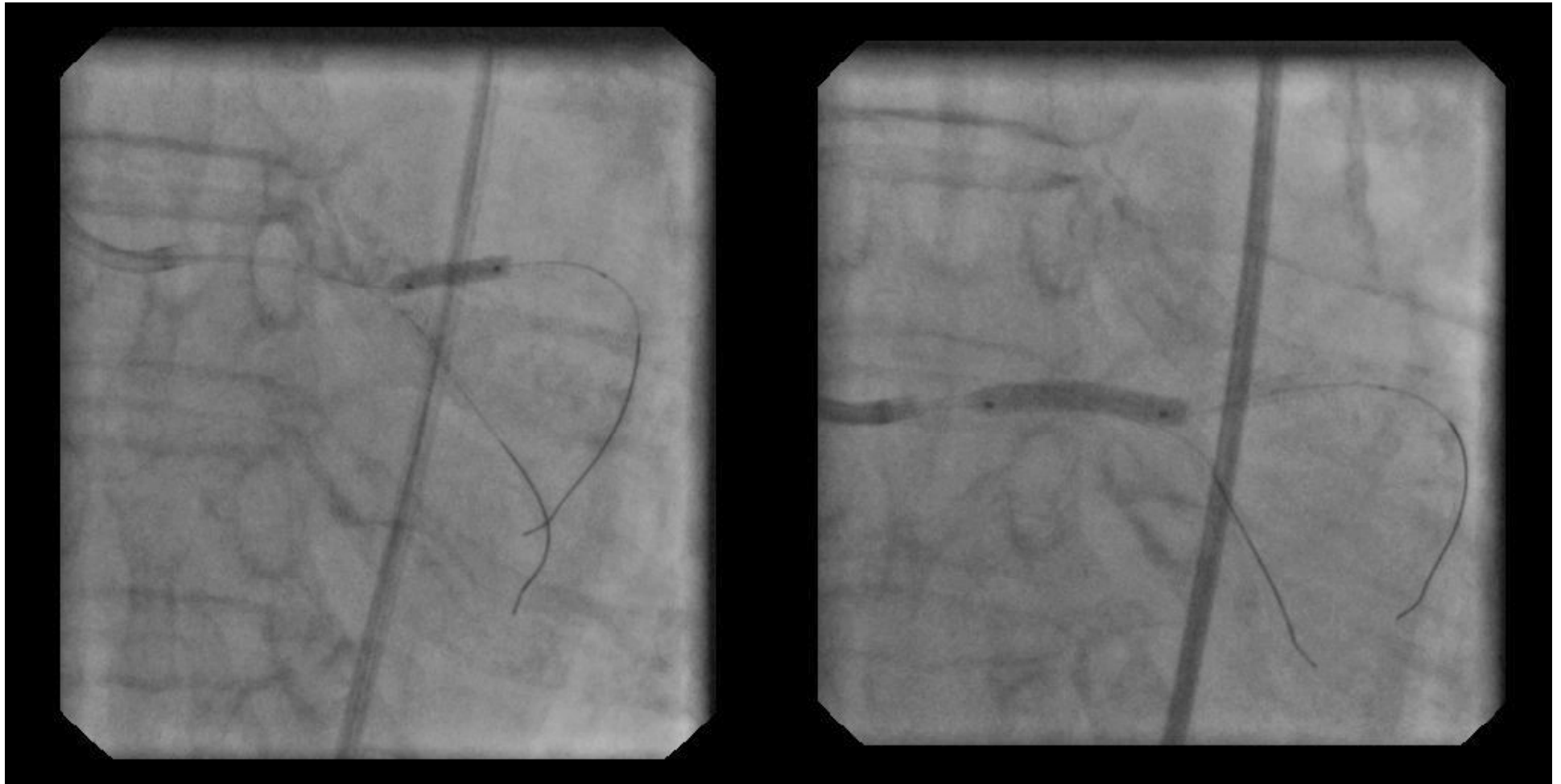


Stenting Cx
Xcience 2.5x16mm



Stenting LAD and LM

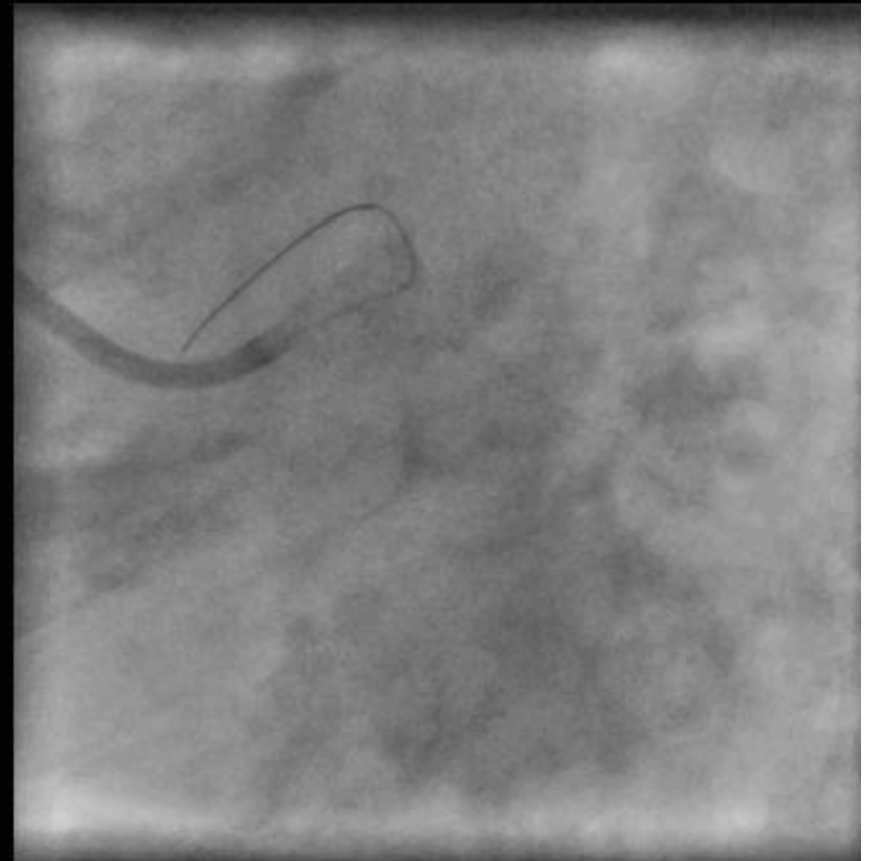
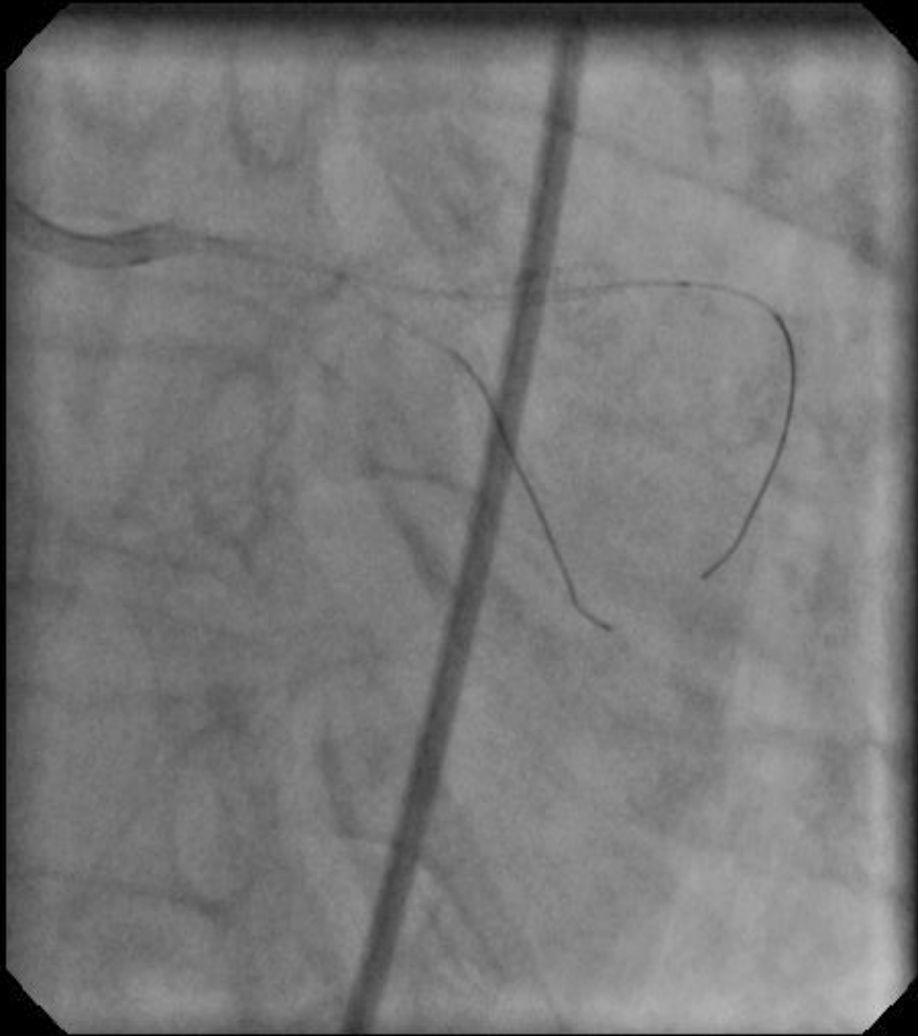
Xcience V 2.5x15mm and 3.5x18mm



FINAL ANGIO

AP/Caud

LAO-Caud



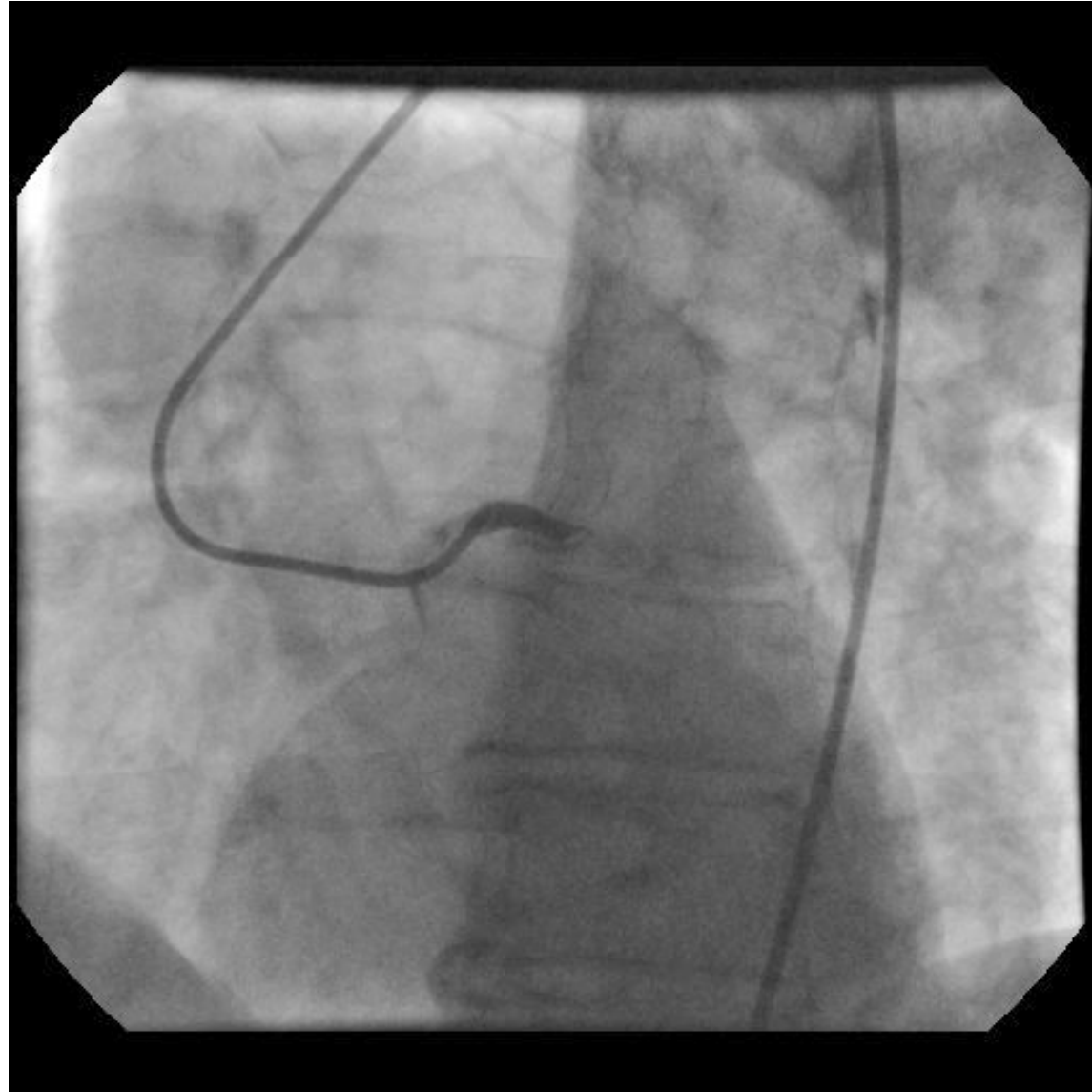
Summary

- The patient was discharged after 3 days on sinus rhythm,
- Rx:
DAPT, amiodaron, ACEI, statin, beta blocker
- Scheduled for a control angio only if positive non-invasive tests

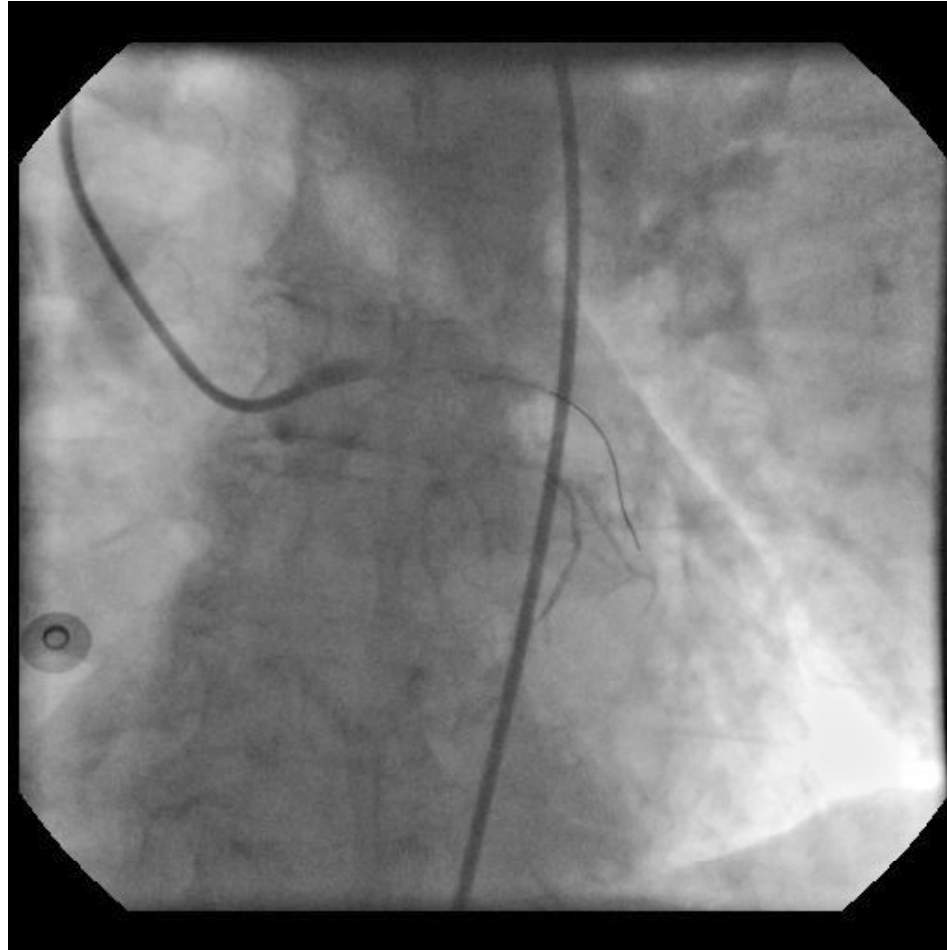
CASE no 2

- 88 year old female
- Transferred from home by ambulance
- Cardiogenic shock: RR 70/40mmHg, HR 120/min,
- Sever chest pain
- ECG: AF, RBBB, ST elevation V1-V6
- Rx: Dopamine and Levonori.v., UF Heparin i.v.
Aspirin, Clopidogrel

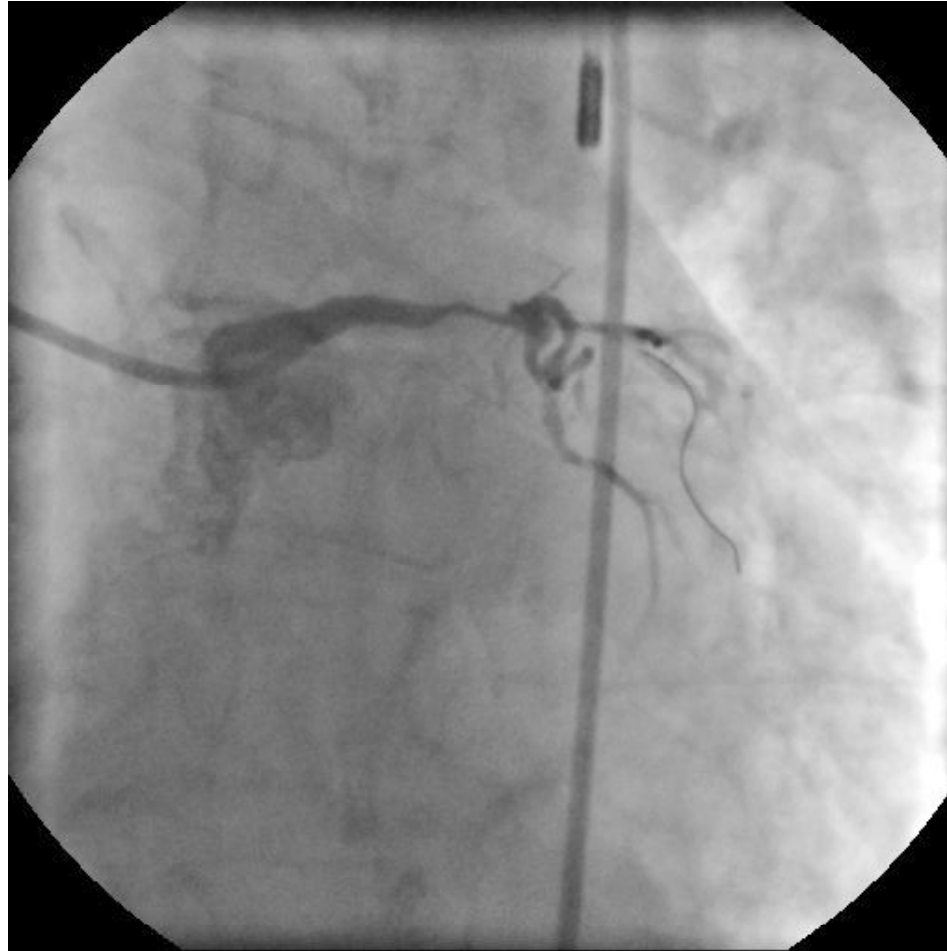
LCA: total acute occlusion of LMCA



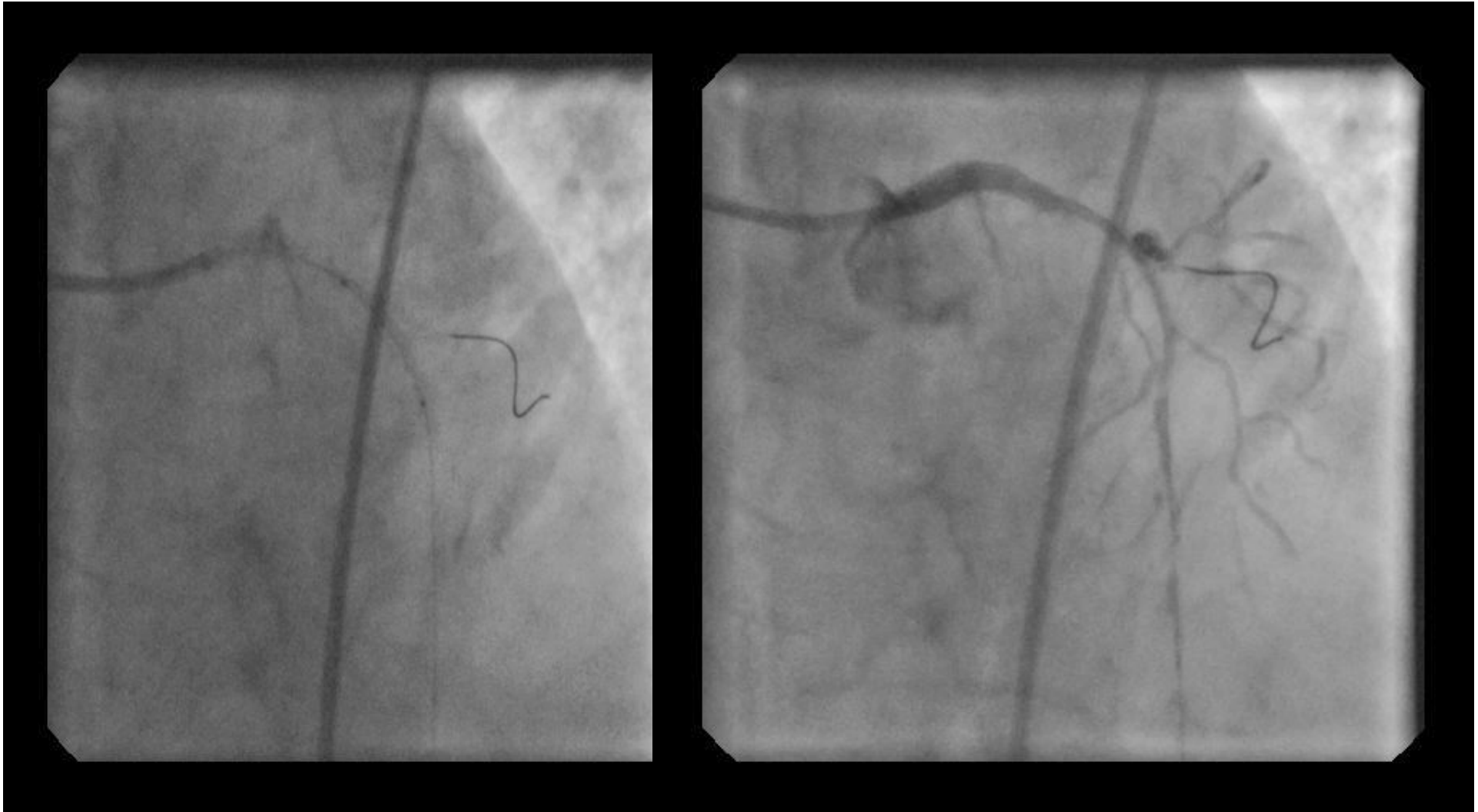
First wire and cloth aspiration
with thrombectomy catheter



Bolus of Integrillin i.c.
IABP in thoracic aorta



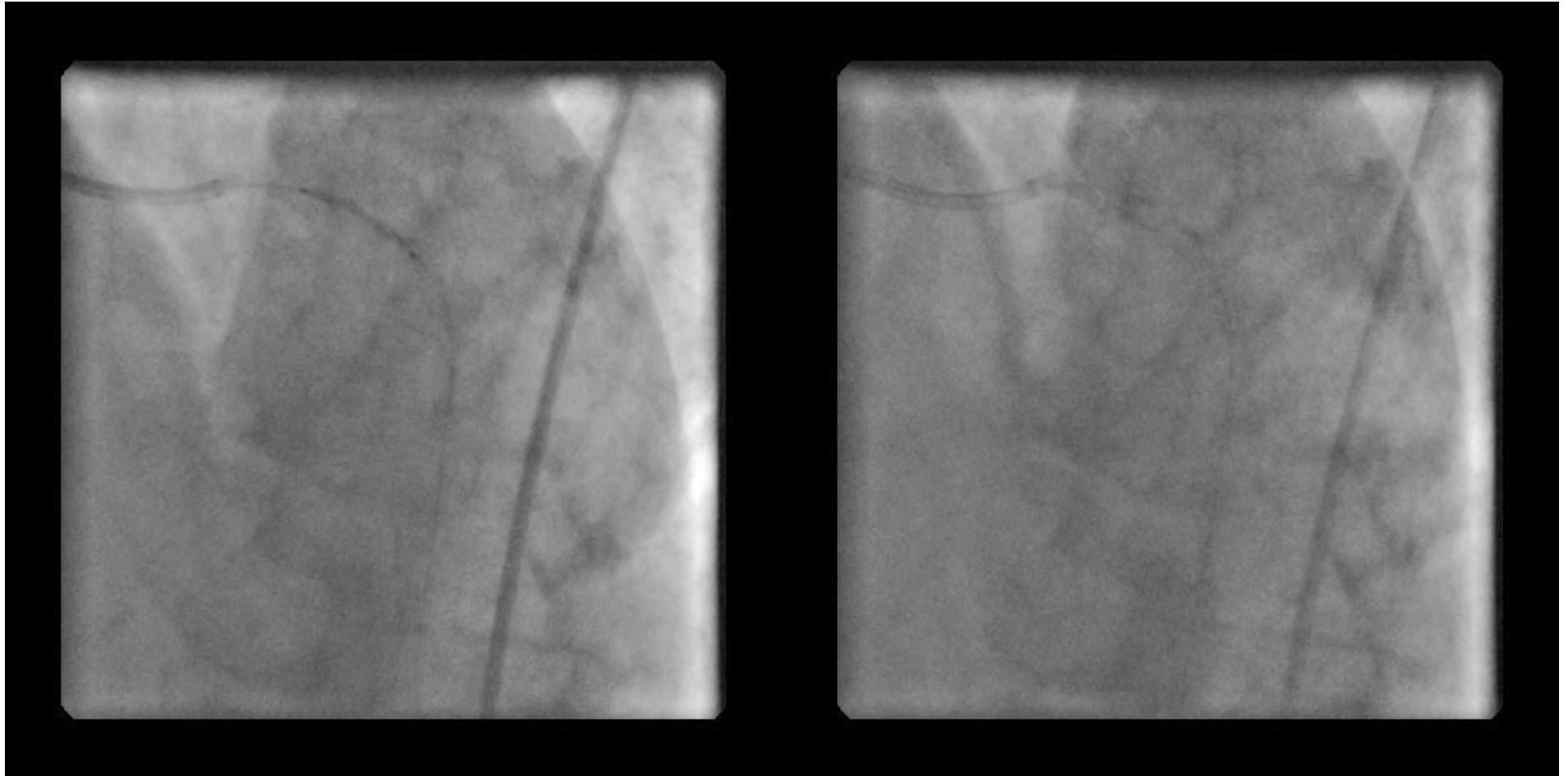
The second wire, predilatation in LM/LAD



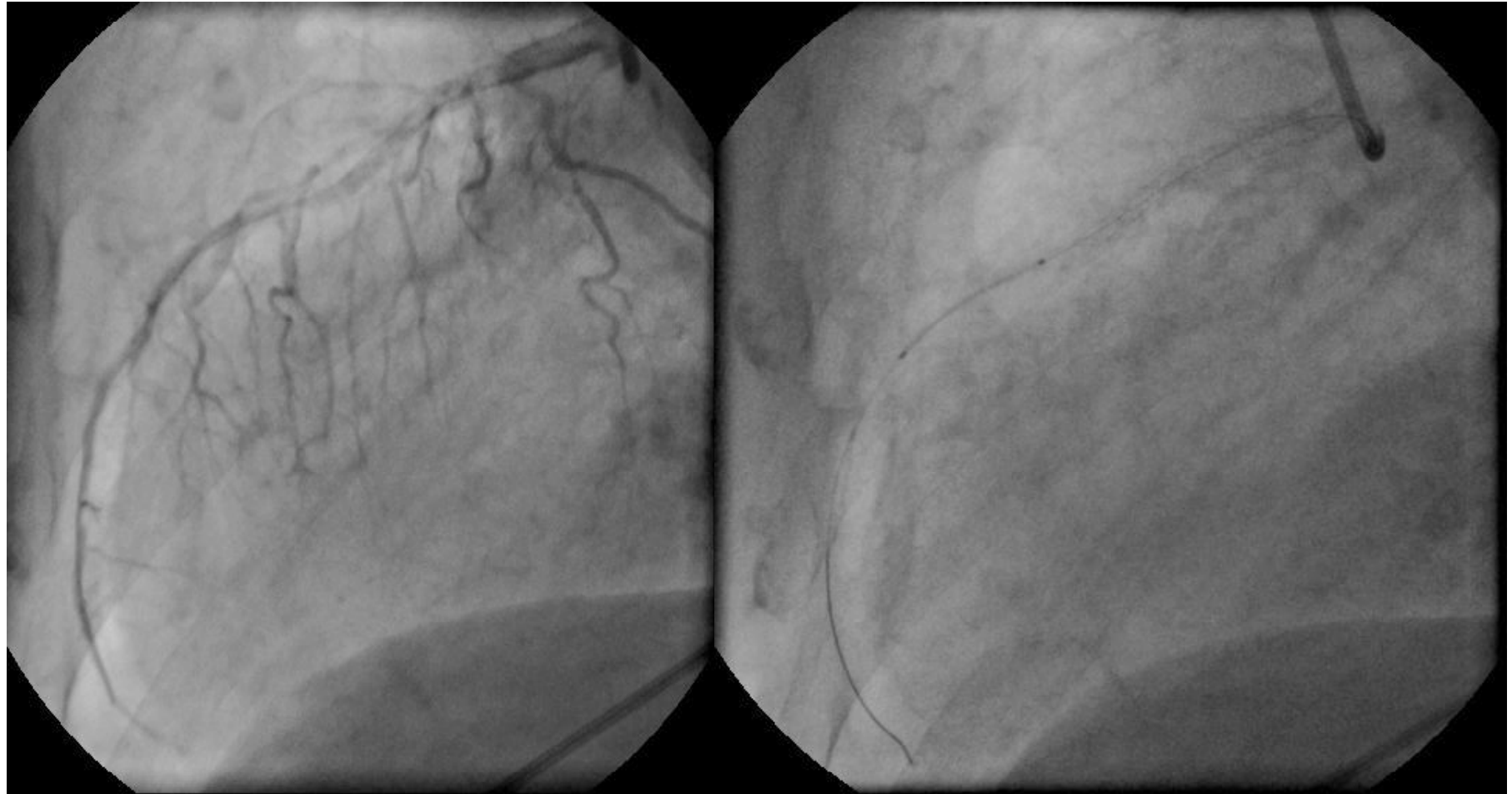
The first stent in LAD NexGen 2,5x32mm



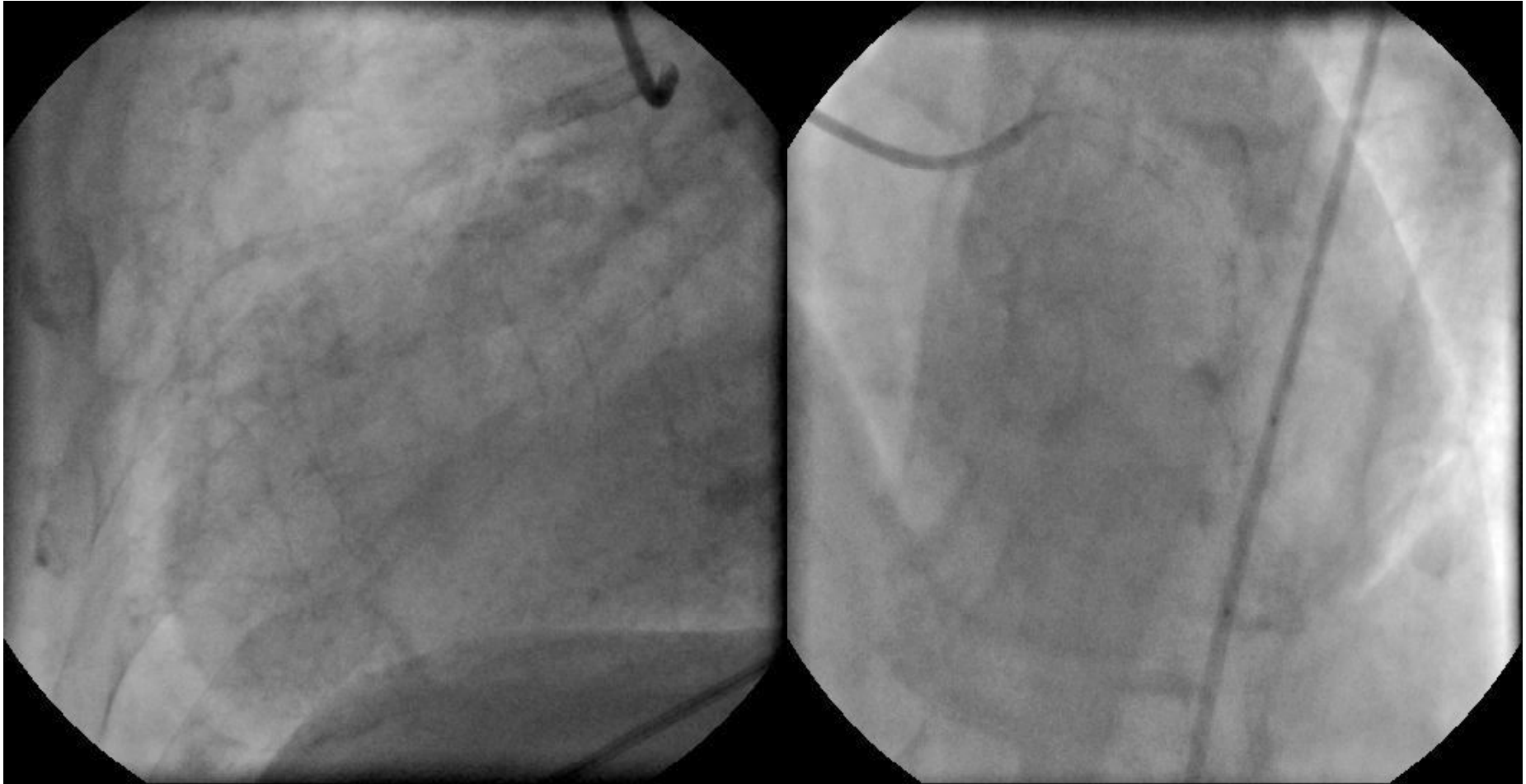
LM stenting
Nexgen 4,0x16mm



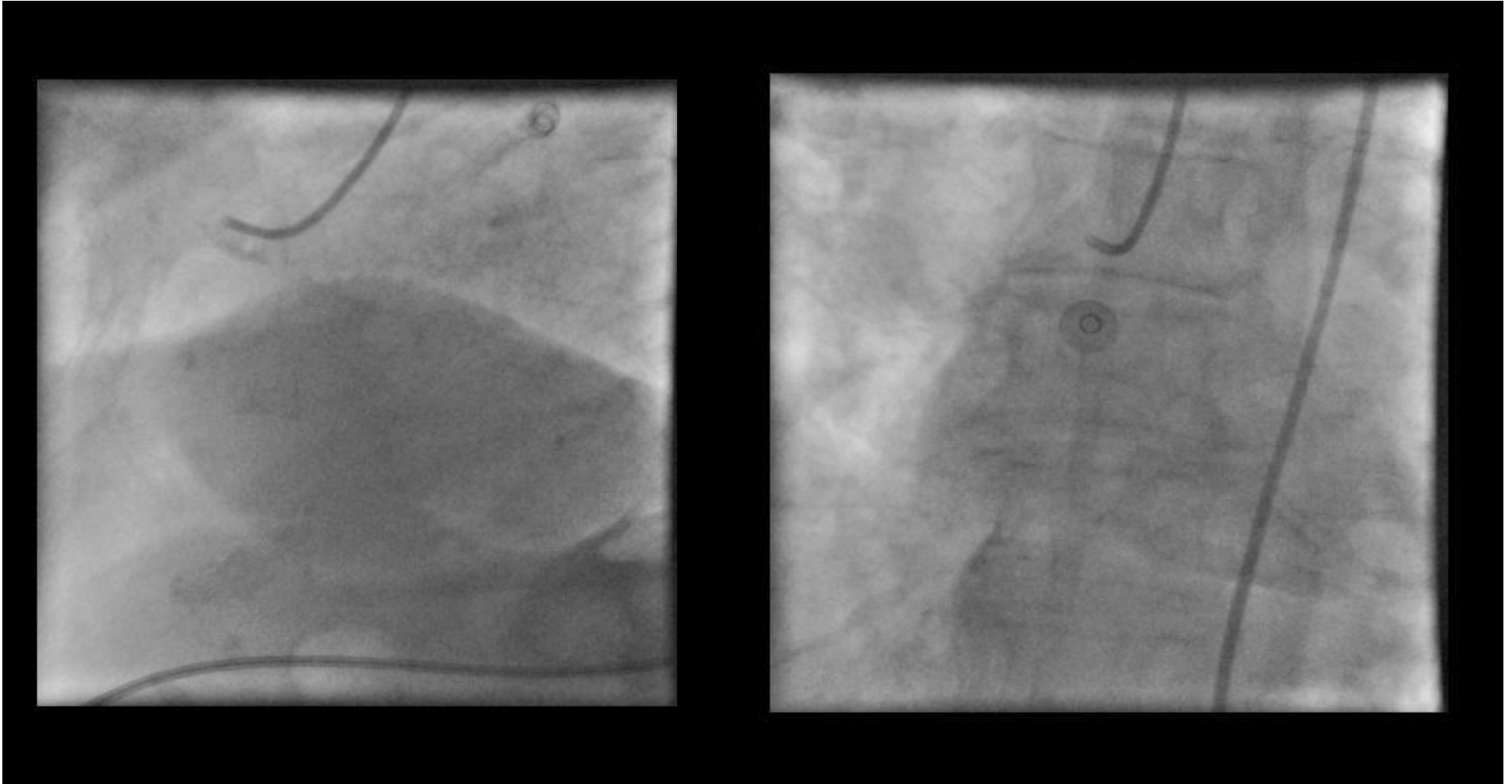
Distal LAD stenting:
Skylor 2,5x20mm



Final LCA angio



RCA

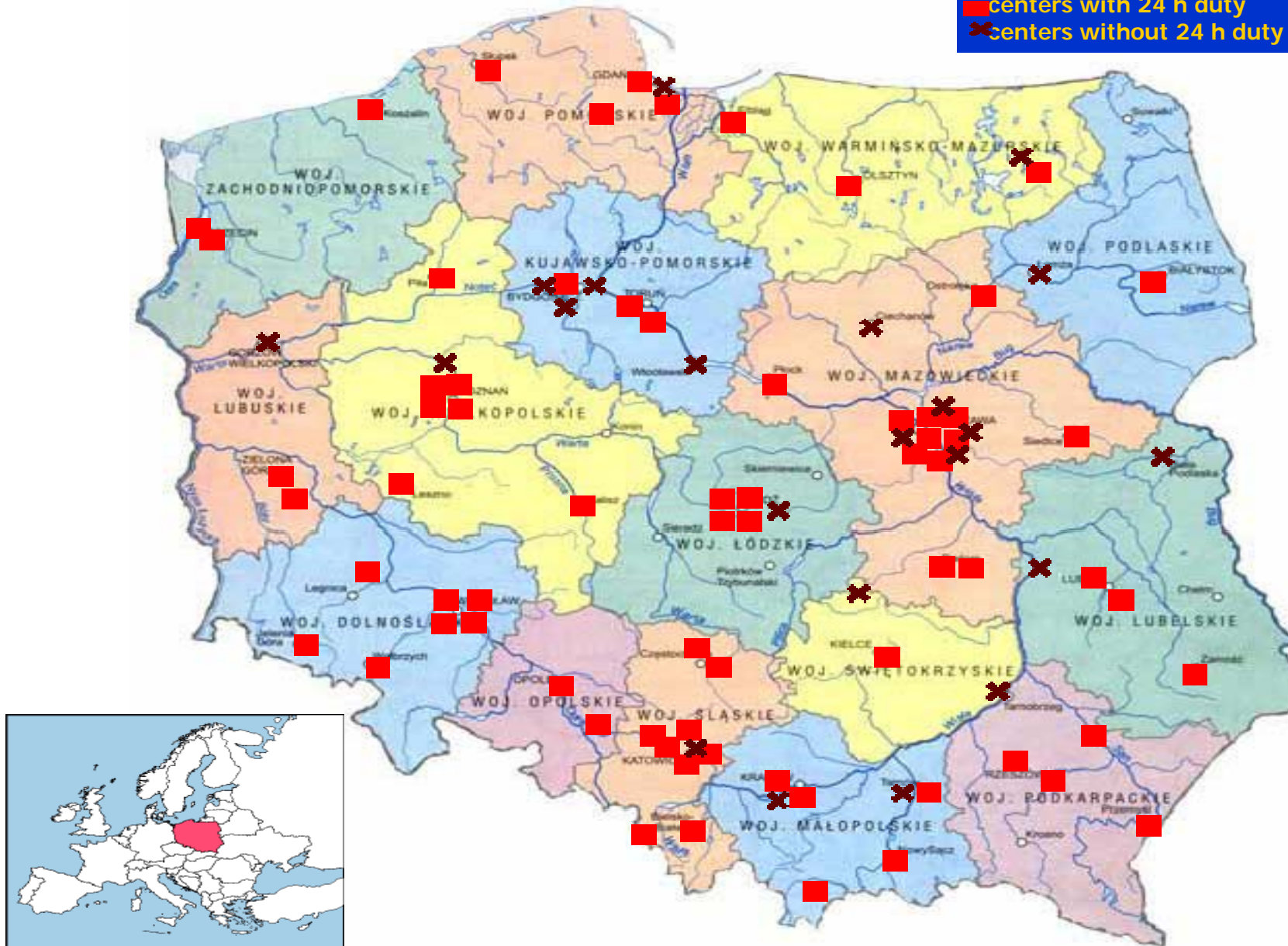


Summary

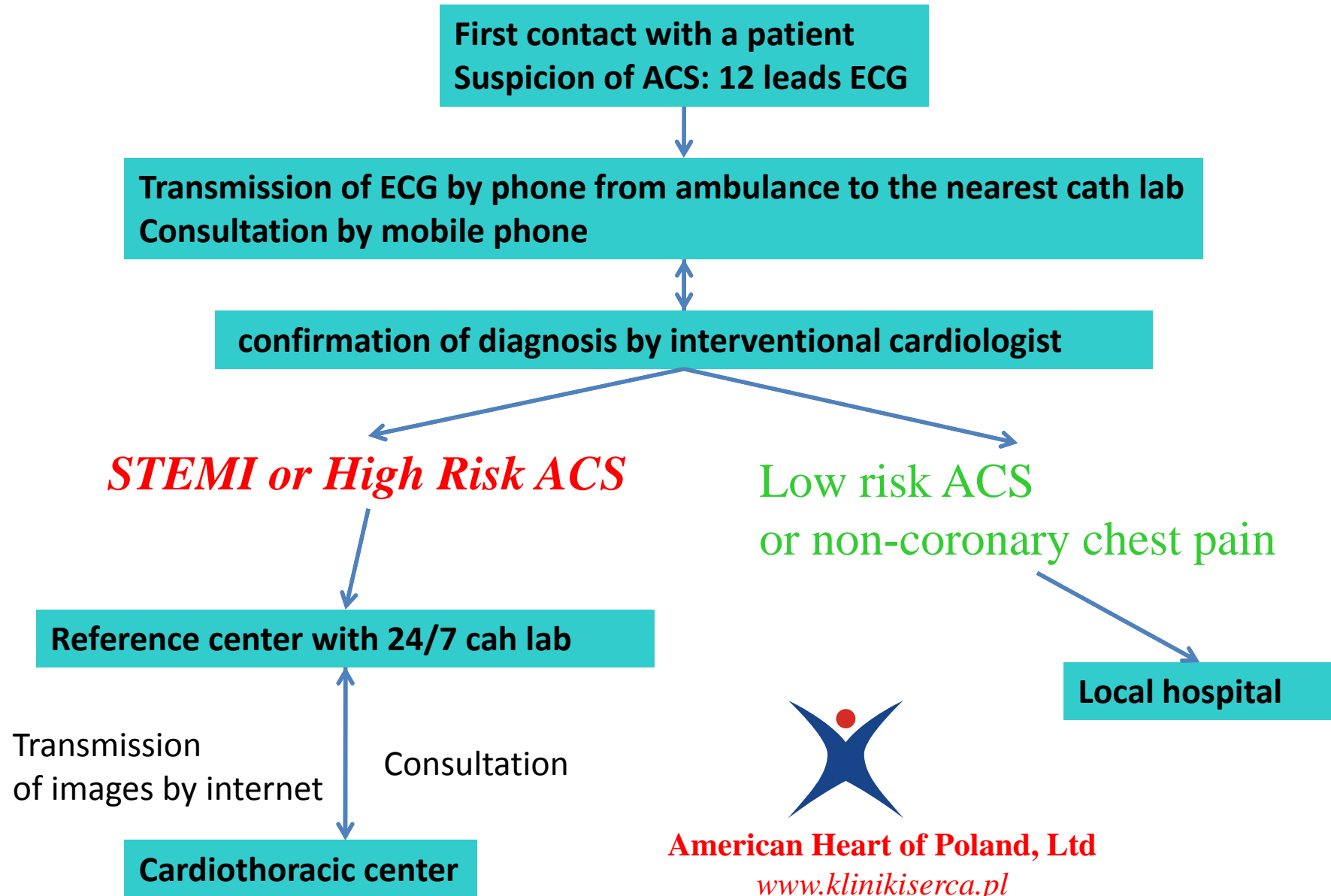
- During pPCI several VF converted with defibrillation into SR
- After the procedure hemodynamically stable, on SR
- Hospitalization 9 days
- Further transfer to rehab center
- A control angiographic evaluation is being considered (3 month after procedure) together with PCI in RCA

Polish Cardiac Society Working Group on Cardiovascular Interventions Interventional Cardiology in Poland 2009

■ centers with 24 h duty
✕ centers without 24 h duty



ECG teletransmission through mobile phone LIFE NET SYSTEM



PCI in Poland 2000-2008

Total PCI / PCIin AMI

2350 PCI/mln

1155 PCI/mln

Polish Registry of Acute Coronary Syndrom (PI-ACS)

Pawel E. Buszman, MD, PhD, FACC, FESC

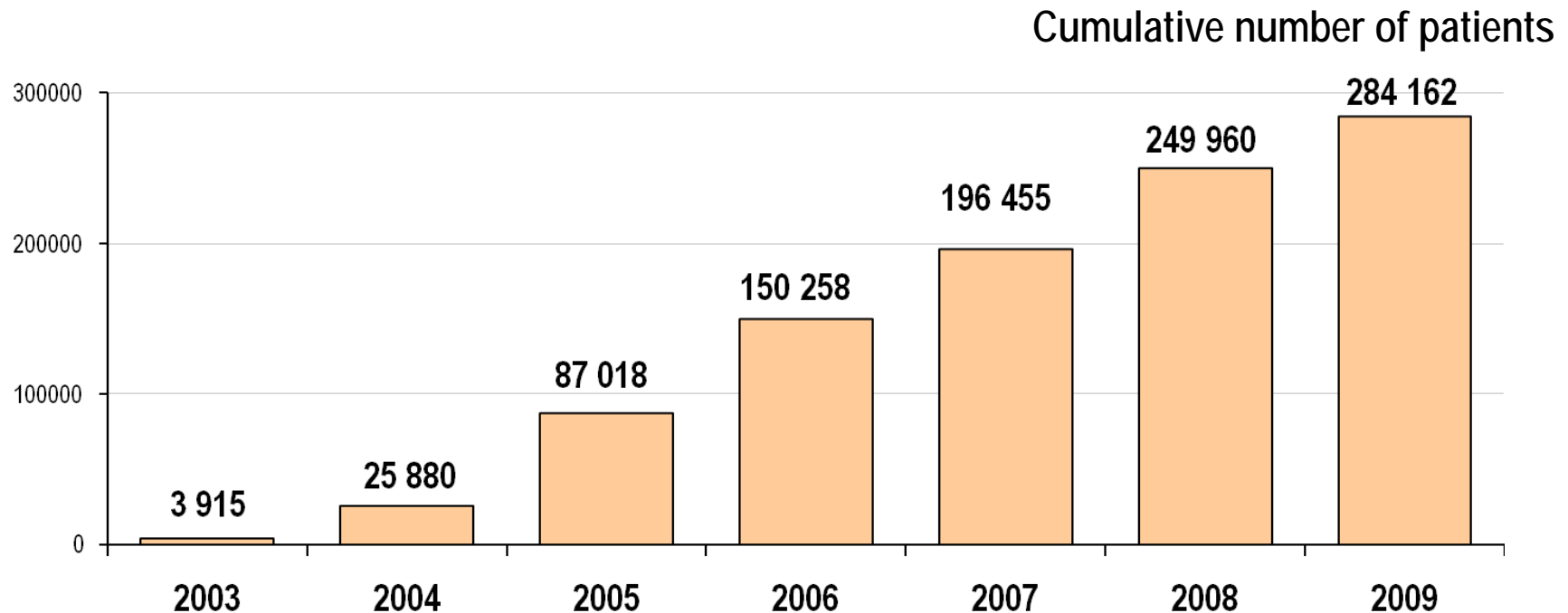
Professor, Medical University of Silesia
Silesian Center for Heart Diseases, Zabrze
and American Heart of Poland, Ustroń

On behalf of Steering and Scientific Committee

L. Polonski, P. Buszman, M. Gasior, M. Gierlotka,
A. Witkowski, M. Lesiak, D. Dudek, K. Wilczek, Z. Kalarus,
R. Gil, M. Zembala

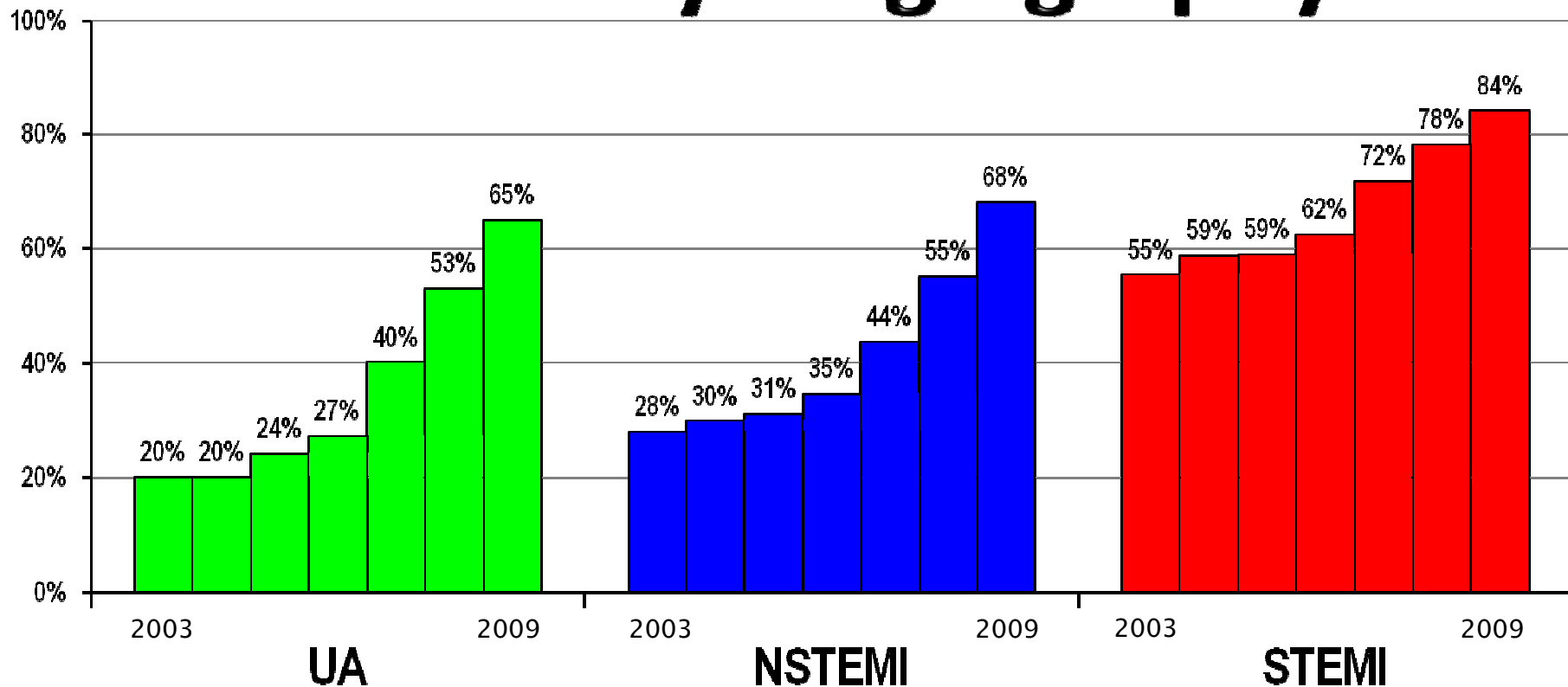
Material

- Number of patients – **284 162**
(October 2003 – December 2009)
- Number of centers - **512**
 - Invasive **88** 20 with on-site cardiac surgery
 - Non-invasive **424**



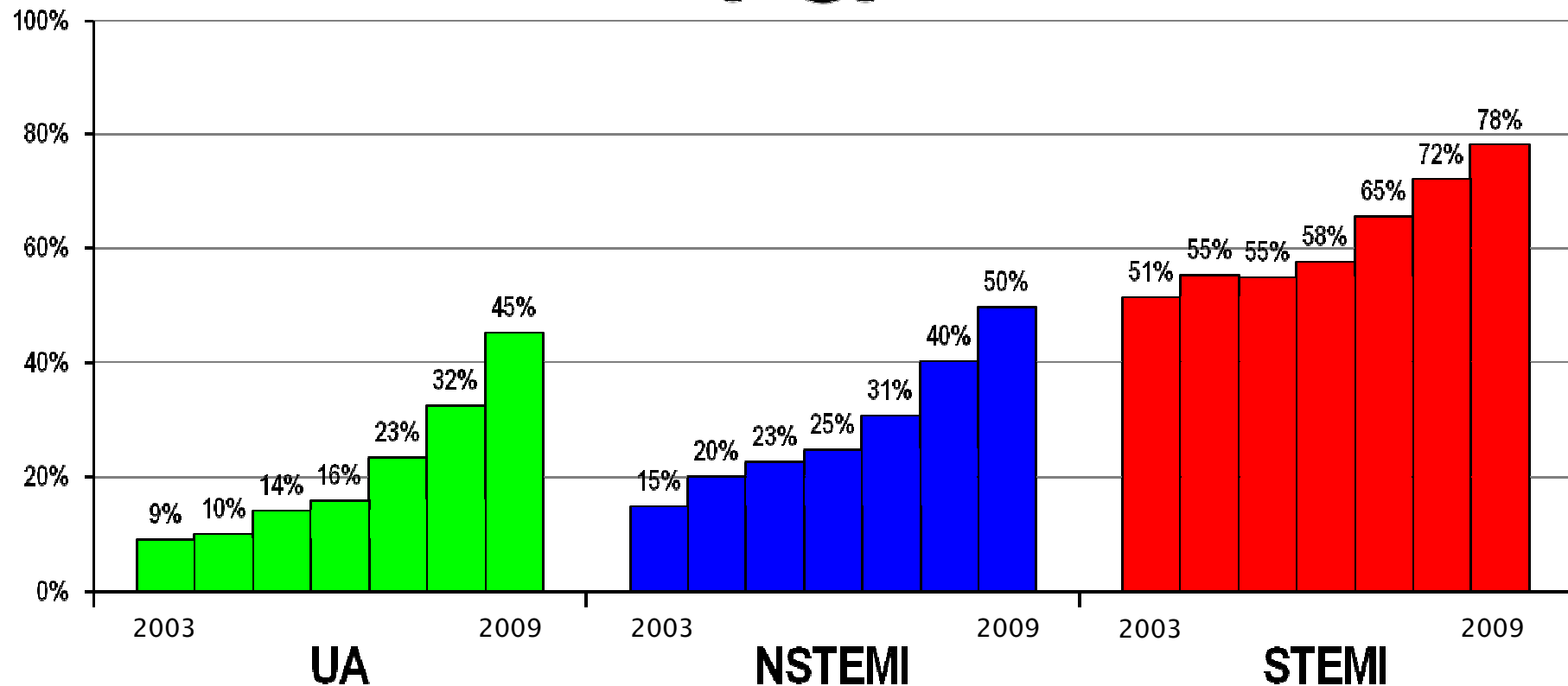
Invasive strategy in PL-ACS Registry 2003-2009

Coronary angiography



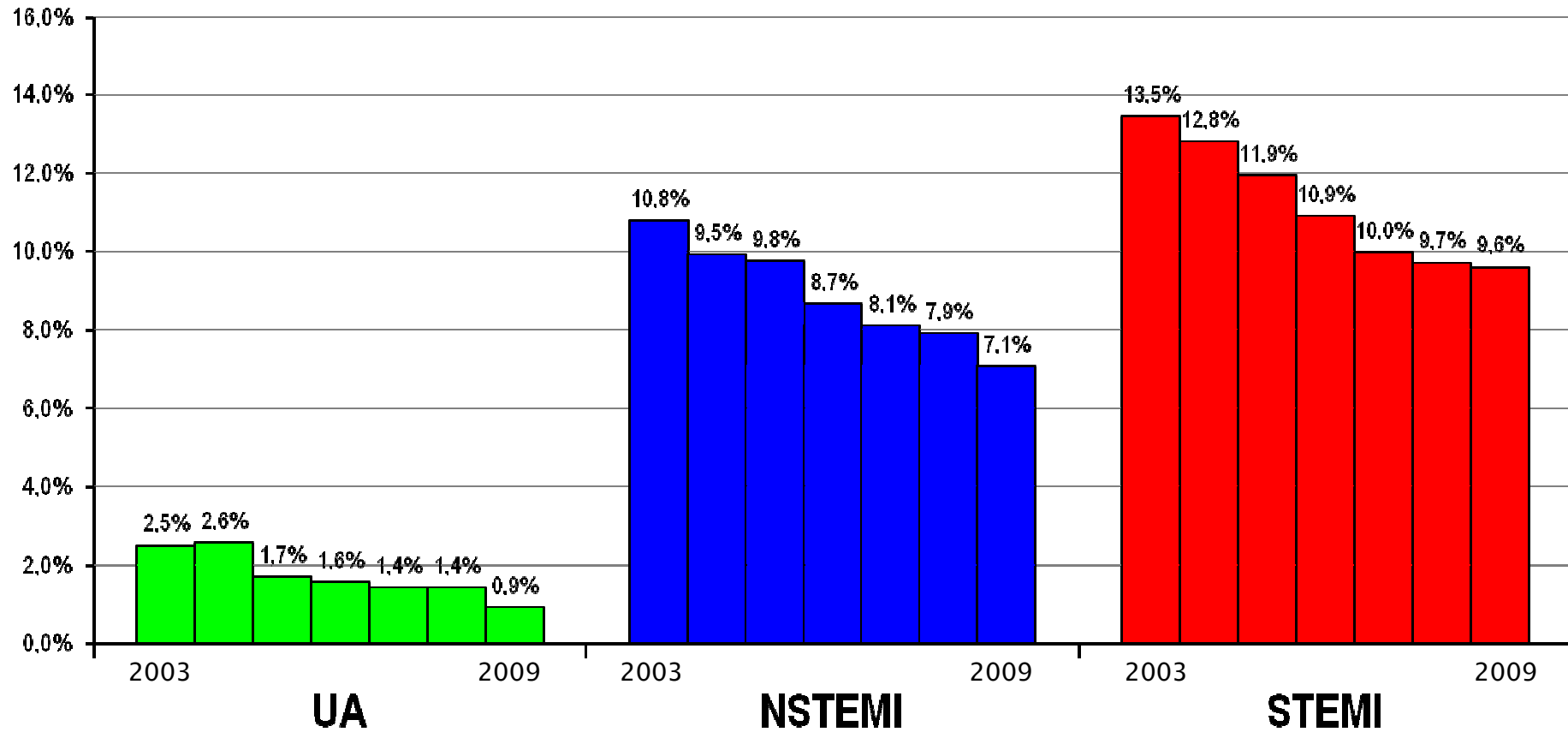
Invasive strategy in PL-ACS Registry 2003-2009

PCI



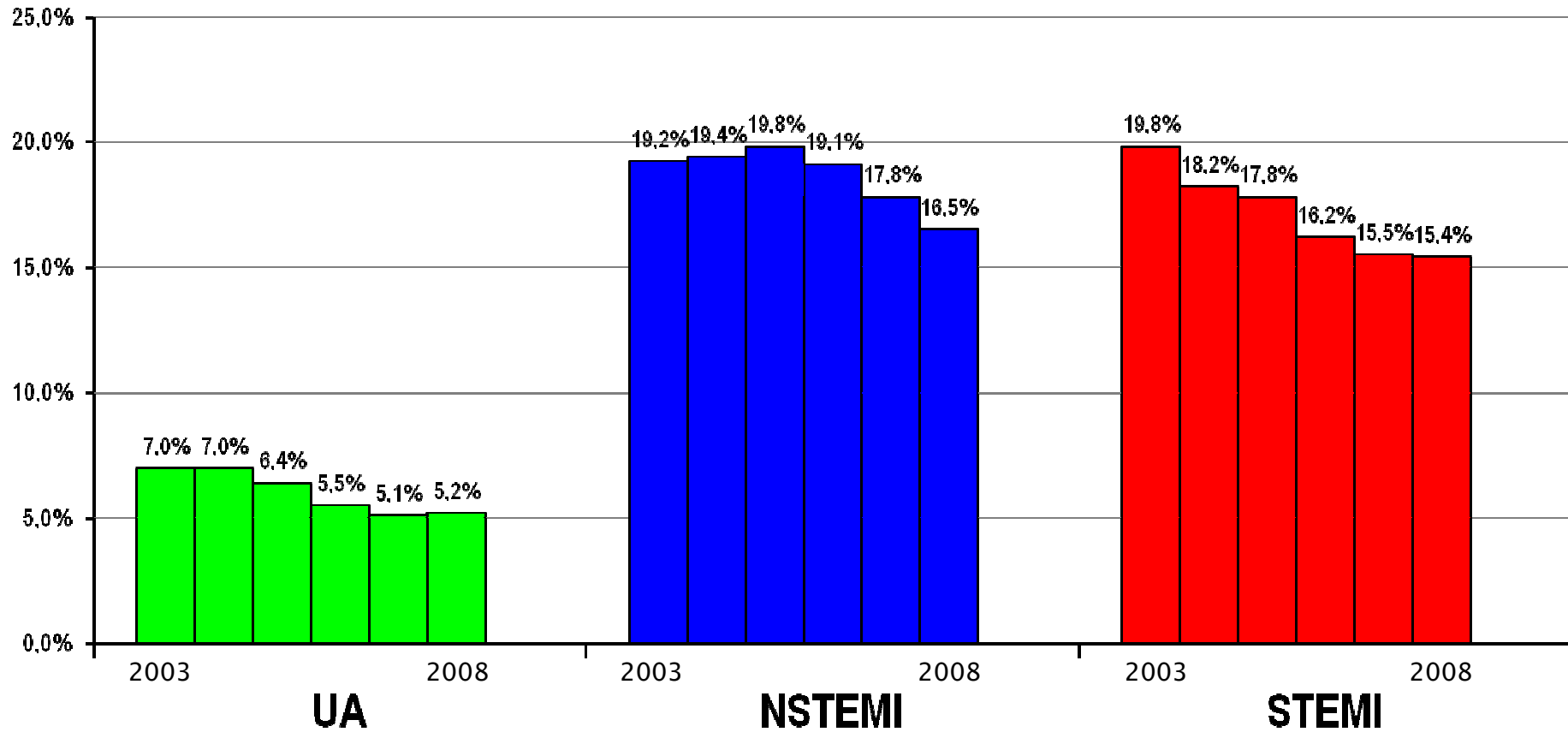
Results 30-day mortality

30-day mortality, %



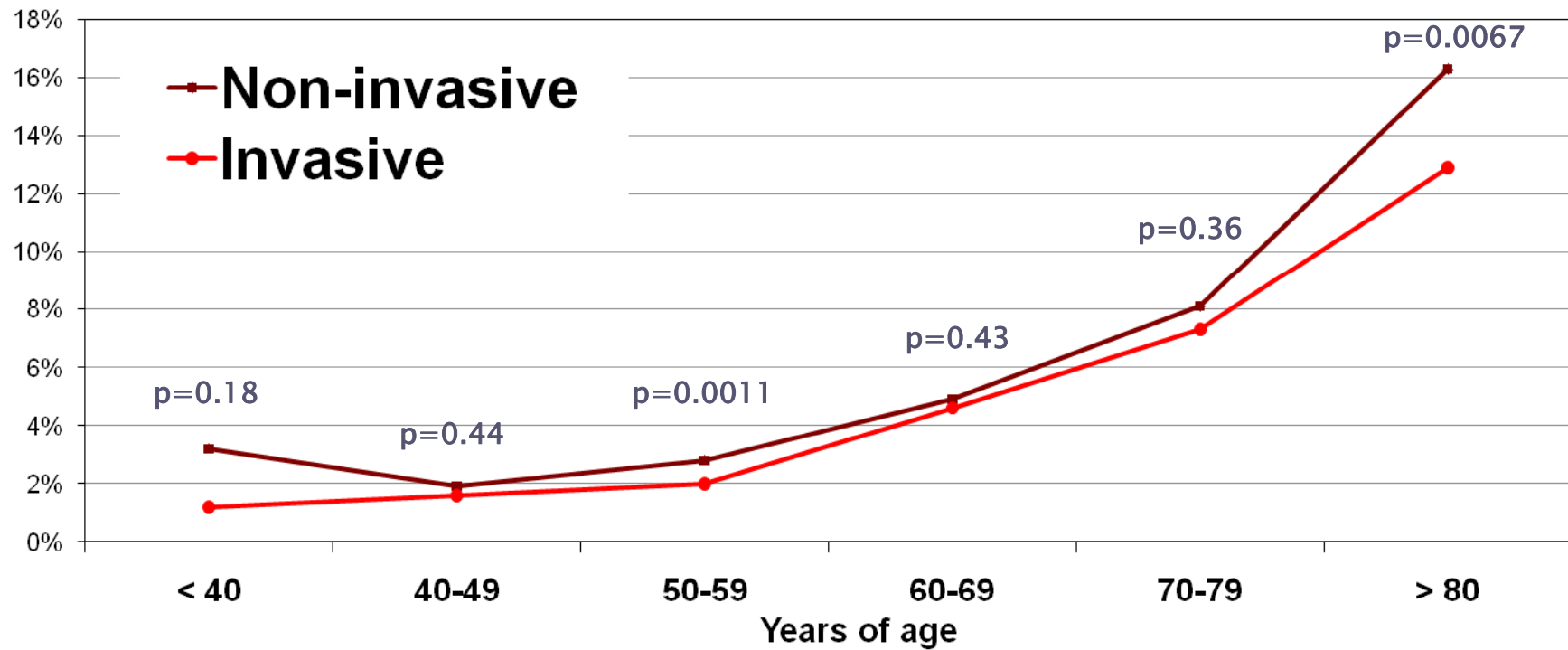
Results 1-year mortality

1-year mortality, %



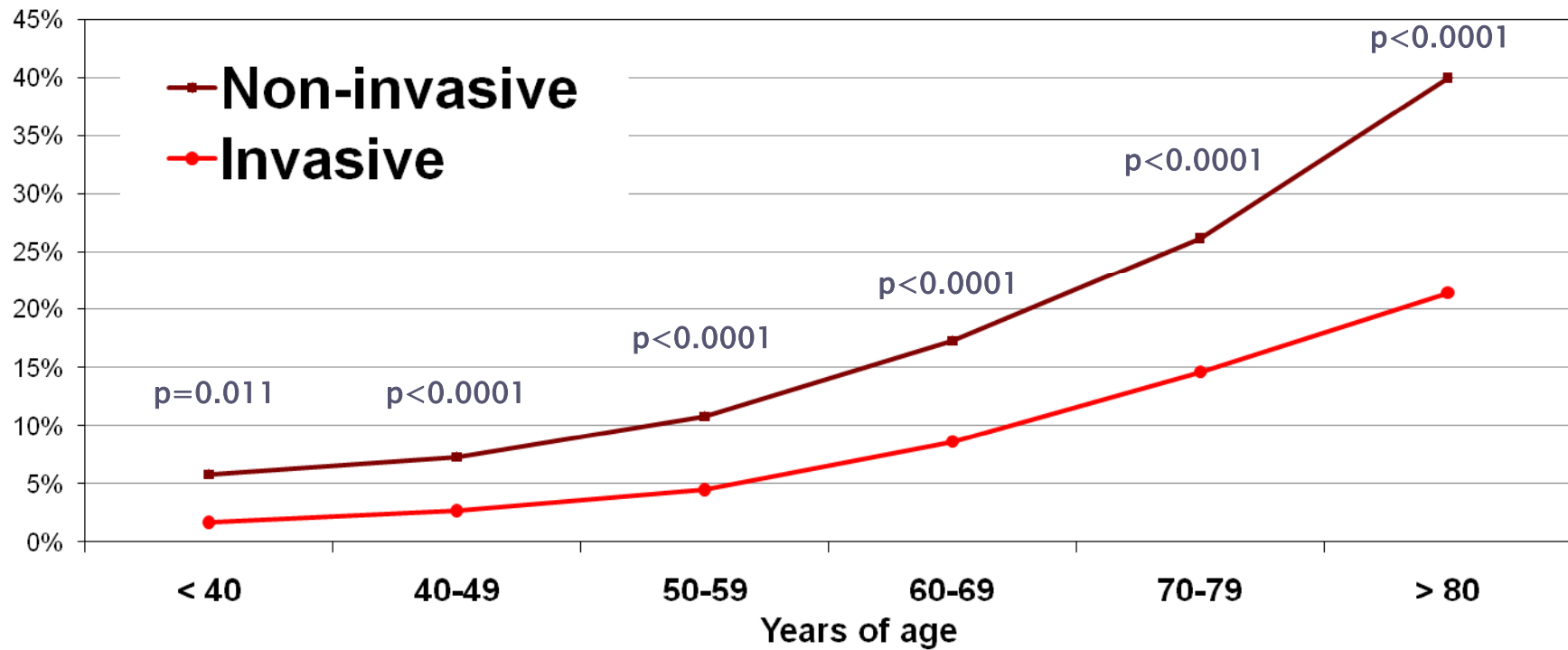
1-year mortality by age and invasivetreatment

UA



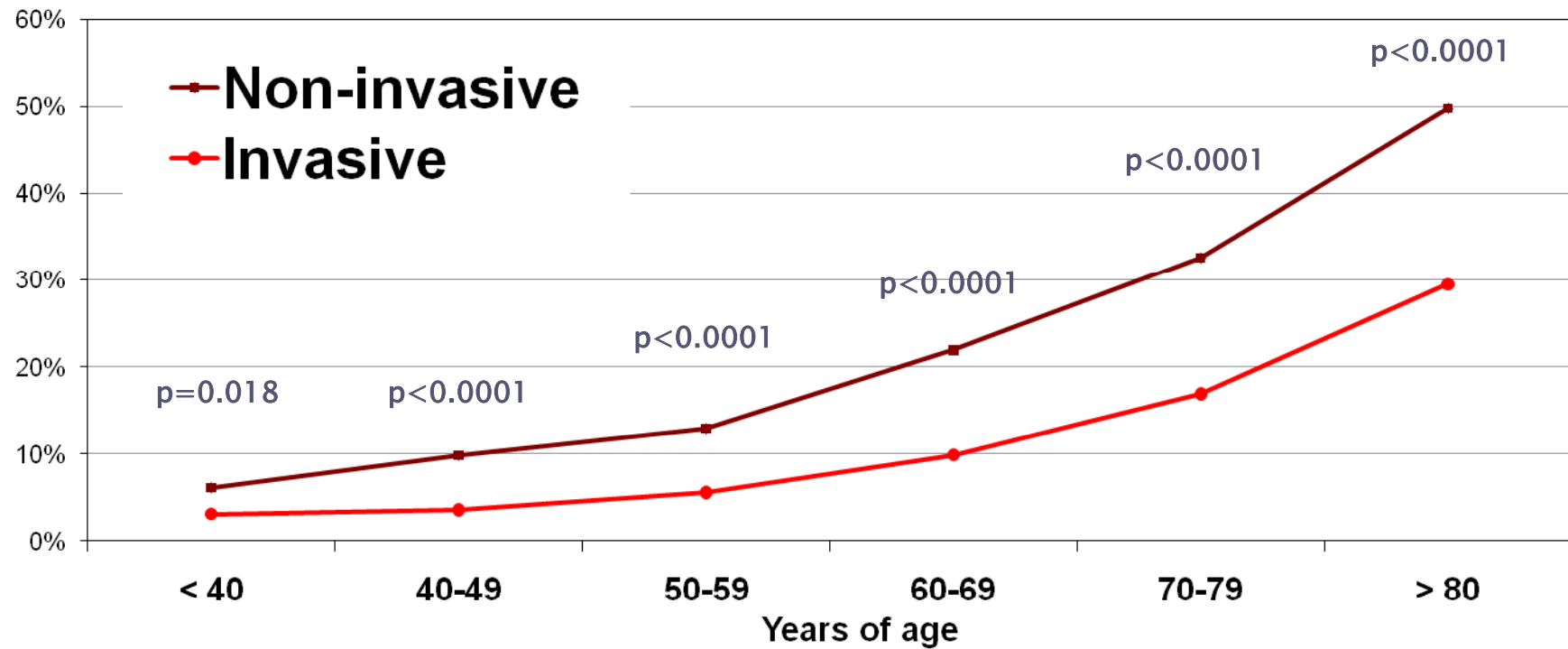
RRR	63%	16%	29%	6%	10%	21%
ARR	2.0%	0.3%	0.8%	0.3%	0.8%	3.4%

1-year mortality by age and invasivetreatment **NSTEMI**



RRR	71%	63%	58%	50%	44%	47%
ARR	4.1%	4.6%	6.3%	8.7%	11.6%	18.6%

1-year mortality by age and invasivetreatment **STEMI**



RRR	49%	63%	57%	55%	48%	41%
ARR	3.0%	6.2%	7.3%	12.0%	15.7%	20.3%

Cardiovascular(or CAD)

MortalityRatein Poland inyears 2004-

2009

SDR, diseases of circulatory system, all ages per 100000					
Countries	2003	2004	2005	2006	2007
004 Austria	270,66	248,31	240,2	229,64	223,88
009 Bulgaria	713,01	685,35	...	...	...
010 Croatia	499,61	419,04	438,83	417,73	...
011 Cyprus	...	241,55	...	221,82	...
012 Czech Republic	461,88	430,53	419,02	386,33	370,66
013 Denmark	234,01	217,18	202,71	200,78	...
014 Estonia	551,84	515,38	498,17	...	...
015 Finland	264,92	248,37	240,56	234,12	231,13
016 France	160,53	145,41	142,96	133,37	...
018 Germany	286,99	262,82	259,02	243,54	...
019 Greece	326,45	313,97	293,57	284,6	274,65
020 Hungary	508,3	486,95	502,43	...	...
021 Iceland	208,06	206,95	177,63	187,99	174,68
022 Ireland	256,1	240,1	221,72	207,47	...
024 Italy	220,19	...	...	183,4	...
027 Latvia	593,02	578,07	578,74	563,92	565,98
028 Lithuania	519,78	528,53	562,81	562,05	550,4
029 Luxembourg	265,03	230,13	227,23	...	...
030 Malta	289,05	255,38	271,95	262,77	231,47
033 Netherlands	212,07	197,38	187,37	175,25	167,17
034 Norway	214,53	201,42	182,55	179,31	...
035 Poland	416,65	397,03	384,24	372,19	...
036 Portugal	256,32	228,89	...	...	...
038 Romania	688,9	649,44	645,47	618,73	578,07
041 Serbia	613,58	584,52	603,86	566,97	542,52
042 Slovakia	526,35	501,04	508,68	...	...
043 Slovenia	295,29	276,99	288,02	261,2	259,15
044 Spain	187,37	173,54	171,99	...	...
045 Sweden	234,38	218,79	212,05	206,9	...
046 Switzerland	187,98	173,73	172,86	164,74	...
052 United Kingdom	243,38	223,96	211,28	196,95	188,09
055 EU	293,58	274,13	267,38	255,99	251,95

Reperfusion therapy for ST elevation acute myocardial infarction in Europe: description of the current situation in 30 countries

Table 3 Percutaneous coronary interventions (PCI) per one million inhabitants compared with gross domestic product (GDP) per capita (in US dollars, according to the UN statistics for 2007, <http://unstats.un.org/unsd/demographic/products/socind/inc-eco.htm>)

Country	All PCIs/year	All PCIs/million	Primary PCIs/year (% of all PCIs)	Primary PCIs/million	GDP per capita (US\$)
Austria	19 342	2358	3500 (18%)	426	44 652
Belgium	22 000	2079	3300 (15%)	312	43 469
Bulgaria	6000	785	1801 (30%)	236	5177
Croatia	4000	890	1150 (22%)	255	11 256
Czech Republic	21 531	2105	6720 (31%)	657	16 880
Denmark	10 500	1920	2691 (26%)	481	57 256
Estonia	2471	1878	485 (20%)	369	15 932
France	120 000	1921	14 400 (12%)	231	40 089
Finland	8894	1678	826 (9%)	156	46 370
Germany	299 600	3660	60 000 (20%)	730	40 162
Greece	19 311	1804	1022 (5%)	95	28 111
Hungary	18 500	1858	5700 (31%)	573	13 777
Italy	128 428	2161	22 421 (17%)	376	35 585
Israel	20 000	2726	3500 (17%)	477	23 382
Latvia	5956	2624	410 (7%)	181	11 930
Lithuania	4143	1159	1485 (36%)	415	11 307
F.Y.R. Macedonia	2516	1227	981 (39%)	478	3703
The Netherlands	36 367	2217	11 201 (31%)	683	46 669
Norway	11 890	2530	2632 (22%)	560	82 464
Poland	75 024	1948	26 457 (35%)	687	11 007
Portugal	9873	919	1902 (19%)	179	20 990
Romania	6560	294	450 (7%)	20	7523
Serbia	6395	864	1161 (18%)	157	5382
Slovakia	5730	1061	1924 (34%)	356	13 701
Slovenia	3336	1661	1043 (31%)	519	22 936
Spain	60 457	1340	11 322 (19%)	251	32 450
Sweden	19 000	2103	5421 (29%)	600	49 873
Switzerland	36 817	4849	7363 (20%)	970	56 578
Turkey	70 000	991	5500 (8%)	78	6511
UK	77 373	1273	8153 (11%)	134	45 549

In summary

- Interventional diagnosis and treatment of patients with ACS improve outcome and survival rate especially in elderly patients.
- Close cooperation between rescue team in ambulance and interventional team in cath lab decreases pre-hospital and in-hospital delay
- 24/7 working cath labs guarantee door-to-balloon time less than 30 min.