



The Latest Update "Presentation Theater" - Complex PCI: Left Main and Bifurcation

# Bifurcation PCI: New Insights with Bioresorbable Scaffolds

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# Disclosure of financial interest

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

## Affiliation/Financial relationship

## Company

- **Speakers' honoraria**

Abbott Vascular, Aspen, AstraZeneca, Bayer, Cordis, Daiichi Sankyo, Eli-Lilly

- **Consulting**

Abbott Vascular, Stentys

- **Advisory Board**

AstraZeneca



# Patient flow

## All patients (N=1,189)

All-comers consecutive patients undergoing single or multivessel PCI with  $\geq 1$  Absorb BVS in 10 European centers between November 2011 and January 2014

Patients with  $\geq 1$  bifurcation PCI (N=317)

$\geq 1$  BVS(s) in the main vessel  
(N=289 patients, 302 lesions)

BVS at the  
SB only  
N=28

Provisional single stenting  
(N=260 lesions, 90%)

Systematic double stenting  
(N=42 lesions, 10%)

# Baseline characteristics

N=289

## Demographics

Age - mean  $\pm$  SD, years 62  $\pm$  12

Male gender - % 81%

## Cardiac risk factors

Hypertension - % 74%

Diabetes - % 25%

Current smoker - % 23%

## Cardiovascular history

Prior CABG - % 4%

Prior PCI - % 37%

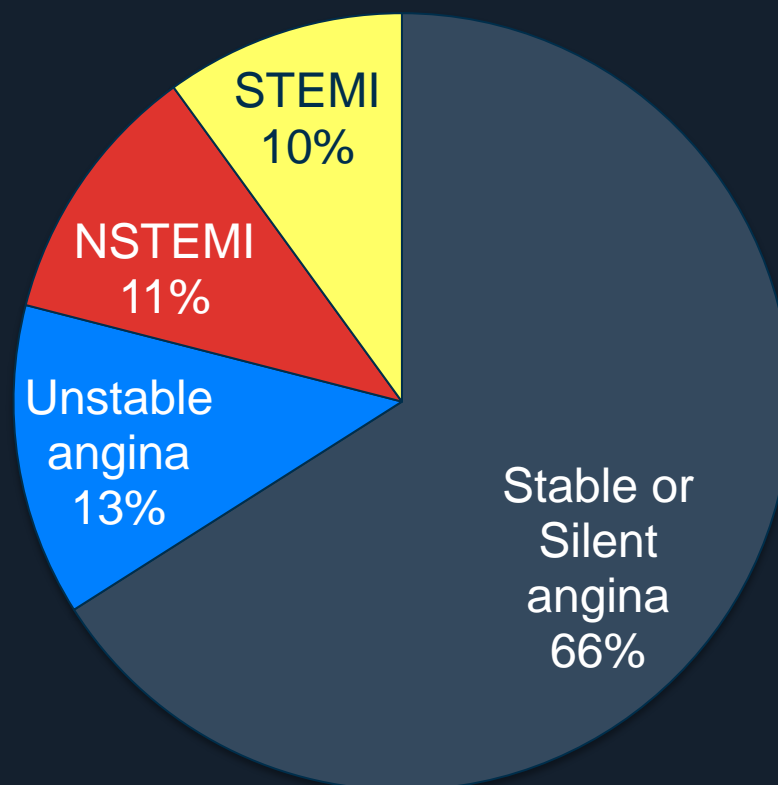
Prior stroke - % 2%

LVEF - mean  $\pm$  SD, % 54  $\pm$  9

Multivessel disease - % 38%

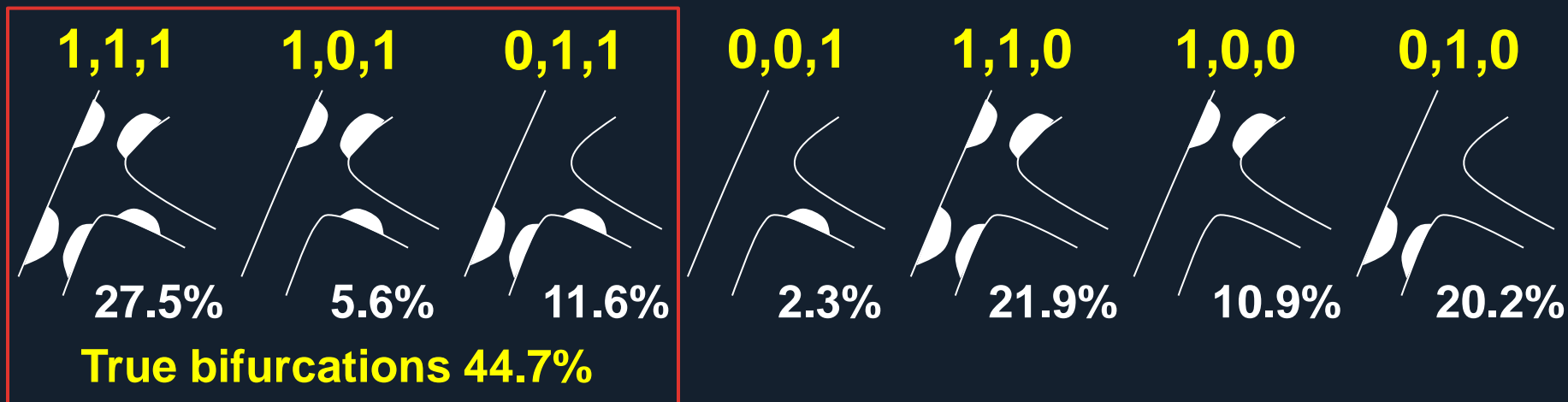
Prasugrel or ticagrelor use - % 19%

## Clinical presentation

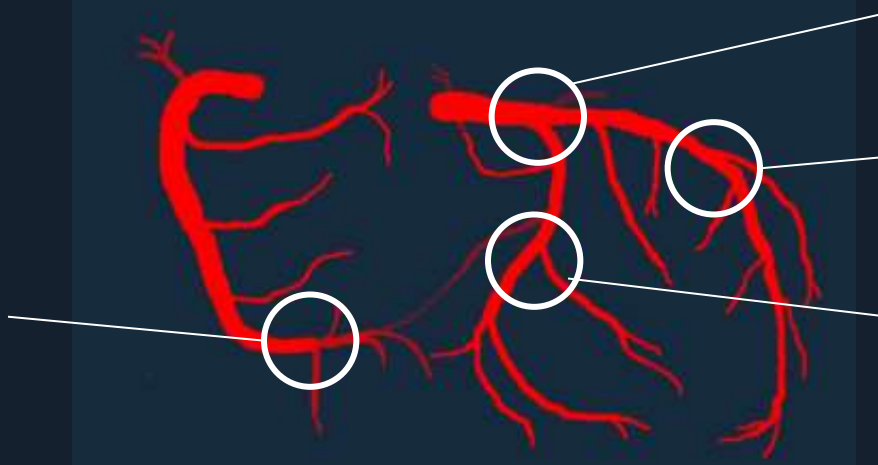


Bifurcations  
**GHOST-EU**

# Lesion characteristics



**Distal RCA**  
5.6%

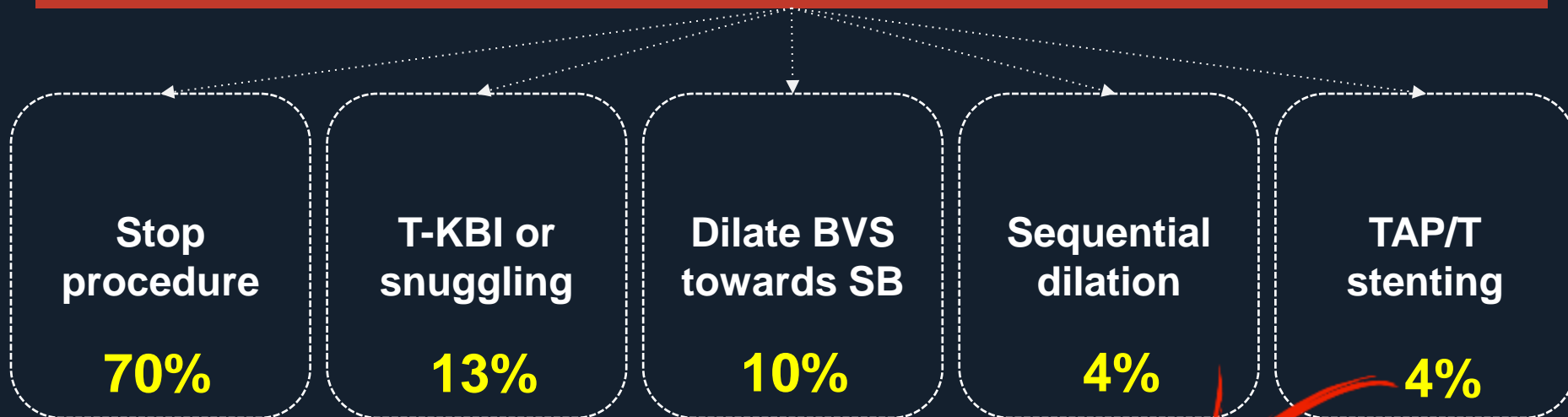


**Distal left main**  
5.0%

**LAD/Diagonal**  
69.5%

**LCX/Marginal**  
19.9%

## Provisional single stenting (N=260)



A second BVS was implanted in 4 (1.5%), a DES in 6 (2.3%) followed by T-KBI (N=4), dilation of BVS towards SB (N=1), sequential dilation (N=2)

## Systematic double stenting (N=42)

BVS on both MB and SB  
(N=34, **81%**)

BVS on MB and DES on SB  
(N=8, **19%**)

T-KBI or  
snuggling

**48%**

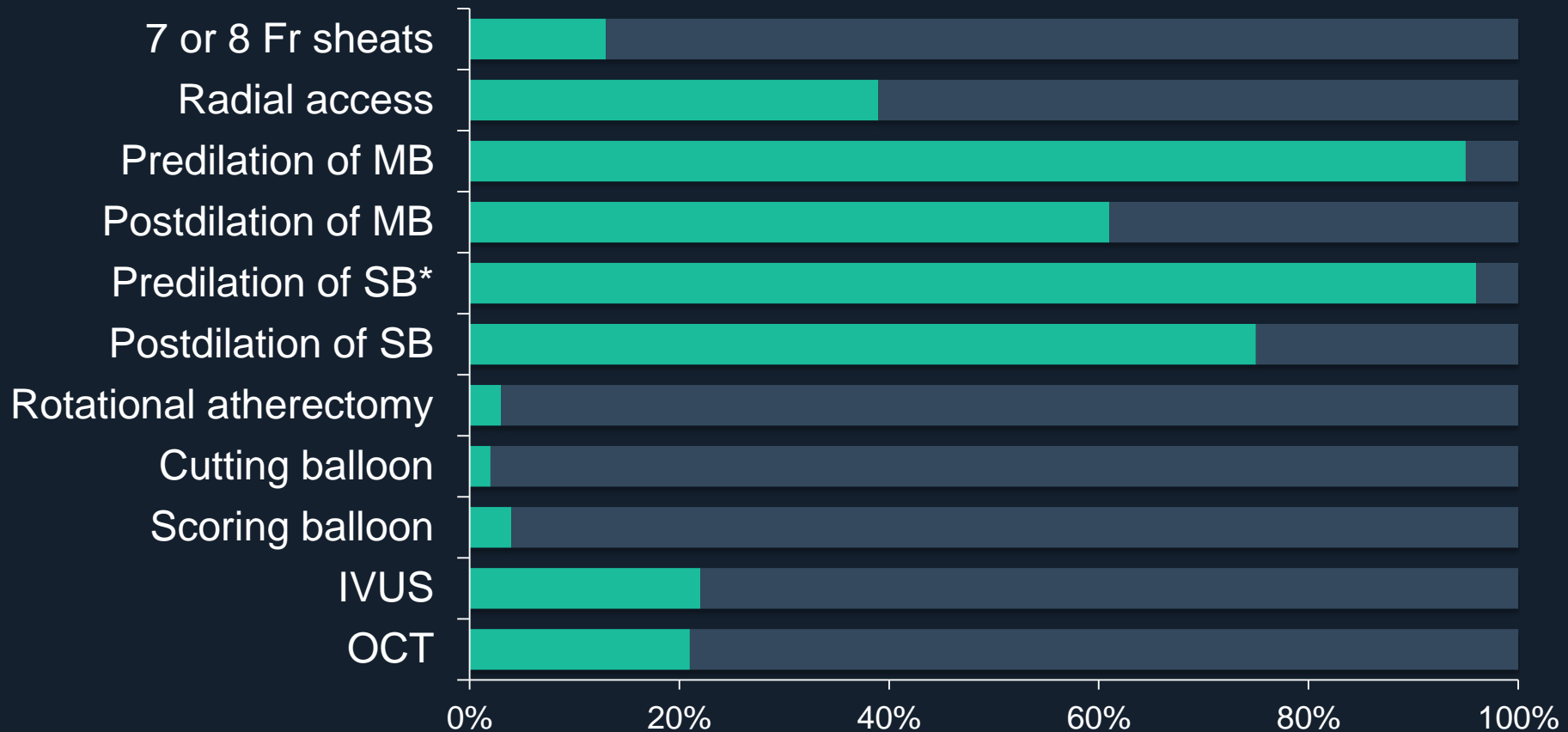
Stop  
procedure

**45%**

Sequential  
dilation

**7%**

# Procedural details



\*Denominator (N=52) includes 10 provisional T-stenting/TAP + 42 double stenting

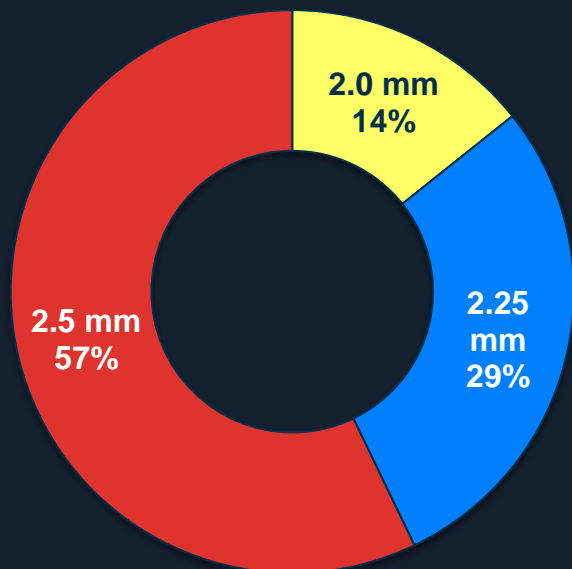




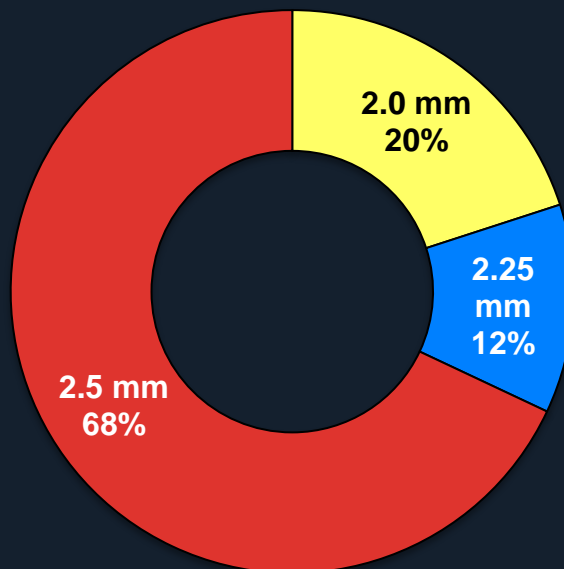
# Procedural details

## Side branch balloon sizes for kissing balloon inflation

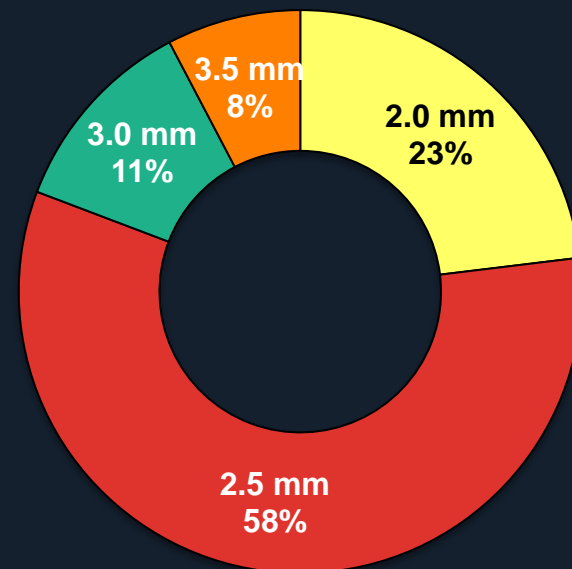
**MB BVS = 2.5 mm**



**MB BVS = 3.0 mm**

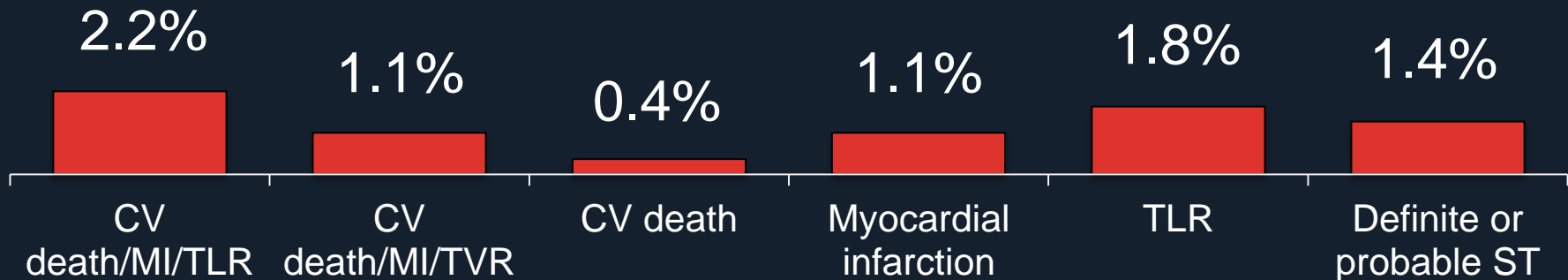


**MB BVS = 3.5 mm**



## 30-day outcomes (KM estimates)

■ 30 days

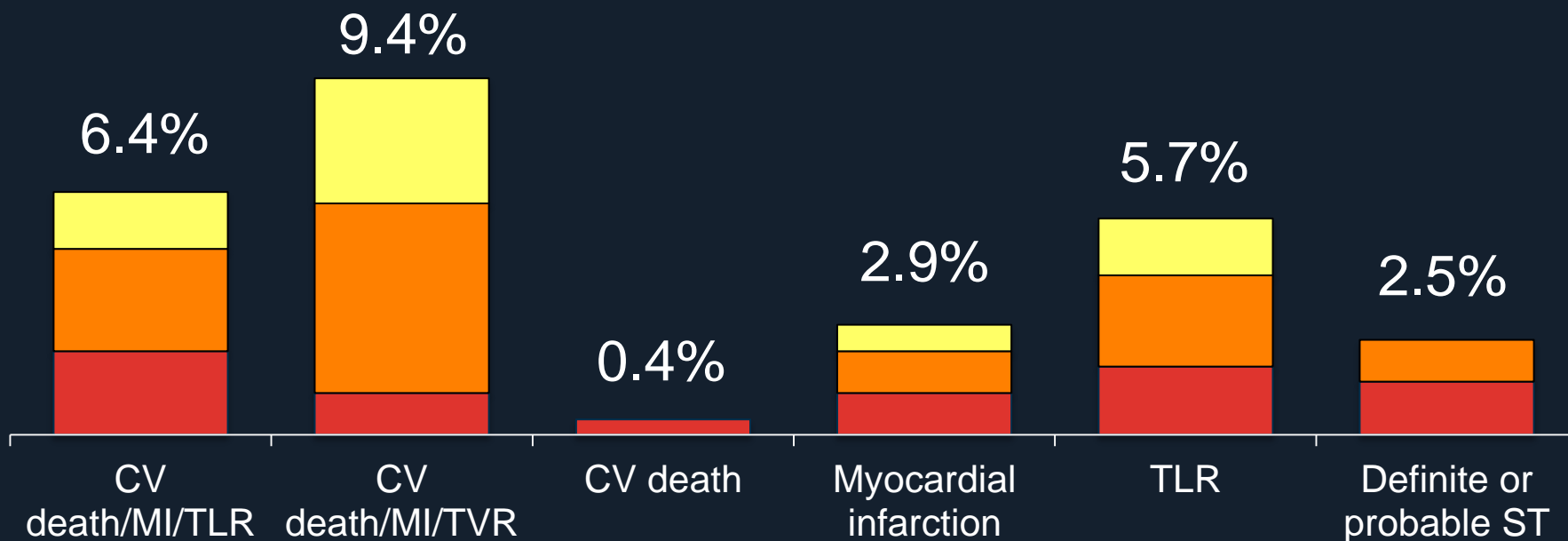




# Clinical outcomes

## 1-year outcomes (KM estimates)

■ 30 days    ■ 30 days - 6 months    ■ 6 months - 12 months



# Bifurcations GHOST-EU

## Scaffold thrombosis

Case	DM	ACS	Medina	Technique	MB post-dilation	KBI	OCT and/or IVUS	P2Y <sub>12</sub> inhibitor	On DAPT
1	No	No	0,1,0	Single	No	No	No	Clopidogrel	Yes
2	No	Yes	1,0,0	Single	No	No	Yes	Clopidogrel	Yes
3	No	Yes	1,1,1	Single	No	No	No	Ticagrelor	Yes
4	Yes	Yes	1,1,0	Single	No	No	No	Clopidogrel	Yes
5	No	Yes	1,1,1	Double	Yes	No	No	Clopidogrel	No
6	No	Yes	1,1,0	Single	No	No	No	Clopidogrel	Yes
7	Yes	Yes	1,1,0	Single	No	No	No	Clopidogrel	Yes
8	Yes	Yes	0,0,1	Single	No	Yes	No	Prasugrel	Yes

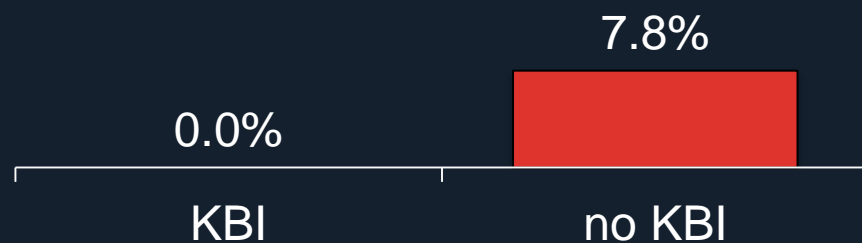
Unfavorable characteristics are shown in red.

# Subsets of interest

## 1-year CV death, MI or TLR

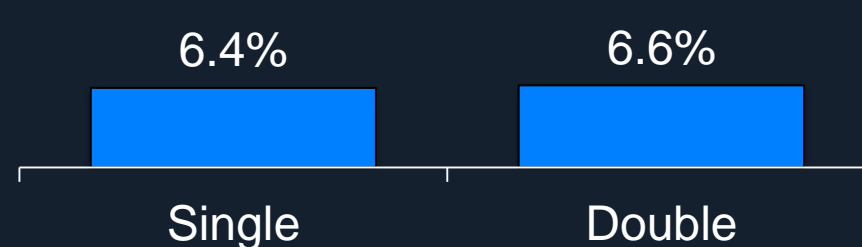
### Kissing balloon Yes/No

P=0.18



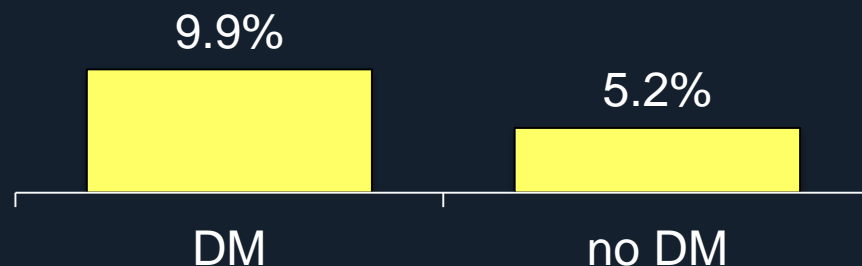
### Technique

P=0.56



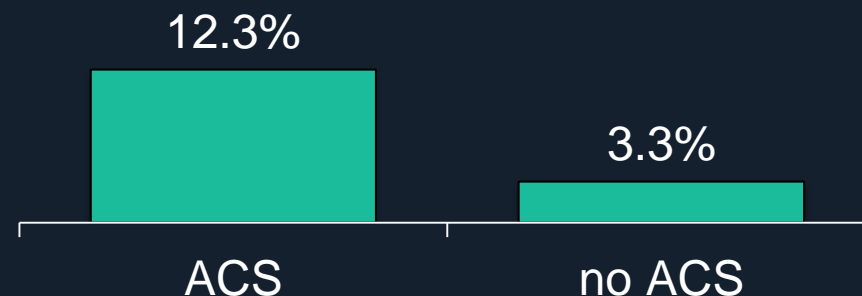
### Diabetes Yes/No

P=0.026



### ACS Yes/No

P=0.004





# Predictors of TLF

	Univariate		Multivariate	
	HR (95% CI)	P value	HR (95% CI)	P value
Age	1.00 (0.96-10.4)	0.91	-	-
Male	0.95 (0.32-2.84)	0.93	-	-
Current smoker	1.42 (0.55-3.71)	0.47	-	-
Diabetes mellitus	<b>2.73 (13-6.61)</b>	<b>0.03</b>	<b>3.37 (1.38-8.26)</b>	<b>0.008</b>
Hypertension	7.13 (0.95-53.3)	0.06	-	-
Previous PCI	0.42 (0.14-1.27)	0.13	-	-
Renal disease	0.59 (0.13-2.67)	0.49	-	-
LVEF	1.01 (0.95-1.08)	0.74	-	-
ACS	<b>3.91 (1.55-9.86)</b>	<b>0.004</b>	<b>4.67 (1.78-12.3)</b>	<b>0.002</b>
ISR	2.14 (0.49-9.29)	0.31	-	-
CTO	0.62 (0.08-4.65)	0.64	-	-
IVUS	0.59 (0.19-1.79)	0.35	-	-
OCT	2.19 (0.86-5.60)	0.10	-	-
MB predilation	<b>0.20 (0.06-0.71)</b>	<b>0.012</b>	-	-
MB Postdilation	0.54 (0.21-1.35)	0.19	-	-
Prasugrel or Ticagrelor use	1.83 (0.72-4.65)	0.20	-	-
True bifurcation	0.65 (0.26-1.62)	0.35	-	-
Double stenting	0.65 (0.15-2.80)	0.56	-	-
Kissing balloon inflation	0.25 (0.03-1.88)	0.18	-	-
Sequential dilation/SB fenestration	1.55 (0.52-4.64)	0.44	-	-



# What did we learn?

## Inference and speculations based on data from an initial European multicenter experience with the Absorb BVS

1. Provisional stenting remains the default strategy in bifurcations treated with BVS.
2. SB fenestration and T-FKI with no or minimal protrusion of the SB balloon can be performed at low pressure if necessary.
3. TAP is advisable for bailout SB stenting (easier with DES).
4. T stenting, when feasible, should be the preferred technique for elective double stenting.



## What did we learn?

### Inference and speculations based on data from an initial European multicenter experience with the Absorb BVS

5. A hybrid double-stenting strategy (BVS-MB and DES-SB) may be preferable to a two BVS strategy in case of true bifurcations with small SB and narrow bifurcation angle.
6. Intracoronary imaging is advisable, particularly in complex procedures with double stenting.
7. Scaffold optimization and effective antithrombotic therapy are essential.
8. BVS might not be the best option in patients with bifurcation lesions and concurrent ACS and/or diabetes.