Welcome to the 8th European Bifurcation Club 12-13 October 2012 - Barcelona

Left main session

European Bifurcation Club

EBC

Dr. Andrejs Erglis
Latvian Centre of Cardiology
Pauls Stradins Clinical University Hospital
Institute of Cardiology, University of Latvia
Riga, LATVIA

Left main distal bifurcation: Influence of technical factors on long term outcome

European Bifurcation Club

EBC

Disclosure Statement of Financial Interest

Within the past 12 months, I or my spouse/partner have had a financial interest/arrangement or affiliation with the organization(s) listed below.

Affiliation/Financial Relationship	Company
• Grant/Research Support	• Abbott Vascular
• Consulting Fees/Honoraria	• Boston Scientific
• Consulting Fees/Honoraria	• Cordis J&J
• Consulting Fees/Honoraria	• Abbott Vascular
• Consulting Fees/Honoraria	• Biosensors
• Major Stock Shareholder/Equity	
• Royalty Income	
• Ownership/Founder	
• Intellectual Property Rights	
• Other Financial Benefit	

Unprotected LM registry at Latvian Centre of Cardiology

90ties 2001 2004 2007 2011

90ties: Emergency procedures in LM

2001: Elective PCI for LM
Refused CABG, "Syntax" < 20 etc.

2004: Randomized trial (n=103)
2005: SYNTAX study (n=40)

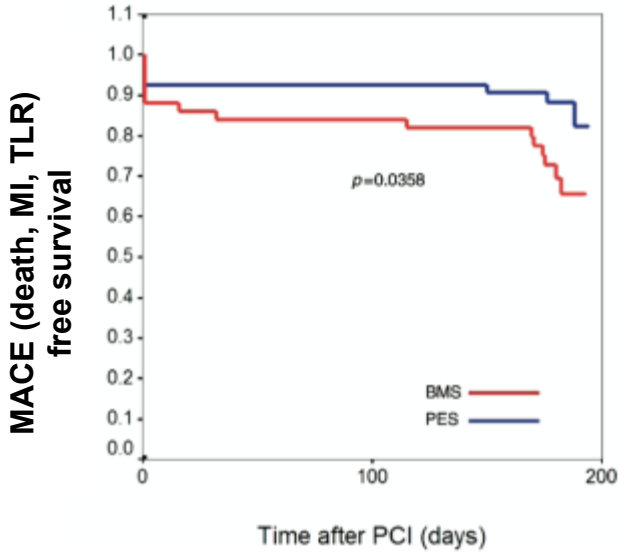
2007: Local guidelines for LM PCI
IVUS guidance
Plaque modification (CB)
DES implantation
Provisional stenting in bifurcations
Clinical follow-up + stress test
9 mo angio, IVUS follow-up

2010: NOBLE study

Ten years experience: Thousand patients!

The Latvian Randomized trial Comparing BMS vs PES in ULM

Between Feb 2004 and Nov 2005 PCI on unprotected LM: IVUS guidance, cutting balloon pretreatment mandatory, randomization: BMS n=50 vs PES n=53



Erglis A, et al. *JACC* 2007;50;491-497

Unprotected LM registry at Latvian Centre of Cardiology

1052 consecutive patients with unprotected LM disease undergoing PCI enrolled into the LM PCI registry since January 2002

↓

723 patients with distal bifurcation lesion

↓

449 patients with distal bifurcation lesion and at least 1 year follow-up available

Patient characteristics

	n=449
Age, years (mean±STD)	63.8 ± 10.2
Male, %(n)	75.5% (339)
Risk factors:	
Arterial hypertension, %(n)	81.9% (363)
Diabetes mellitus, %(n)	14.0% (62)
Dyslipidemia, %(n)	76.8% (338)
Smokers, %(n)	18.9% (79)
Ex-smokers, , %(n)	30.6% (128)
Family history of CAD, , %(n)	39.8% (165)
Previous history:	
Previous PCI, %(n)	49.5% (217)
Previous CABG, %(n)	1.1% (5)
Clinical presentation:	
Non-ST Acute coronary syndrome, %(n)	10.2% (45)
Unstable angina, %(n)	12.3% (54)
Stable angina, %(n)	76.2% (329)
Mean hospitalization time (days)	4.2 ± 2.7

Procedural characteristics (1)

	n=449
LM % stenosis, mean±STD	80.1 ± 10.4
LM lesion and 1 vessel disease, %(n)	18.1% (79)
LM lesion and 2 vessel disease, %(n)	29.3% (128)
LM lesion and 3 vessel disease, %(n)	50.8% (222)
SYNTAX score, mean±STD	31.0 ± 11.8
EUROscore, mean±STD	3.2 ± 5.6
Medina classsification, %(n):	
1,1,1	40.1% (174)
1,1,0	56.2 (244)
1,0,0	1.2% (5)
1,0,1	1.6% (7)
0,1,1	0.2% (1)
0,0,1	0% (0)
0,1,0	0.7% (3)

Procedural characteristics (2)

	n=449 %(n)
Radial approach	32.2% (140)
Predilatation	27.3% (120)
Cutting balloon	76.9% (339)
Cutting balloon for SB	11.4% (51)
DES implantation	87.9% (384)
1 stent technique	91.2% (396)
2 stent technique	8.5% (37)
Culotte	27.0% (10)
Crush	45.9% (17)
T stent	27% (10)
Final kissing balloon	33.7% (151)

	n=449 %(n)
IVUS	40.5% (182)
OCT	1.1% (5)
FFR	0.9% (4)
Virtual histology	0.7% (3)
GP IIb/IIIa use	89.7% (392)
IABP	0.7% (3)

Technical factors

	N=449 %(n)
1 stent technique	
Stent to LAD	90.1% (390)
Stent to LCX	1.4% (6)
1 stent technique	
Stent to most angulated vessel	4.5% (18)
Stent to most tightest lesion	96.2% (381)
Stent to most longest lesion	99.7% (395)

Intrahospital outcomes

	n=449
Adverse events, %(n):	
Myocardial infarction	1.6% (7)
Q MI	0.5% (2)
Non Q MI	1.1% (5)
Death	0.7% (3)
TLR	0.5% (2)
TVR	0.7% (3)
Stent thrombosis	0.5% (2)
Cardiac markers, mean±STD:	
CK-MB rise post PCI (ng/ml)	7.8 ± 15.8
TroponinI rise post PCI (ng/ml)	3.35 ± 11.2
CK-MB rise post PCI (ng/ml)	7.8 ± 15.8

Predictors of 1-year cardiac death

	Cardiac death	Others	p-value
Male gender, %(n)	5 (38.5%)	105 (24.1%)	0.322
Diabetes mellitus, %(n)	6 (46.2%)	56 (13.0%)	0.005
Hypertension, %(n)	11 (84.6%)	351 (81.6%)	1.00
Dyslipidemia, %(n)	10 (76.9%)	327 (76.6%)	1.00
PCI in history, %(n)	4 (30.8%)	213 (50.1%)	0.260
Non-ST ACS on presentation, %(n)	8 (61.5%)	91 (21.3%)	0.002
Use of IVUS, %(n)	3 (23.1%)	179 (41.3%)	0.256
Predilatation, %(n)	6 (46.2%)	114 (26.8%)	0.202
Cutting balloon predilatation, %(n)	7 (53.8%)	332 (77.6%)	0.086
IVUS + cutting balloon, %(n)	3 (23.1%)	168 (38.5%)	0.386
Stent to most angulated vessel, %(n)	2 (15.4%)	53 (12.6%)	0.674
Stent to most tightest lesion, %(n)	13 (100%)	406 (96.2%)	1.00
Stent to most longest lesion, %(n)	13 (100%)	419 (99.3%)	1.00
MV and SB stent, %(n)	2 (5.4%)	35 (94.6%)	0.307
Postdilatation, %(n)	10 (76.9%)	318 (74.8%)	1.00
Final kissing, %(n)	5 (38.5%)	146 (33.6%)	0.769
Struts to side branch, %(n)	7 (58.3%)	276 (65.7%)	0.759

Predictors of 1-year TLR

	TLR	Others	p-value
Male gender	16 (76.2%)	322 (75.4%)	1.00
Diabetes mellitus	2 (9.5%)	60 (14.2%)	0.752
Hypertension	15 (71.4%)	347 (82.2%)	0.244
Dyslipidemia	17 (81.0%)	320 (76.4%)	0.794
PCI in history	8 (40.0%)	209 (50.0%)	0.494
Non-ST ACS on presentation	8 (40.0%)	91 (21.7%)	0.094
SYNTAX =>30	15 (6.6%)	6 (2.7%)	0.072
Use of IVUS	11 (55.0%)	171 (40.1%)	0.244
Predilatation	8 (42.1%)	112 (26.7%)	0.185
Cutting balloon predilatation	14 (70.0%)	325 (77.2%)	0.426
IVUS + cutting balloon	9 (42.9%)	162 (37.9%)	0.651
Stent to most angulated vessel	3 (17.6%)	52 (12.4%)	0.462
Stent to most tightest lesion	16 (94.1%)	403 (96.4%)	0.478
Stent to most longest lesion	17 (100.0%)	415 (99.3%)	1.00
MV and SB stent	3 (8.1%)	34 (91.9%)	0.170
Postdilatation	12 (63.2%)	316 (75.4%)	0.277
Final kissing	6 (28.6%)	145 (34.0%)	0.814
Struts to side branch	9 (50.0%)	274 (66.2%)	0.204

Predictors of 1-year TVR

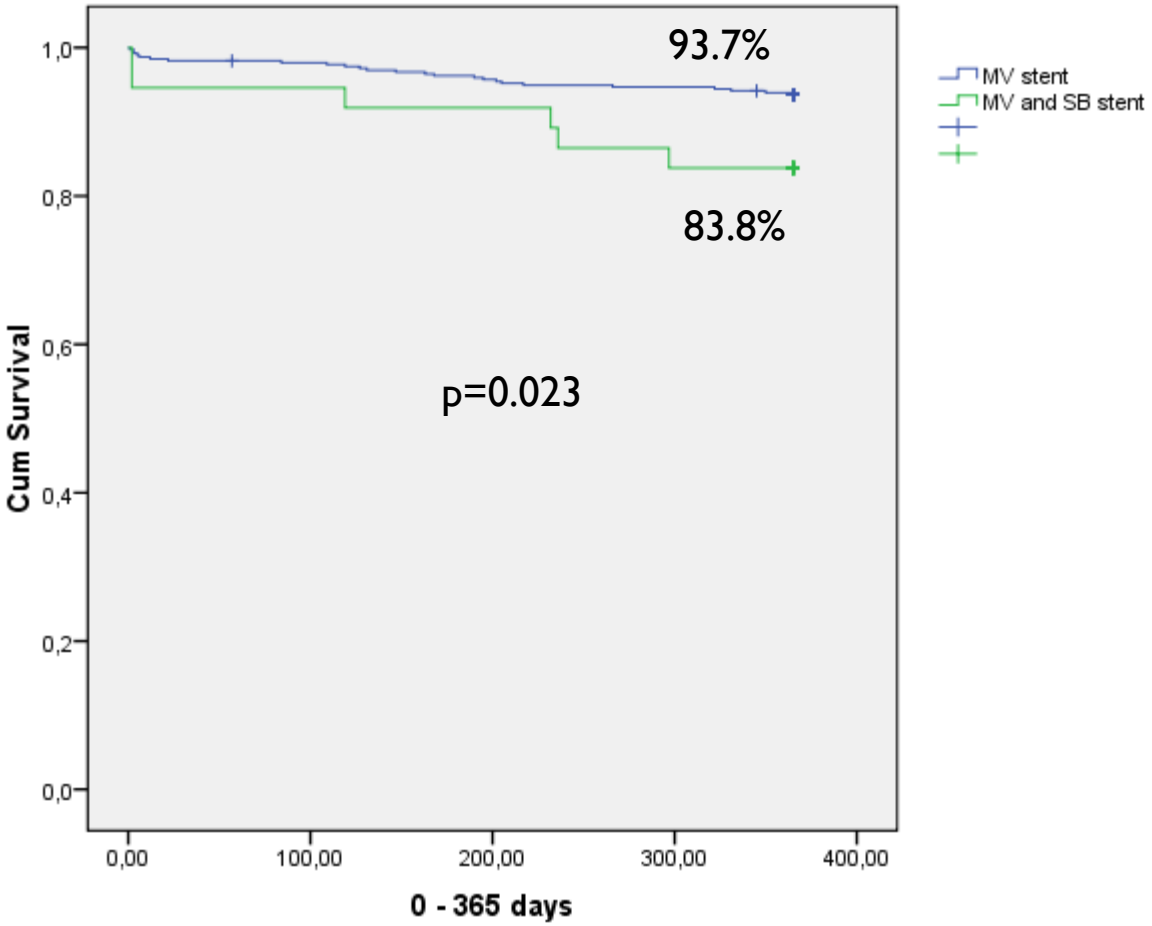
	TVR	Others	p-value
Male gender	49 (84.5%)	289 (74.1%)	0.102
Diabetes mellitus	7 (12.3%)	55 (14.2%)	0.839
Hypertension	44 (77.2%)	318 (82.4%)	0.360
Dyslipidemia	39 (69.6%)	298 (77.6%)	0.236
PCI in history	23 (41.1%)	194 (50.8%)	0.199
Non-ST ACS on presentation	17 (30.9%)	82 (21.3%)	0.121
SYNTAX =>30	39 (17.1%)	19 (8.6%)	0.008
Predilatation	16 (28.6%)	104 (27.2%)	0.873
Cutting balloon predilatation	44 (77.2%)	295 (76.8%)	1.00
Stent to most angulated vessel	8 (15.4%)	47 (12.3%)	0.507
Stent to most tightest lesion	49 (94.2%)	370 (96.6%)	0.422
Stent to most longest lesion	52 (100.0%)	380 (99.2%)	1.00
Postdilatation	39 (69.6%)	289 (75.7%)	0.327
Final kissing	16 (27.6%)	135 (34.6%)	0.372
Struts to side branch	31 (56.4%)	252 (66.8%)	0.132

Predictors of 1-year MACE
(cardiac death, MI, TLR, stent thrombosis)

	MACE	Others	p-value
Male gender	11 (31.4%)	99 (24.0%)	0.313
Diabetes mellitus	8 (22.9%)	54 (13.2%)	0.127
Hypertension	27 (77.1%)	335 (82.1%)	0.494
Dyslipidemia	28 (80.0%)	309 (76.3%)	0.835
PCI in history	14 (41.2%)	203 (50.2%)	0.373
Non-ST ACS on presentation	17 (50.0%)	82 (20.2%)	<0.0001
Use of IVUS	15 (44.1%)	167 (40.5%)	0.719
Predilatation	13 (39.4%)	107 (26.4%)	0.109
Cutting balloon predilatation	22 (64.7%)	317 (77.9%)	0.091
IVUS + cutting balloon	13 (37.1%)	158 (38.2%)	1.00
Stent to most angulated vessel	6 (19.4%)	49 (12.1%)	0.259
Stent to most tightest lesion	30 (96.8%)	389 (96.3%)	1.00
Stent to most longest lesion	31 (100%)	401 (99.3%)	1.00
MV and SB stent	6 (16.2%)	31 (83.8%)	0.039
Postdilatation	23 (69.7%)	305 (75.3%)	0.531
Final kissing	11 (31.4%)	140 (33.9%)	0.854
Struts to side branch	18 (58.1%)	265 (66.1%)	0.433

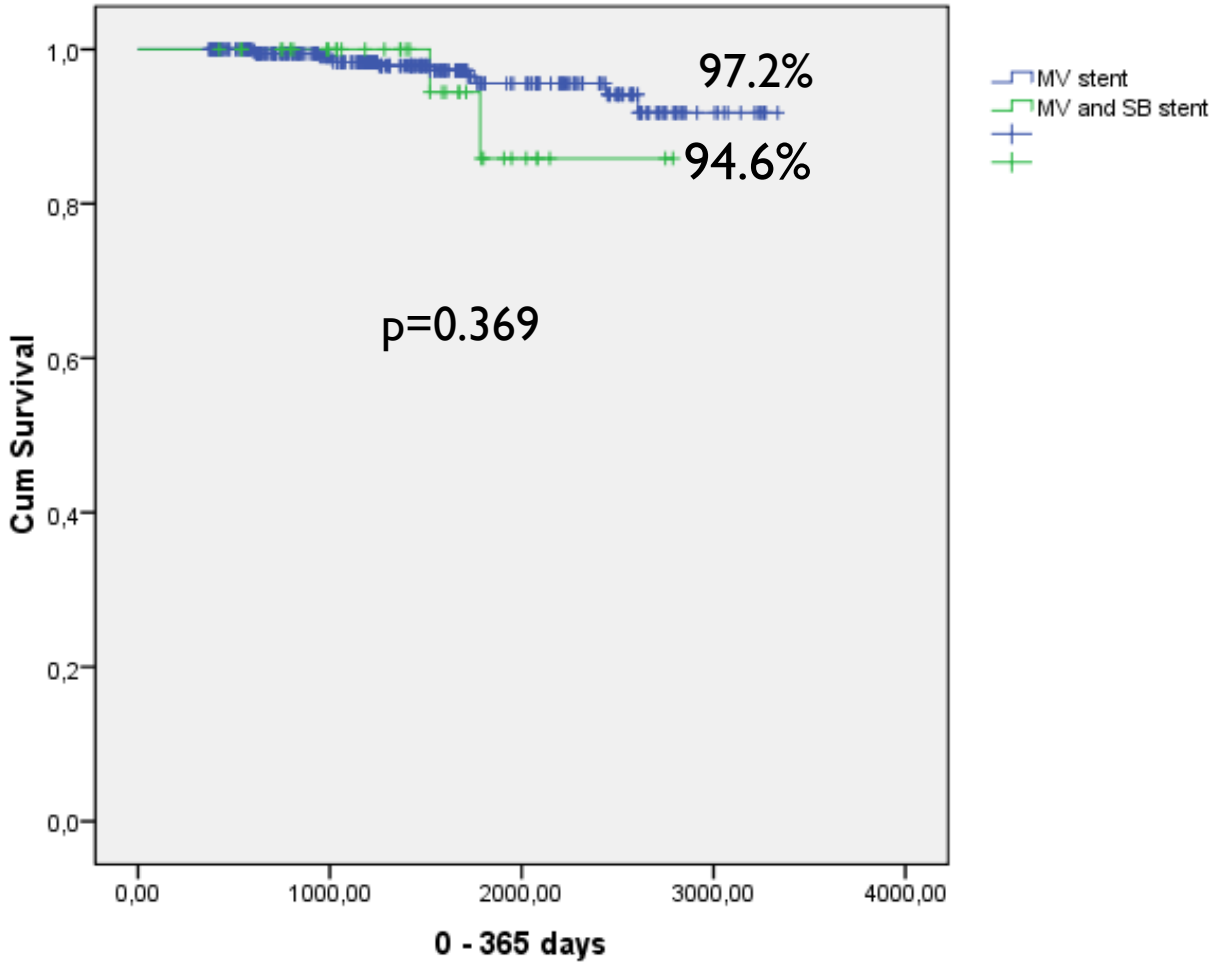
MACE free survival (cardiac death, MI, TLR, stent thrombosis)

MV stent vs MV and SB stent



Cardiac death free survival (cardiac death, MI, TLR, stent thrombosis)

MV stent vs MV and SB stent



Patient characteristics

MV stent vs MV and SB stent

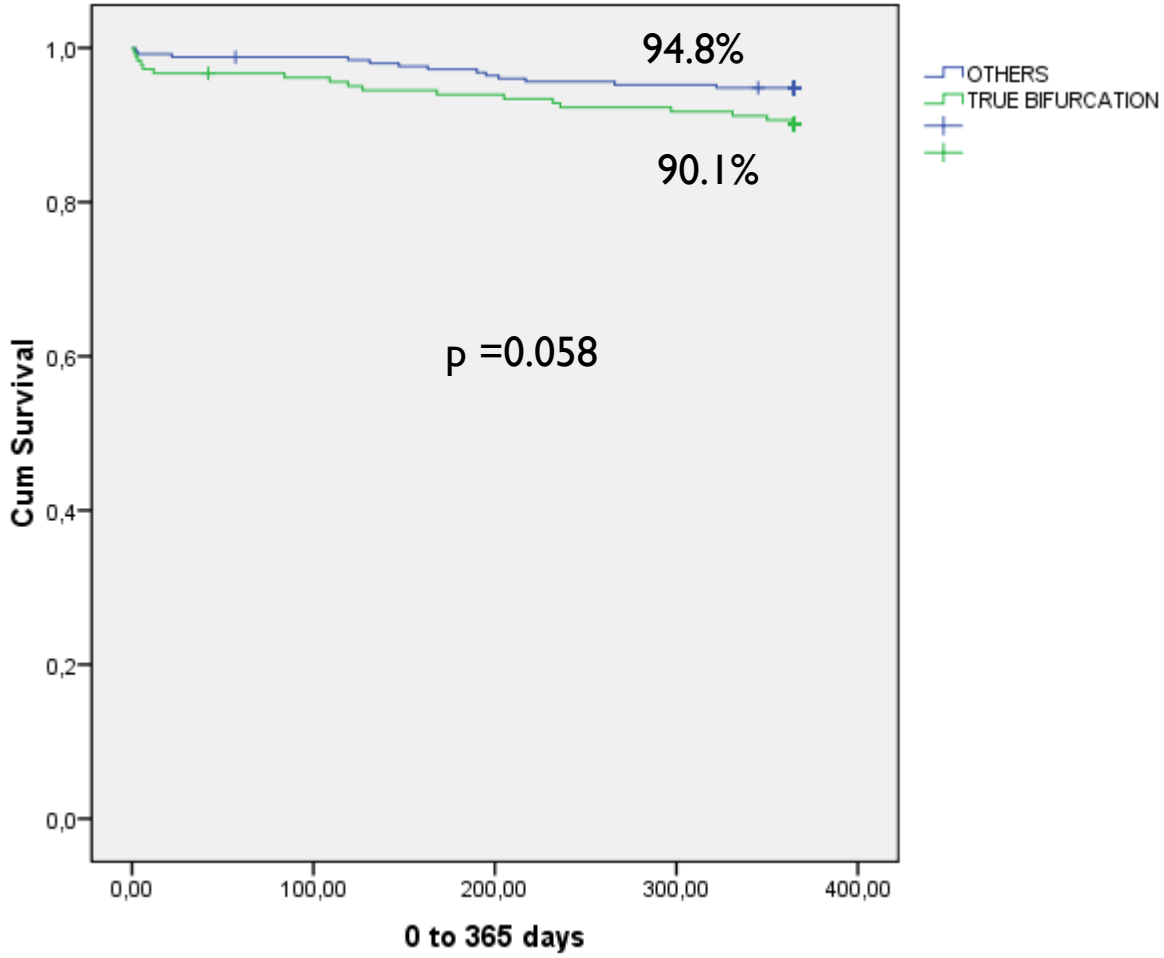
	1 stent (n=396)	2 stents (n=37)	p value
Age (years)	63.9 ± 10.1	64.8 ± 9.3	0.614
Male	75.8% (300)	67.6% (25)	0.320
Previous MI	45.8% (179)	43.2% (16)	0.863
Previous PCI	50.9% (196)	40.5% (15)	0.302
Previous CABG	0.8% (3)	2.7% (1)	0.305
Arterial hypertension	82.6% (323)	89.2% (33)	0.367
Diabetes mellitus	14.3% (56)	13.5% (5)	1.000
Dyslipidemia	76.0% (295)	86.5% (32)	0.219
Smokers (incl e-xsmokers)	49.2% (183)	50.0% (18)	1.000
Family history of CAD	44.3% (147)	41.2% (14)	0.856
Non-ST ACS on presetation	21.4% (83)	27% (10)	0.412
Stable angina on presetation	77.0% (292)	73.0% (27)	0.547
Mean hospitalization time (days)	4.0 ± 2.5	5.3 ± 3.4	0.019

PCI characteristics
MV stent vs MV and SB stent

	1 stent (n=396)	2 stents (n=37)	p value
Radial approach	33.6% (129)	21.6% (8)	0.197
Predilatation	24.3% (94)	56.8% (21)	<0.001
Cutting balloon	78.6% (305)	54.1% (20)	0.002
Cutting balloon for SB (Lcx)	9.9% (38)	32.4% (12)	<0.001
Final kissing balloon	31.1% (123)	75.7% (28)	<0.001
DES implantation	88.9% (343)	91.9 (34)	0.784

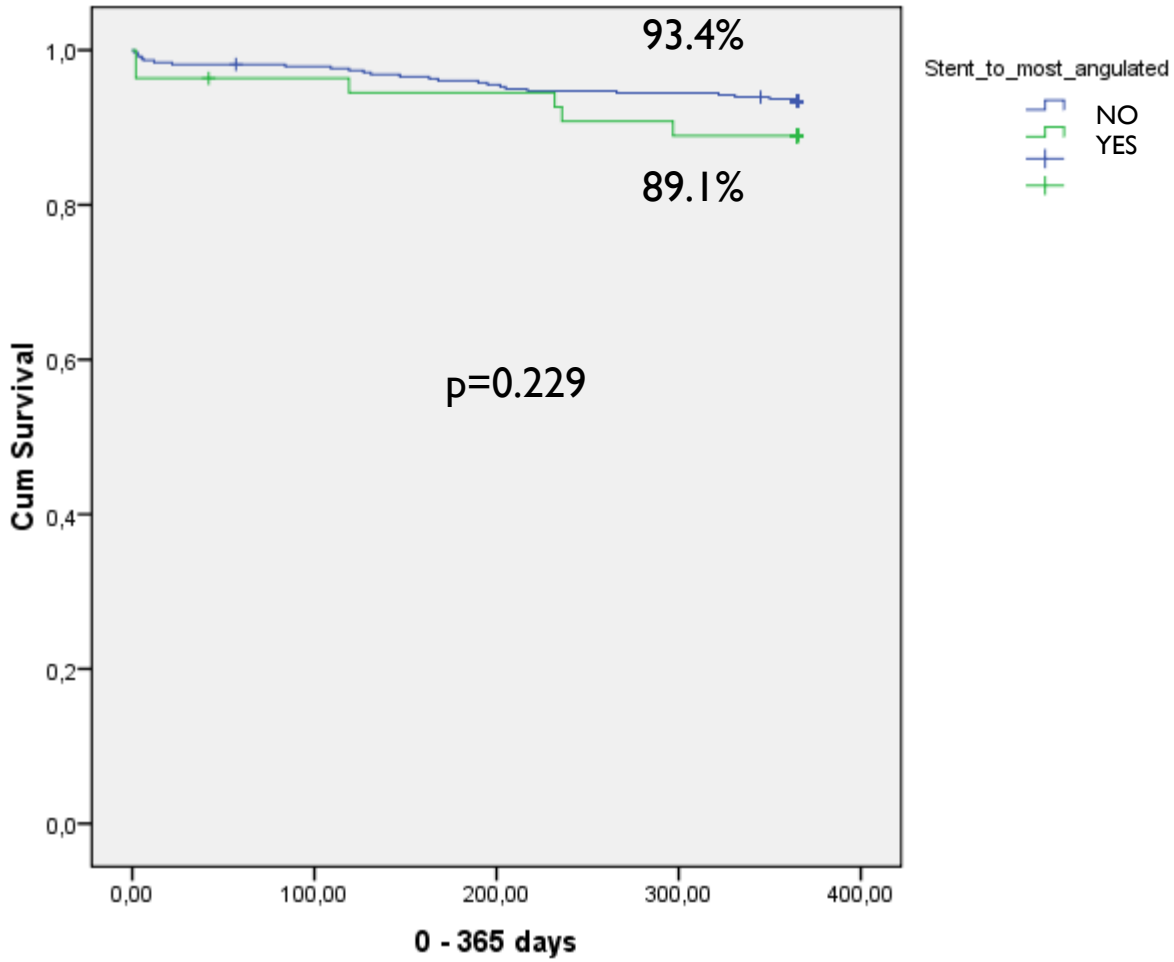
MACE free survival (cardiac death, MI, TLR, stent thrombosis)

True vs Non-true bifurcation



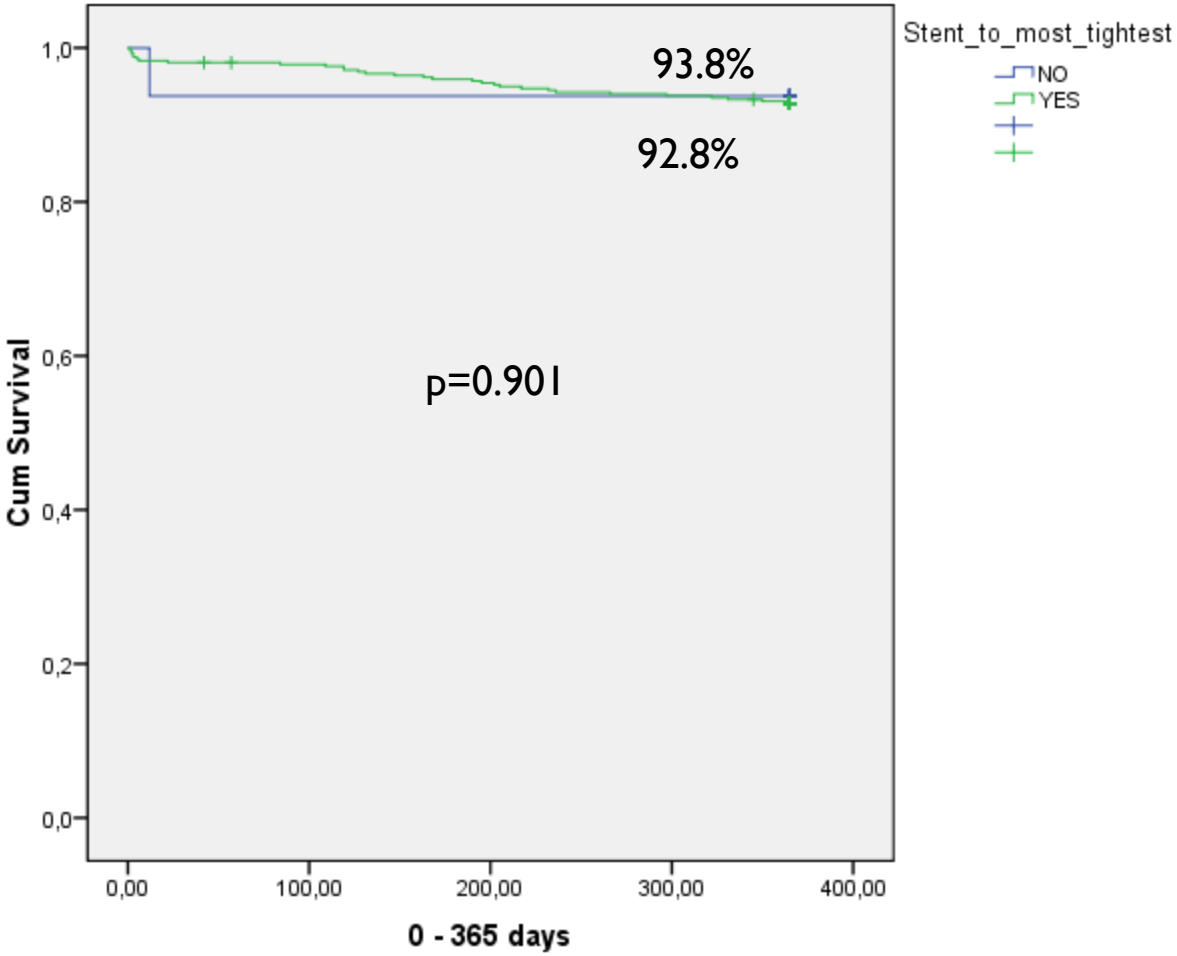
MACE free survival (cardiac death, MI, TLR, stent thrombosis)

Stent to the most angulated vessel



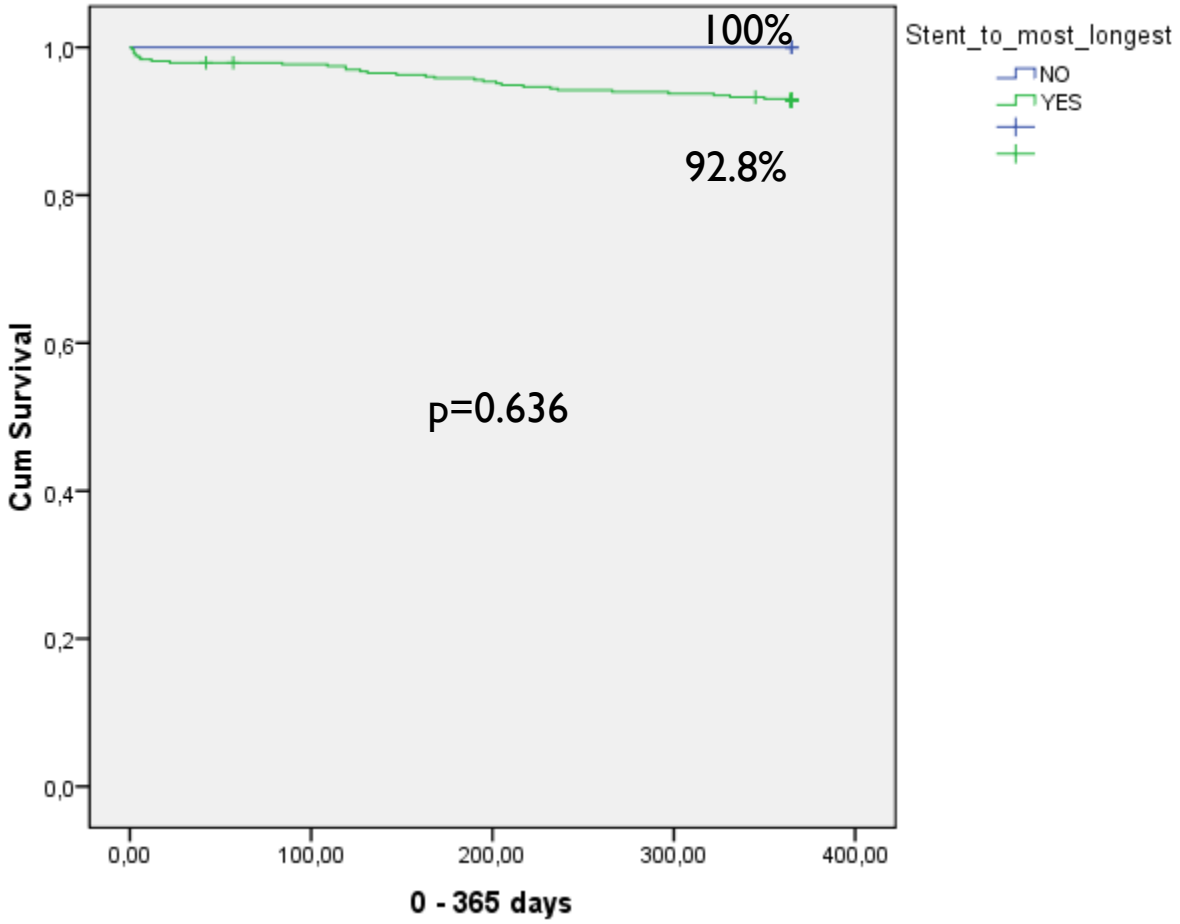
MACE free survival (cardiac death, MI, TLR, stent thrombosis)

Stent to the most tightest lesion



MACE free survival (cardiac death, MI, TLR, stent thrombosis)

Stent to the most longest lesion



Conclusions

- Diabetes mellitus and non-ST acute coronary syndrome on presentation are predictors of cardiac death in patients after distal left main PCI
- Technical factors except stenting strategy do not influence one year MACE after distal left main PCI
- Two stent strategy is associated with higher one year MACE rate compared to one stent strategy

7 13:22