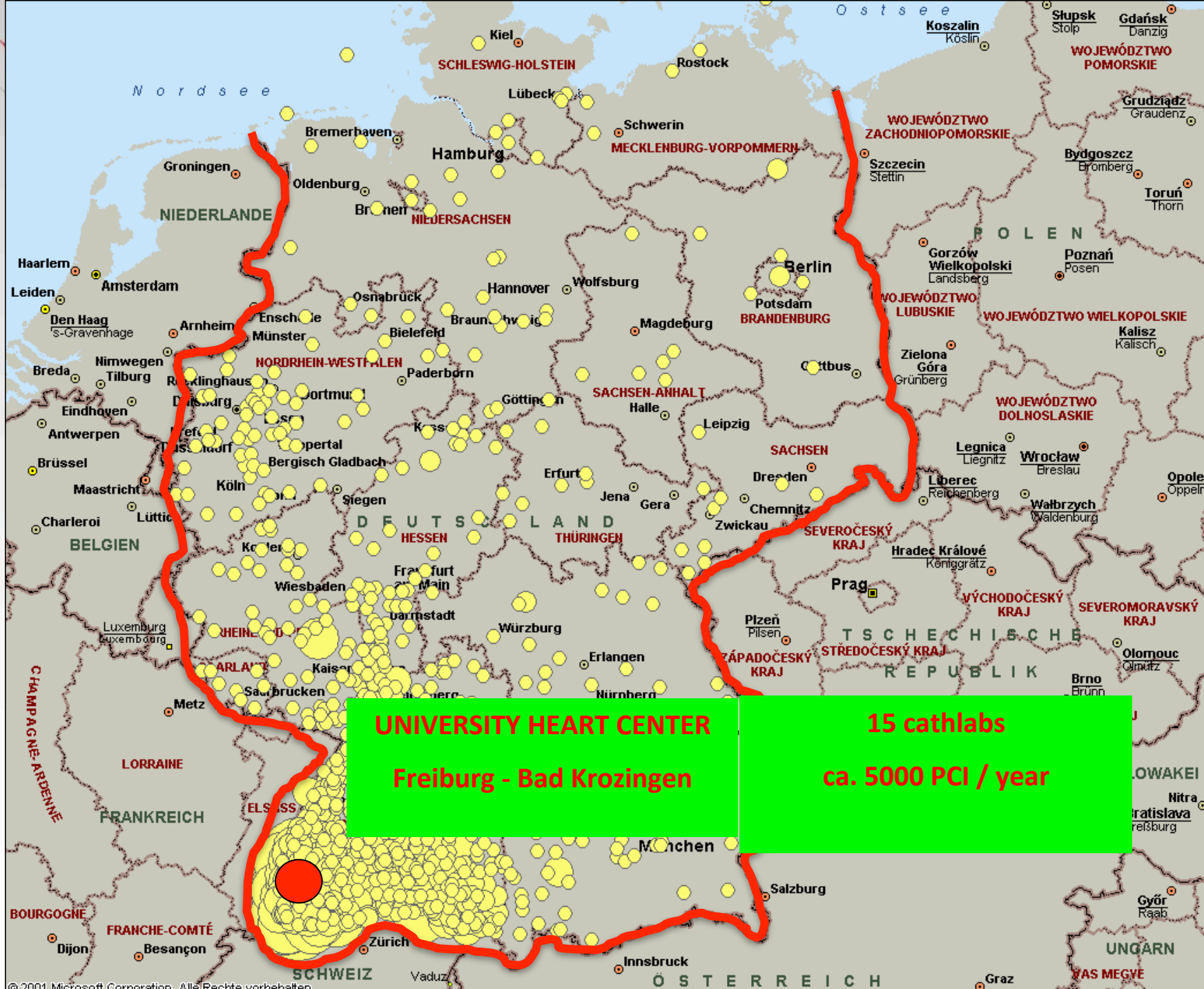


Long term results after PCI of unprotected distal left main stenosis

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Left main stenosis:



Distal left main stenosis in ca. 80 %

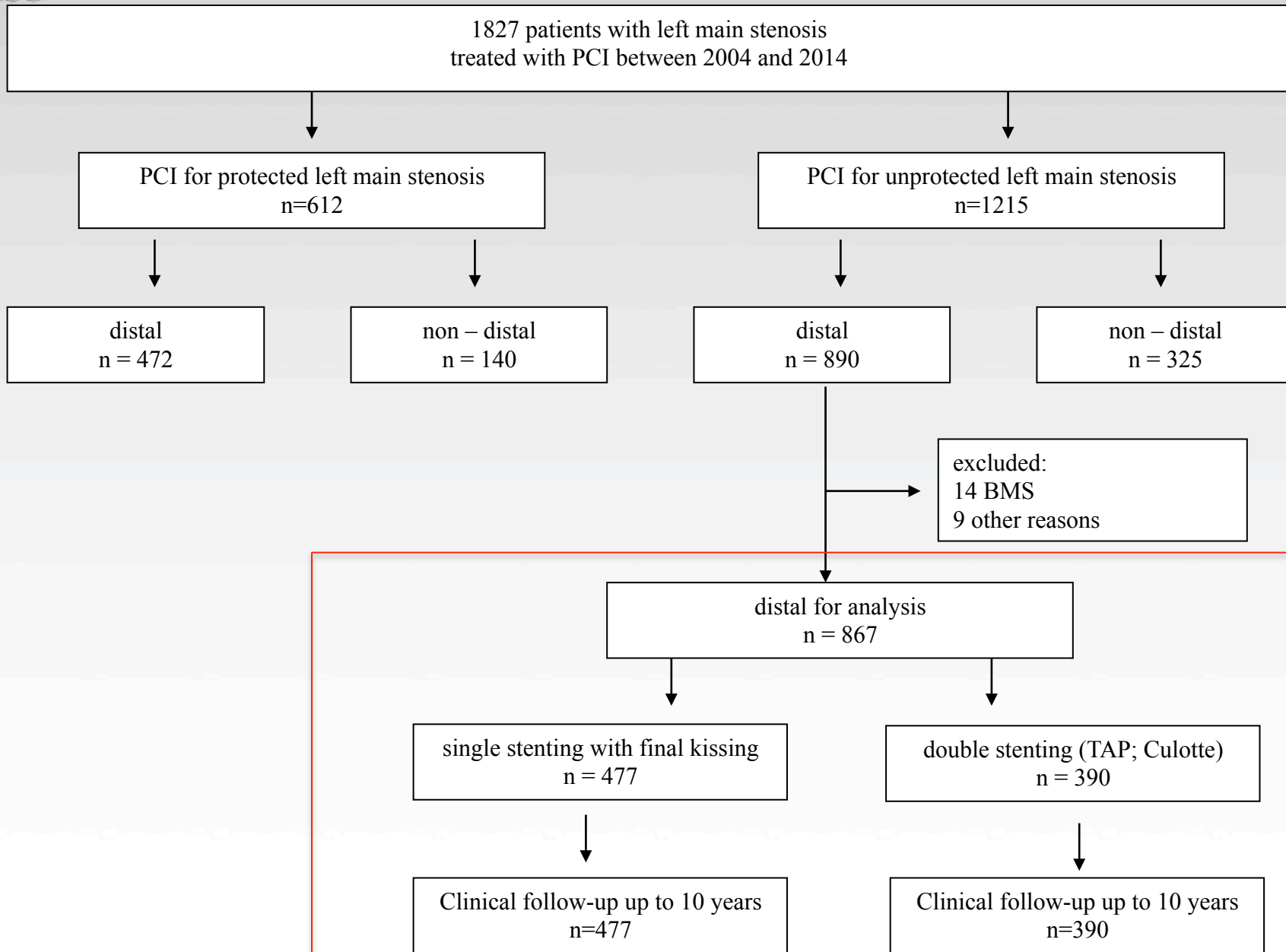
Treatment of the distal Left Main stenosis

10 years clinical results after PCI of the distal Left Main stenosis are limited



BBK- Left main registry

BBK - Left Main registry:

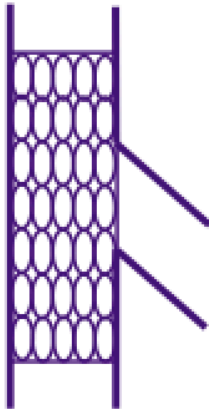


Technical approaches

Provisional side
branch stenting



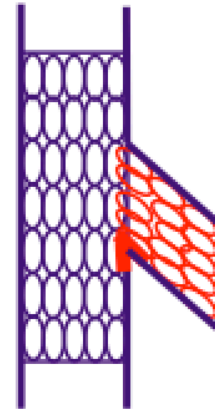
Single stenting
with final kissing



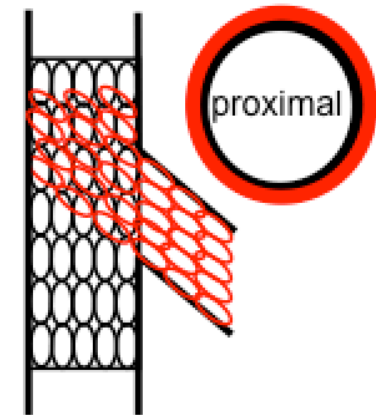
Bail-out side branch stenting or
operator's decision



Modified T stenting
= TAP



Culotte stenting



Baseline characteristics

	Single Stenting n=477	Double Stenting n=390	p
Age (years)	70,6 ± 10,7	70,2 ± 10,9	0,590
Male gender (%)	357 (74,8%)	291 (74,6%)	0,938
Diabetes mellitus (%)	140 (29,4%)	111 (28,5%)	0,821
Current smoker (%)	56 (11,7%)	48 (12,3%)	0,834
Hypertension (%)	404 (84,7%)	326 (83,6%)	0,708
Family history (%)	146 (30,6%)	135 (34,6%)	0,216
Cholesterol (mg/dL)	181 ± 46	184 ± 45	0,278
LDL cholesterol (mg/dL)	112 ± 41	115 ± 40	0,211
Serum creatinine (mg/dL)	1,16 ± 0,83	1,14 ± 0,87	0,786
C-reactive protein (mg/dL)	1,18 ± 2,87	1,13 ± 3,0	0,786
Hemoglobine (g/dl)	13,6 ± 1,8	13,8 ± 1,7	0,057
History of MI (%)	124 (26,0%)	92 (23,6%)	0,431
History of PCI (%)	155 (32,5%)	111 (28,5%)	0,209
History of CABG (%)	0 (0,0%)	0 (0,0%)	1,0
Left ventricular ejection fraction (%)	48 ± 9,7	49 ± 9,2	0,073
Acute coronary syndrome (%)	135 (28,3%)	103 (26,4%)	0,542

Baseline Angiographic and Procedural Characteristics I

	Single Stenting n=477	Double Stenting n=390	p
Number of vessels affected (%):			0,607
1 - vessel	0 (0%)	0 (0%)	
2 - vessels	154 (32,3%)	119 (30,5%)	
3 - vessels	323 (67,7%)	271 (69,5%)	
Distribution of bifurcation (%)			
Distal left main	477 (100%)	390 (100%)	1,0
LCX as side branch	345 (72,3%)	275 (70,5%)	0.597
LAD as side branch	132 (27,7%)	115 (29,5%)	
Medina-Classification (%)			<0,0001
111	145 (30,4%)	235 (60,3%)	
110	161 (33,8%)	31 (7,9%)	
101	47 (9,9%)	50 (12,8%)	
100	68 (14,3%)	11 (2,8%)	
011	10 (2,1%)	40 (10,3%)	
010	39 (8,2%)	9 (2,3%)	
001	7 (1,5%)	14 (3,6%)	
True bifurcations (111, 101, 011) n (%):	202 (42,3%)	325 (83,3%)	<0,0001
Stenosis (visual estimation) pre (%):			
Main branch	64,7 ± 19,2	61,9 ± 20,7	0,043
Side branch	54,3 ± 27,9	66,7 ± 23,6	<0,0001
Calcifications in left main (by visual estimation)			0,578
None	14 (2,9%)	16 (4,1%)	
Minor	235 (49,3%)	178 (45,6%)	
Moderate	160 (33,5%)	133 (34,1%)	
Severe	68 (14,3%)	63 (16,2%)	



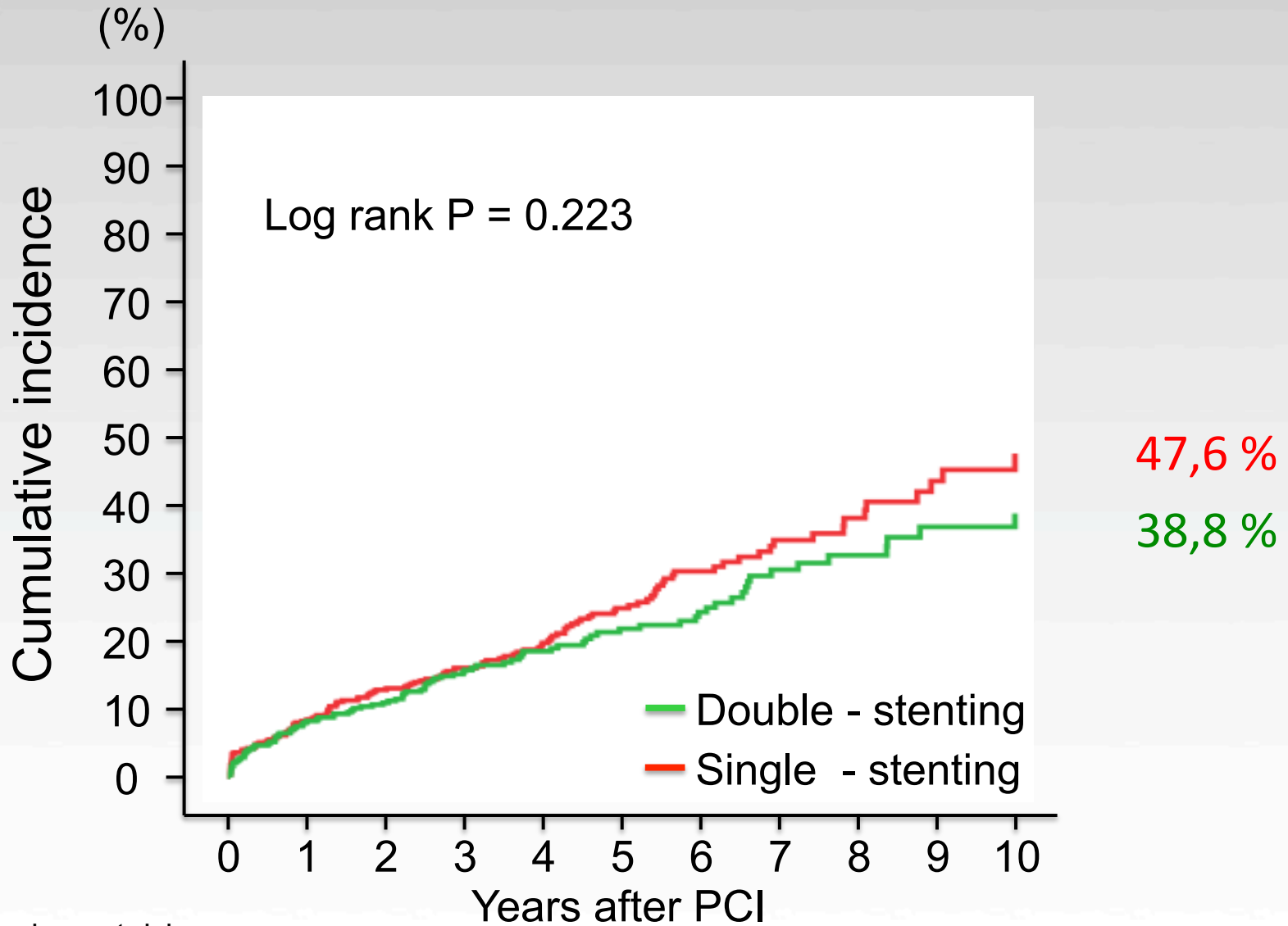
Baseline angiographic and procedural characteristics II

	Single Stenting n=477	Double Stenting n=390	p
Calcifications in left main (by visual estimation)			0,578
None	14 (2,9%)	16 (4,1%)	
Minor	235 (49,3%)	178 (45,6%)	
Moderate	160 (33,5%)	133 (34,1%)	
Severe	68 (14,3%)	63 (16,2%)	
Calcifications in LCX (by visual estimation)			0,075
None	34 (7,1%)	19 (4,9%)	
Minor	328 (68,8%)	245 (62,8%)	
Moderate	99 (20,8%)	107 (27,4%)	
Severe	16 (3,4%)	19 (4,9%)	
Calcifications in LAD (by visual estimation)			0,042
None	24 (5,0%)	11 (2,8%)	
Minor	324 (67,9%)	246 (63,1%)	
Moderate	109 (22,9%)	113 (29%)	
Severe	20 (4,2%)	20 (5,1%)	
Double Stenting Technique			
TAP		350 (89,7 %)	
Culotte		40 (10,3 %)	
Fluoroscopy time (min)	16 ± 14	21 ± 17	<0,0001
Radiation exposure (μGym ²)	6405 ± 7313	8037 ± 8846	0,003
Use of Anti – GPIIb/IIIa (Abciximab) (%)	13 (10,7%)	19 (18,8%)	0,089
Maximal inflation pressure (atm)			
Main branch	15,6 ± 3,7	15,8 ± 3,6	0,946
Side branch	14,4 ± 2,0	14,6 ± 1,8	0,157
Stent diameter (mm)			
Main branch	3,87 ± 1,2	3,83 ± 1,3	0,182
Side branch	0 ± 0	3,2 ± 0,36	<0,0001

Clinical outcome during 10 years after Index- PCI

	Single Stenting n=477	Double Stenting n=390	p
Death all cause (%)	126 (26,4%)	91 (23,3%)	0,307
Death - cardiac (%)	60 (12,6%)	39 (10,0 %)	0,494
Death - non-cardiac (%)	66 (13,8%)	52 (13,3 %)	0,494
Death and/or myocardial infarction (%)	139 (29,1%)	106 (27,2%)	0,545
Stent thrombosis any (%)	28 (5,9 %)	18 (4,6%)	0,449
definite (%)	2 (0,4%)	0 (0%)	0,504
probable (%)	4 (0,8%)	8 (2,1%)	0,151
possible (%)	22 (4,6%)	10 (2,6%)	0,147
definite/probable (%):	6 (1,3%)	8 (2,1%)	0,422
early (definite/probable) (%)	6 (1,3%)	6 (1,5%)	0,275
late (definite/probable) (%)	0 (0%)	2 (0,5%)	0,275
TLR (%)	83 (17,4%)	106 (27,2%)	0,001
MACE (%)	198 (41,5%)	191 (49,0%)	0,028

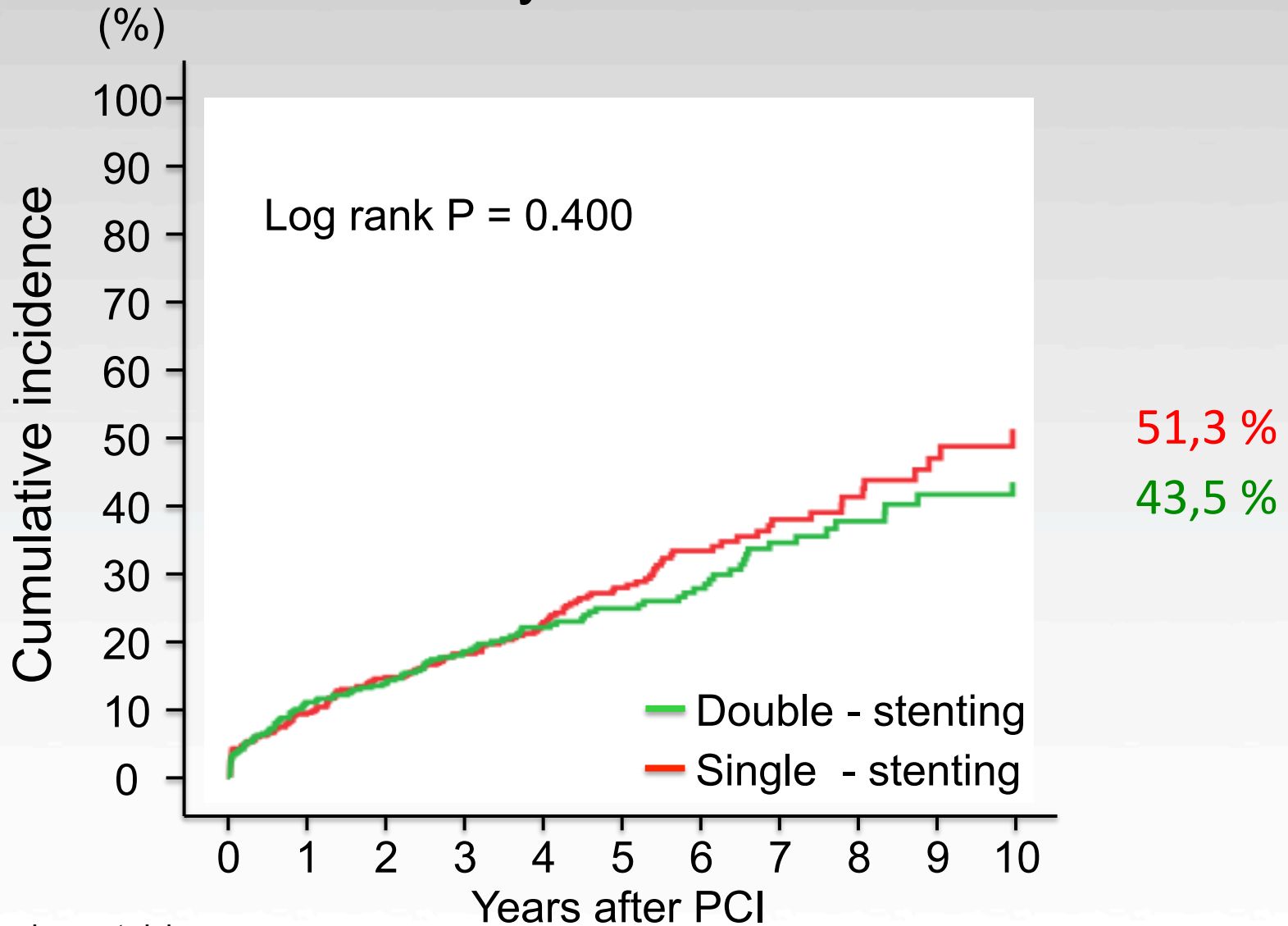
Death



Numbers at risk

Single	477	435	385	352	236	180	113	75	53	35	22
Double	390	358	325	273	187	150	115	75	53	40	31

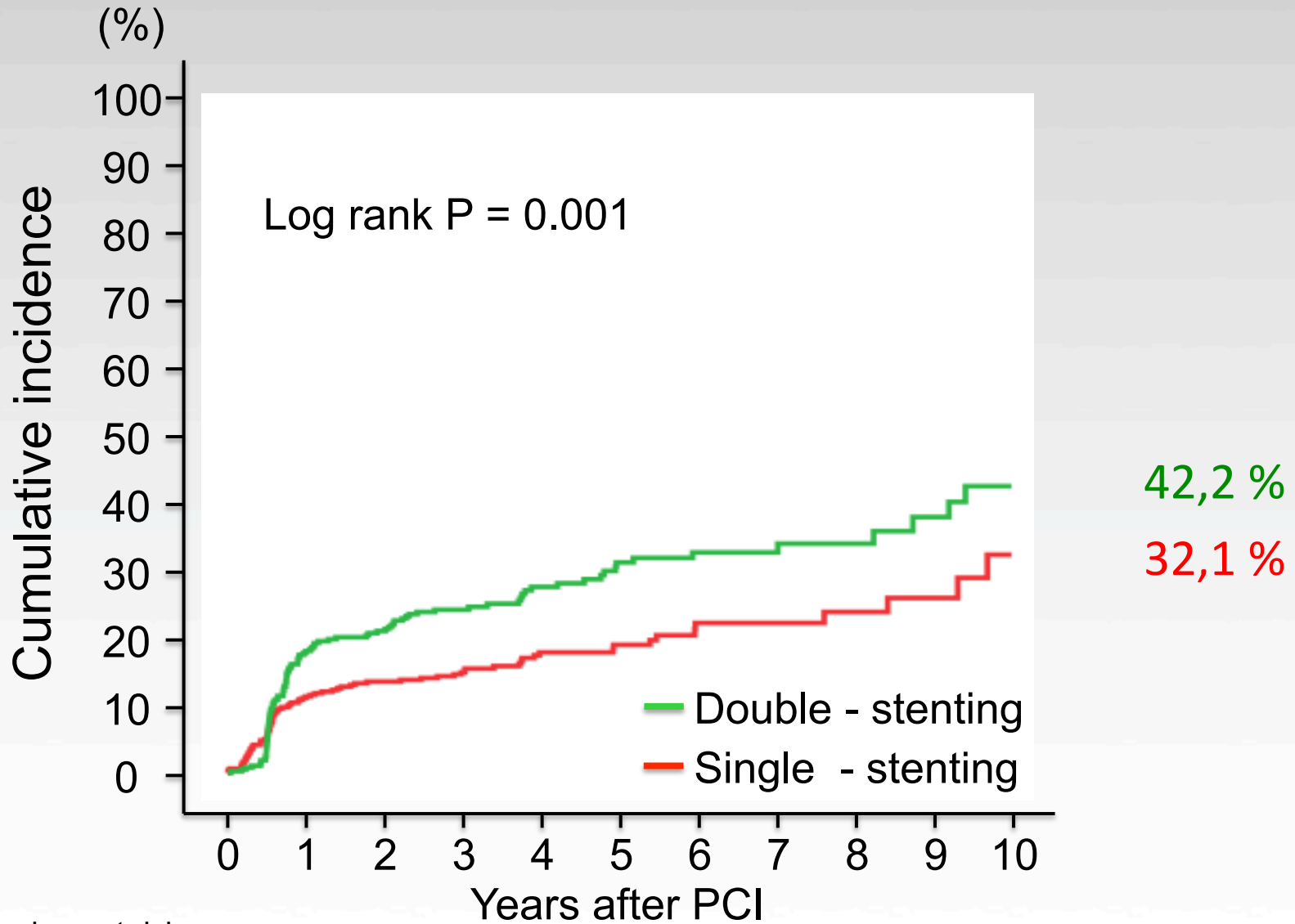
Death / Myocardial Infarction



Numbers at risk

Single	477	430	377	342	228	173	107	70	49	31	19
Double	390	347	313	264	179	144	111	73	52	39	31

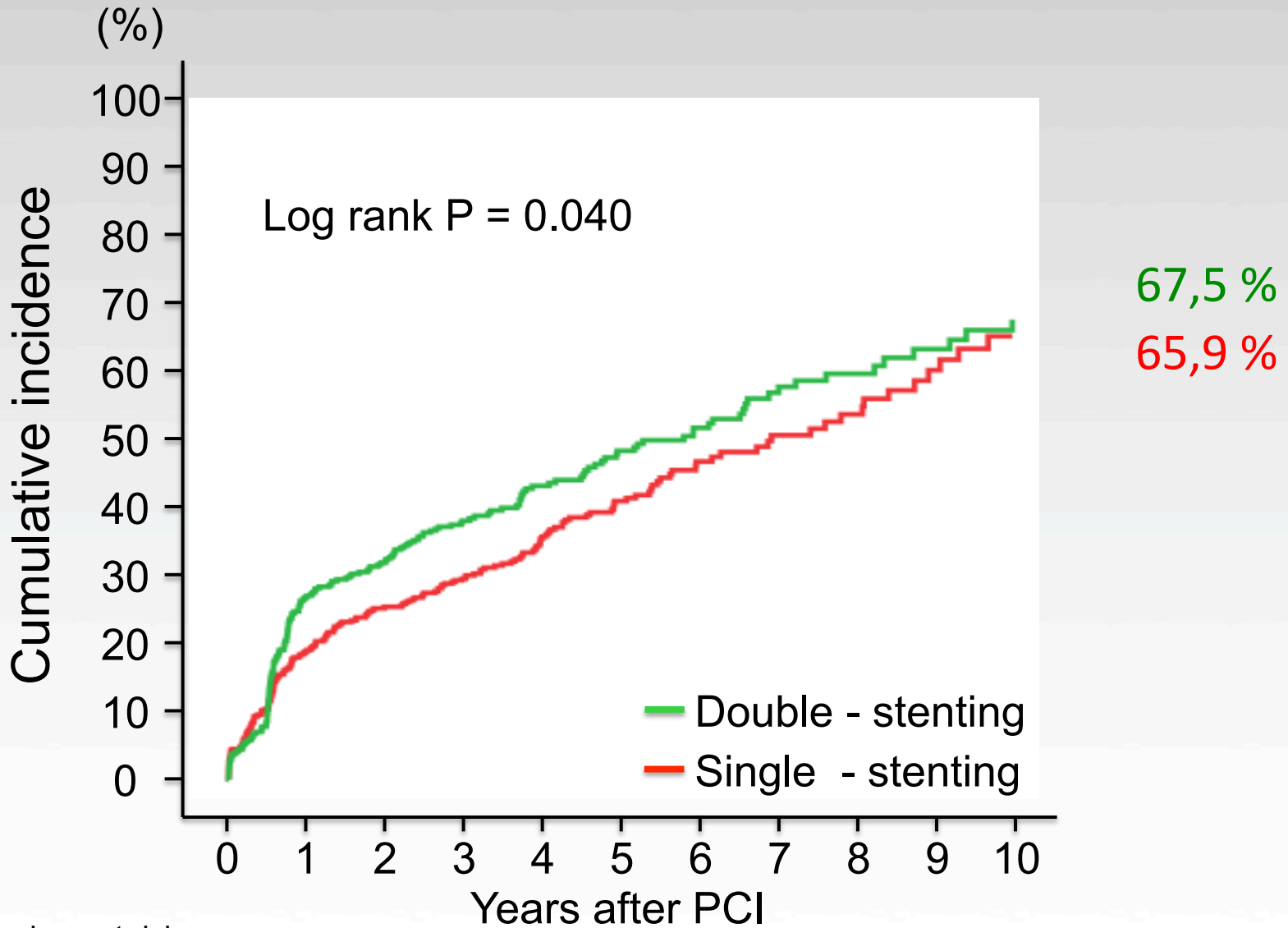
TLR



Numbers at risk

Single	477	388	335	304	195	144	86	59	43	27	14
Double	390	294	256	214	141	107	82	51	37	28	21

MACE

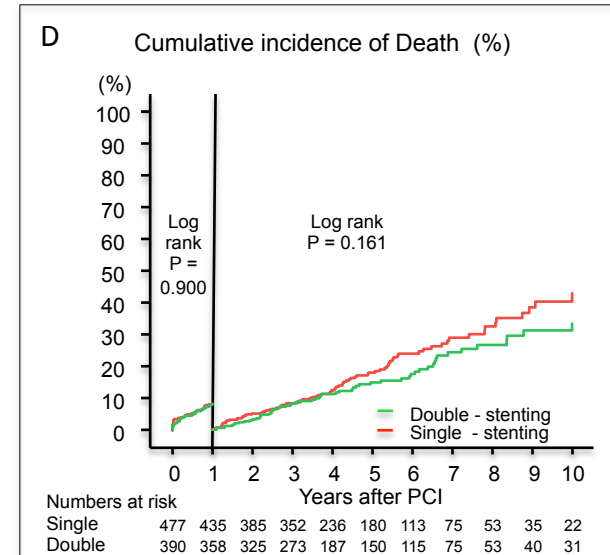
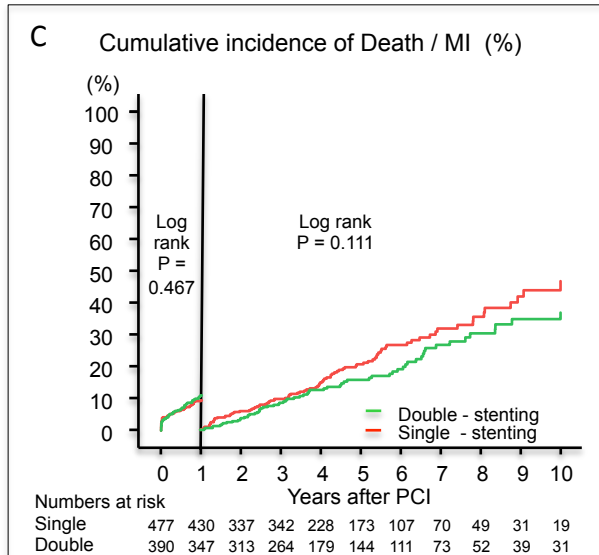
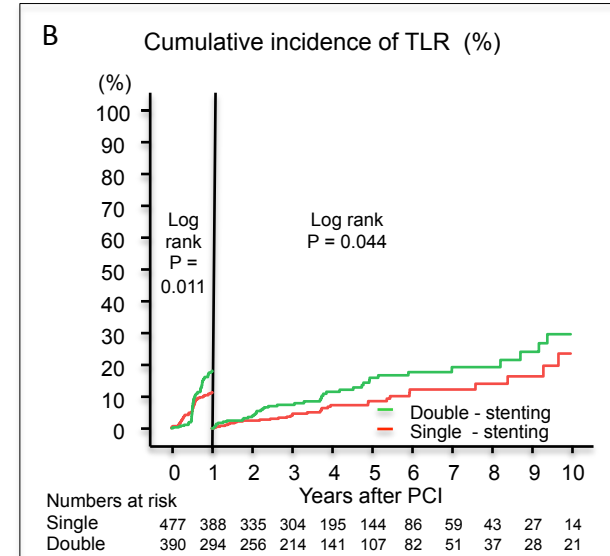
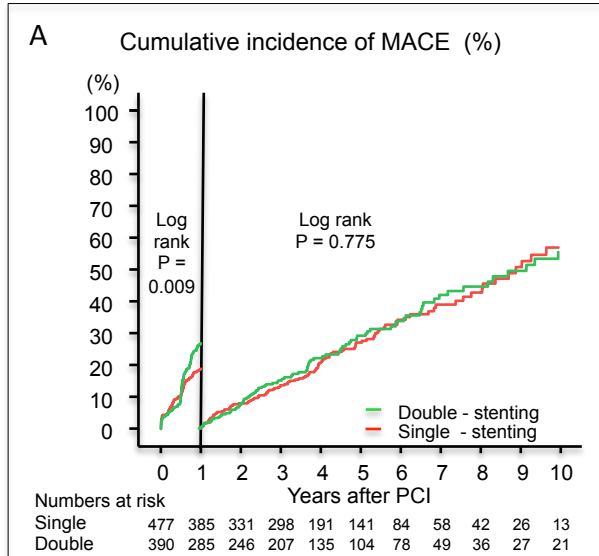


Numbers at risk

Single	477	385	331	298	191	141	84	58	42	26	13
Double	390	285	246	207	135	104	78	49	36	27	21

Landmark analysis

BBK – Left Main registry - Landmark analysis



Conclusions

- Compared with single stenting, double stenting was associated with a significantly higher long-term risk of MACE.
- Higher incidence of TLR, whereas the risk of death, MI, or stent thrombosis was similar
- After critical first year the MACE during long term follow-up similar between single and double stenting
- Randomized study EBC-Main ongoing (single vs double)

Thank you