

The impact of the extent of side-branch disease on outcomes An insight from the European Bifurcation Club registry ClinicalTrials.gov Identifier: NCT01967615

Marco Zimarino^{1,2}, MD, PhD, Emanuele Barbato^{3,4}, MD, PhD, Sunao Nakamura⁵, MD, PhD, Francesco Radico¹, MD, Marta Di Nicola⁶, PhD, Carlo Briguori⁷, MD, PhD, Robert J Gil⁸, MD, Vojko Kanic⁹, MD, Matteo Perfetti², MD, Mariano Pellicano, MD^{3,4}, Kristina Maric¹⁰, MD, Goran Stankovic¹¹, MD, PhD
on behalf of the European Bifurcation Club.

¹Institute of Cardiology “G. d’Annunzio” University Chieti-Pescara, Chieti, Italy; ²Interventional Cath Lab, ASL 2 Abruzzo, Chieti, Italy; ³Division of Cardiology, Department of Advanced Biomedical Sciences, Federico II University of Naples, Italy; ⁴Cardiovascular Center Aalst, OLV Clinic, Aalst, Belgium; ⁵Department of Cardiology, New Tokyo Hospital, Chiba, Japan; ⁶Department of Medical, Oral and Biotechnological Sciences, Laboratory of Biostatistics, “G. d’Annunzio”; ⁷Interventional Cardiology Unit, Clinica Mediterranea, Naples, Italy; ⁸Department of Invasive Cardiology, Central Clinical Hospital of the Ministry of Interior, Warsaw, Poland; ⁹Department of Cardiology and Angiology, University Medical Centre, Maribor, Slovenia; ¹⁰Department of Cardiovascular Medicine, University Hospital Centre, Zagreb, Croatia; ¹¹Department of Cardiology, Clinical Center of Serbia, University of Belgrade, Serbia.

Speaker's name: **Marco Zimarino**, Chieti (Italy)

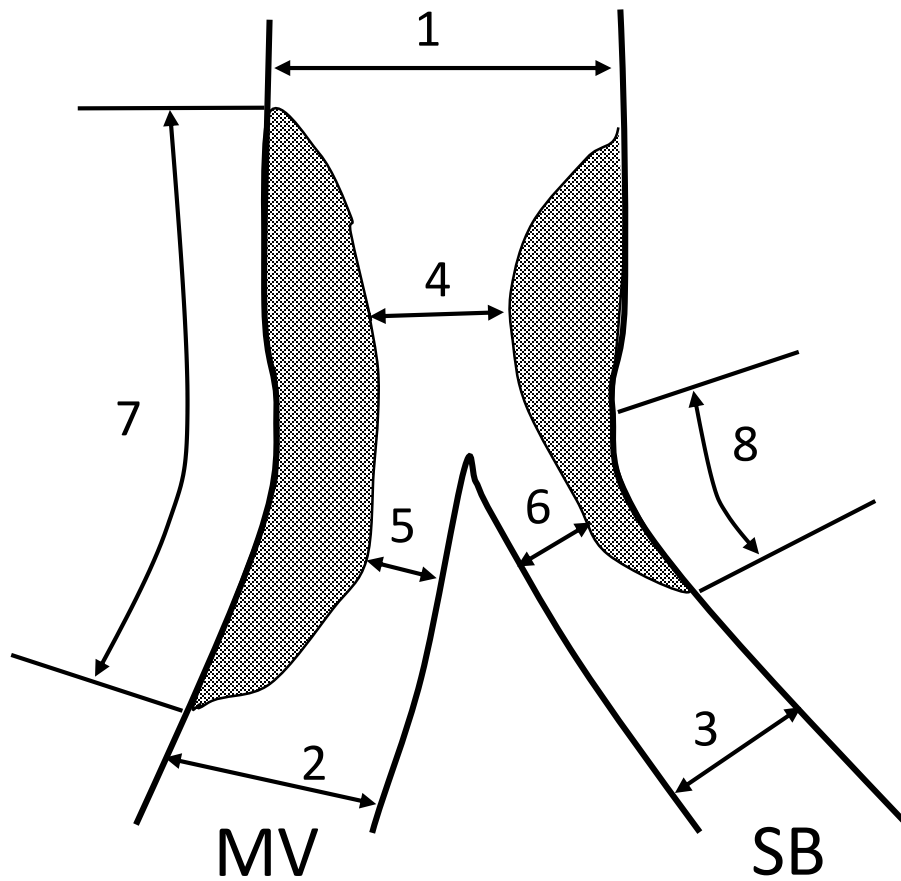
I do not have any potential conflict of interest to declare

- In percutaneous coronary intervention (PCI) on bifurcations, a single “provisional” stenting in main vessel (MV) is generally preferred, although in the presence of a side branch (SB) lesion double stenting is often used.
- According to Medina classification, “true” coronary bifurcation lesions encompass both MV and SB.
- Anyway, the role of the SB lesion length remains questionable for strategy planning and its implication with outcome is controversial.
- The aim of the present study was to define the impact of SB lesion length on clinical outcomes.

- A retrospective multicenter registry in which 17 center in Europe and abroad enrolled 1,252 patients who underwent DES-PCI on a coronary bifurcation (all Medina types), with the endorsement of the European Bifurcation Club.
- PCI of a bifurcating lesion with MV ≥ 2.5 mm and SB ≥ 2.0 mm, with quantitative coronary analysis (QCA) performed by local centers.
- Bifurcation treatment strategy was left at operator's discretion.
- A propensity-score pairwise matching was performed for age, sex, diabetes, acute coronary syndromes, ejection fraction, multivessel coronary artery disease, bailout stenting.

Primary endpoint

Major Adverse Cardiac Events (MACE) as the composite of cardiac mortality, myocardial infarction (MI) and stent thrombosis at 18 months (IQR 11-28) follow-up.



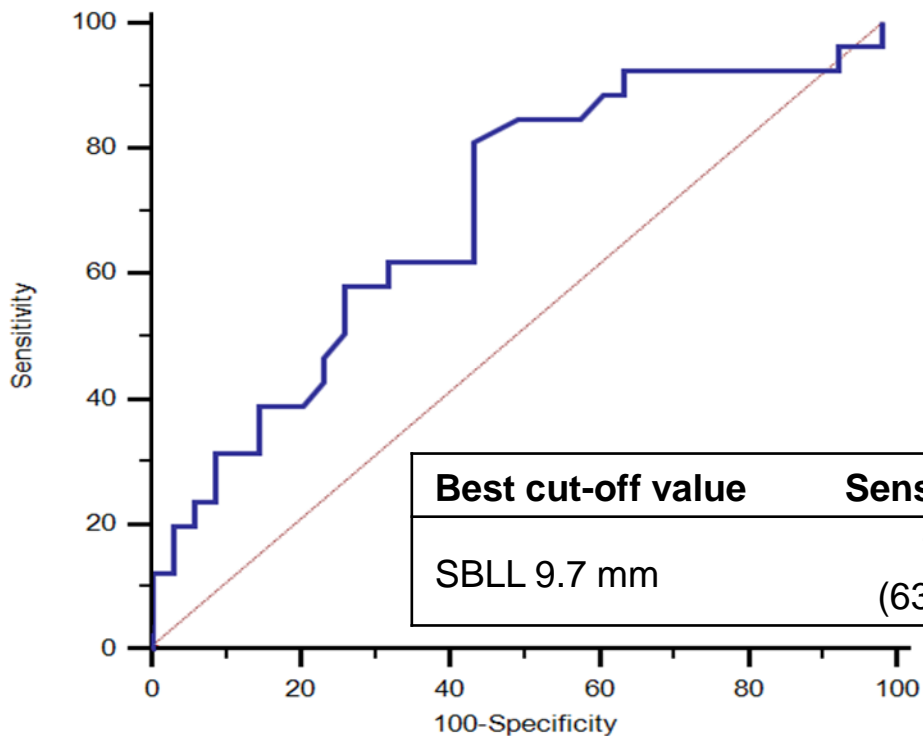
What are the essential results?

	Overall population (n=1252)				
Clinical variables	Normal SB	SBLL - 1 st tertile	SBLL - 2 nd tertile	SBLL - 3 rd tertile	P value
	N=489	N=253	N=256	N=254	
Age (y)	66.0 ± 9.80	65.4 ± 10.3	67.0 ± 9.49	67.9 ± 8.87	0.01
Sex (M)	375 (77%)	168 (66%)	182 (71%)	201 (79%)	0.97
Diabetes	181 (37%)	80 (32%)	87 (34%)	105 (41%)	0.43
Hypertension	406 (83%)	209 (83%)	201 (78%)	208 (82%)	0.15
Dyslipidemia	365 (75%)	183 (73%)	182 (71%)	206 (81%)	0.25
Smoker	240 (50%)	69 (27%)	88 (34%)	141(57%)	0.99
Prior MI	106 (40%)	84 (34%)	85 (35%)	32 (24%)	<0.01
Prior CABG	14 (3%)	15 (6%)	31 (12%)	10 (4%)	NS
Prior PCI	249 (51%)	98 (39%)	109 (43%)	118 (46%)	0.01
Prior Stroke	43 (9%)	27 (11%)	23(10%)	26(12%)	0.10
LVEF ≤ 30%	14 (3%)	1 (0.4%)	0 (0%)	10 (4%)	0.77
ACE inhibitors	95 (19%)	73 (29%)	79 (40%)	63 (25%)	NS

What are the essential results?

	Overall population (n=1252)				
Procedural variables	Normal SB	SBLL - 1 st tertile	SBLL - 2 nd tertile	SBLL - 3 rd tertile	P value
	N=489	N=253	N=256	N=254	
MV size (mm)	3.05 ± 0.67	3.11 ± 0.49	3.05 ± 0.58	2.89 ± 0.66	NS
MVLL (mm)	20.6 ± 9.66	16.7 ± 6.93	17.9 ± 4.81	22.0 ± 9.35	0.03
SB size (mm)	2.38 ± 0.55	2.41 ± 0.42	2.48 ± 0.51	2.15 ± 0.63	<0.01
Multivessel Disease	239 (49%)	167 (67%)	173 (69%)	145 (57%)	<0.01
SYNTAX score	13.4 ± 5.25	12.6 ± 5.20	13.6 ± 6.99	16.7 ± 7.23	<0.01
>1 stent	79 (16%)	30 (12%)	67 (26%)	107 (42%)	<0.01
Two stent technique:					
- T stenting	51 (11%)	8 (3.4%)	10 (4%)	41 (16%)	NS
- TAP	12 (2.5%)	6 (2.6%)	24 (10%)	33 (13%)	
- Culotte	0 (0%)	3 (1.3%)	1 (0.4%)	4 (1.6%)	
- crush or DK-crush	3 (0.6%)	5 (2.1%)	13 (5.3%)	6 (2.4%)	
- SKS	0 (0%)	0 (0%)	1 (0.4%)	0 (0%)	
- Other	5 (1%)	2 (0.9%)	19 (8%)	23 (9.2%)	

SB lesion length vs MACE

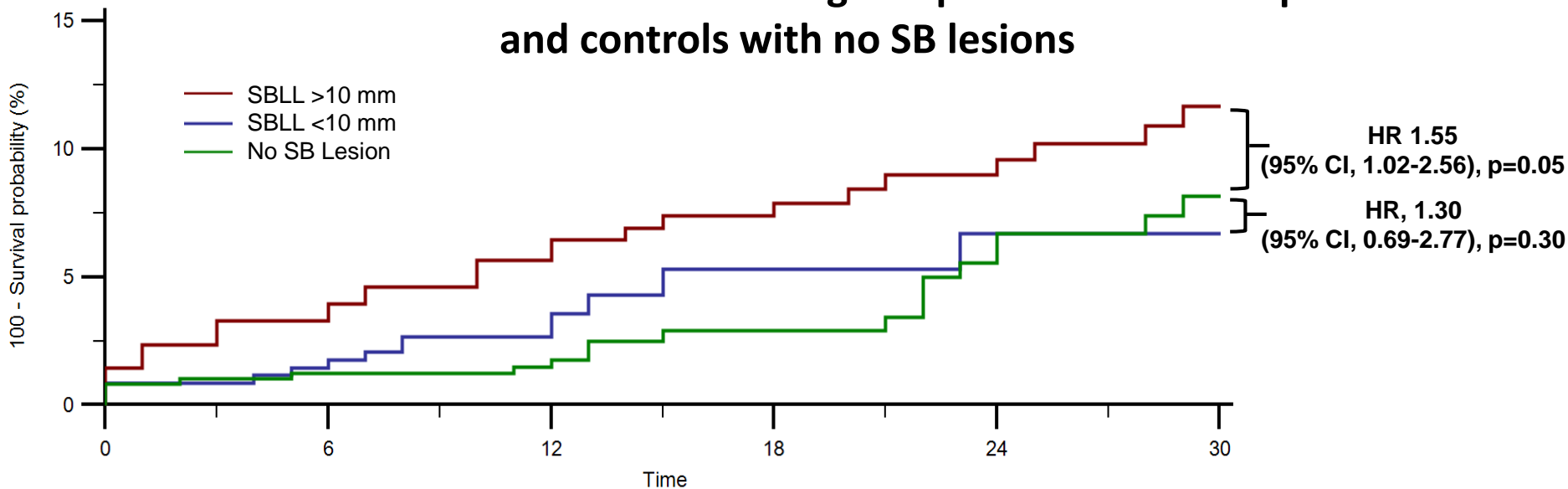


Best cut-off value	Sensitivity	Specificity	AUC	P
SBLL 9.7 mm	75 (63-84)	64 (59-73)	0.71 (0.56-0.80)	0.01

What are the essential results?

	Overall population (n=1252)				
Endpoints	Normal SB	SB Lesion Length 1 st tertile	SB Lesion Length 2 nd tertile	SB Lesion Length 3 rd tertile	P value
	N=489	N=253	N=256	N=254	
MACE	22 (4.5%)	12 (4.8%)	18 (7.0%)	30 (12%)	<0.01
- Cardiac Death	3 (0.6%)	5 (2%)	5 (2%)	10 (4%)	<0.01
- Nonfatal MI	5 (1%)	5 (2%)	11 (4.3%)	9 (4%)	<0.01
- Stent thrombosis	7 (2%)	1 (0.5%)	3 (2%)	5 (3%)	0.27
TVR	44 (10%)	26 (13%)	29 (16%)	15 (8%)	0.76

Cumulative incidence of MACE among 690 pairwise-matched patients and controls with no SB lesions



Number at risk

Group: SBLL<10 mm	338	326	133	87	51	42
Group: SBLL >10 mm	328	290	211	174	148	105
Group: No SB Lesion	466	454	269	212	157	99

	Normal SB		SBLL < 10 mm			SBLL ≥ 10 mm		
	n (%)	HR (95%CI)	n (%)	HR (95%CI)	p-value	n (%)	HR (95%CI)	p-value
MACE	20 (4.1)	Reference	22 (5.1)	1.8 (0.7-4.6)	0.224	26 (8.0)	2.7 (1.4-5.0)	0.003
		-		Reference			1.5 (0.6-3.5)	0.043
Cardiac death	13 (2.6)	Reference	12 (2.8)	1.4 (0.1-27.4)	0.814	17 (5.2)	1.8 (0.7-4.9)	0.058
		-		Reference			1.3 (0.1-23.0)	0.081
MI	10 (2.0)	Reference	16 (3.6)	2.5 (0.7-9.2)	0.162	17 (5.2)	3.7 (1.4-9.6)	0.019
		-		Reference			1.5 (0.5-4.4)	0.318
Stent thrombosis	7 (1.4)	Reference	3 (0.7)	0.4 (0.1-2.0)	0.336	6 (1.8)	1.3 (0.4-4.4)	0.665
		-		Reference			3.7 (0.1-10.4)	0.177
TVR	44 (9.0)	Reference	43 (9.9)	1.3 (0.8-1.9)	0.212	27 (8.2)	0.9 (0.5-1.4)	0.591
		-		Reference			0.7 (0.4-1.1)	0.140

Cox proportional hazards regression independent risk factors for MACE.

	HR (95% CI)	P
LVEF ≤30%	5.88 (2.15-8.55)	<0.001
ACS at admission	1.95 (1.20-3.17)	<0.01
Age>66	1.81 (1.04-3.30)	<0.01
SB lesion length ≥ 10 mm	1.72 (1.02-3.27)	< 0.05

- Patients with progressively longer SB lesions experience higher rate of MACE
- The optimal discriminant for MACE is a SB lesion length ≥ 10 mm
- SB lesion length ≥ 10 mm is an independent predictor of MACE, together with left ventricular dysfunction, ACS at presentation and advanced age
- After propensity-score matching, MACE were still higher in patients with long (≥ 10 mm) as compared with short (< 10 mm) SB lesions.
- Patients with long (≥ 10 mm) SB lesions experience more MACE as compared with both patients with short (<10 mm) SB lesions and without SB disease. No differences in MACE were detected among patients with short (<10 mm) and without SB disease.

WHY?

- To define the impact of SB lesion length on clinical outcomes and its implication on treatment strategy

WHAT?

- 1,252 patients who underwent DES-PCI on a coronary bifurcation (all Medina types)

HOW?

- The primary endpoint was the occurrence of MACE, as the composite of cardiac mortality, MI and stent thrombosis at 18 months (IQR 11-28) follow-up.

WHAT ARE THE RESULTS ?

- MACE increases with SB lesion length. The optimal discriminant for MACE is a SB lesion length ≥ 10 mm
- SB lesion length ≥ 10 mm, together with LVEF $<30\%$, ACS and advanced age are independent predictors of MACE
- After propensity-score matching, MACE were still higher in patients with long (≥ 10 mm) as compared with short (< 10 mm) SB lesions and lesions without SB disease.

WHAT IS IT IMPORTANT?

- Beyond the sole presence of a lesion in the SB, as defined by the Medina classification, SB lesion length is independently associated with MACE and patients with a SB lesion ≥ 10 mm should be carefully evaluated for an optimal procedural planning.

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