

Optimal Treatment of Distal Left Main Stem Lesions in 2010

Andreas Baumbach, MD
Bristol, UK



University Hospitals Bristol 
NHS Foundation Trust

Conflicts of Interest

Speakers fees and Advisory Board

- Boston Scientific, Medtronic, Eli Lilly

Guidelines for PCI 2010

European Heart Journal (2005) 26, 804–847
doi:10.1093/eurheartj/ehi138



ESC Guidelines

2005

Guidelines for Percutaneous Coronary Interventions
The Task Force for Percutaneous Coronary Interventions
of the European Society of Cardiology

The presence of a left main (LM) coronary artery stenosis identifies an anatomic subset still requiring bypass surgery for revascularization

Stenting for Left Main Stem stenosis should only be considered in absence of other revascularisation options



FOCUSED UPDATE

2009 Focused Updates: ACC/AHA Guidelines for the Management of Patients With ST-Elevation Myocardial Infarction (Updating the 2004 Guideline and 2007 Focused Update) and ACC/AHA/SCAI Guidelines on Percutaneous Coronary Intervention (Updating the 2005 Guideline and 2007 Focused Update)

PCI of the left main coronary artery with stents as an alternative to CABG may be considered in patients with anatomic conditions that are associated with a low risk of PCI procedural complications and clinical conditions that predict an increased risk of adverse surgical outcome.

(Level of Evidence: B)



GUIDELINES

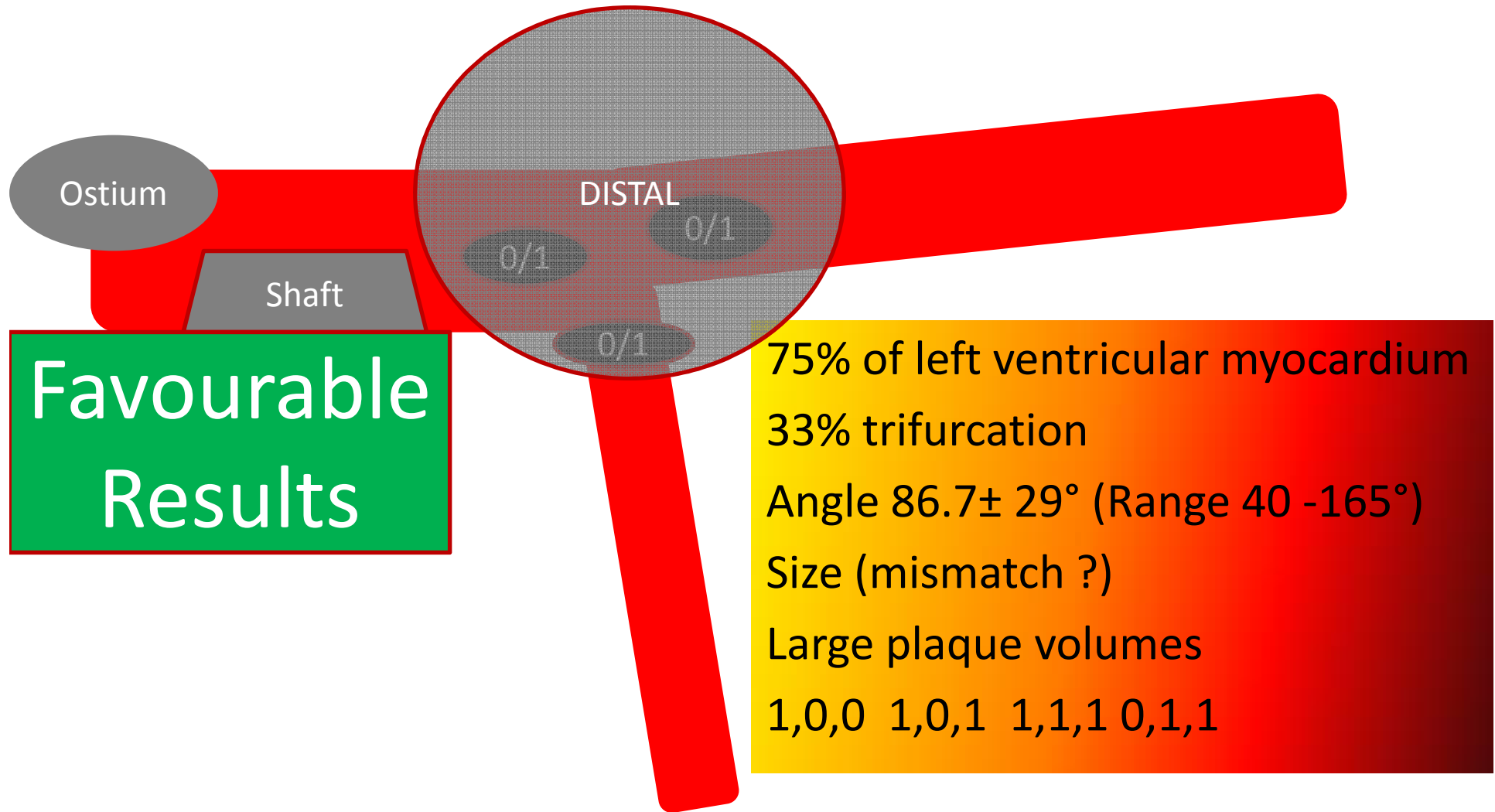
- Recent data not considered
- No consideration of anatomical subsets

Contemporary Reviews in Interventional Cardiology

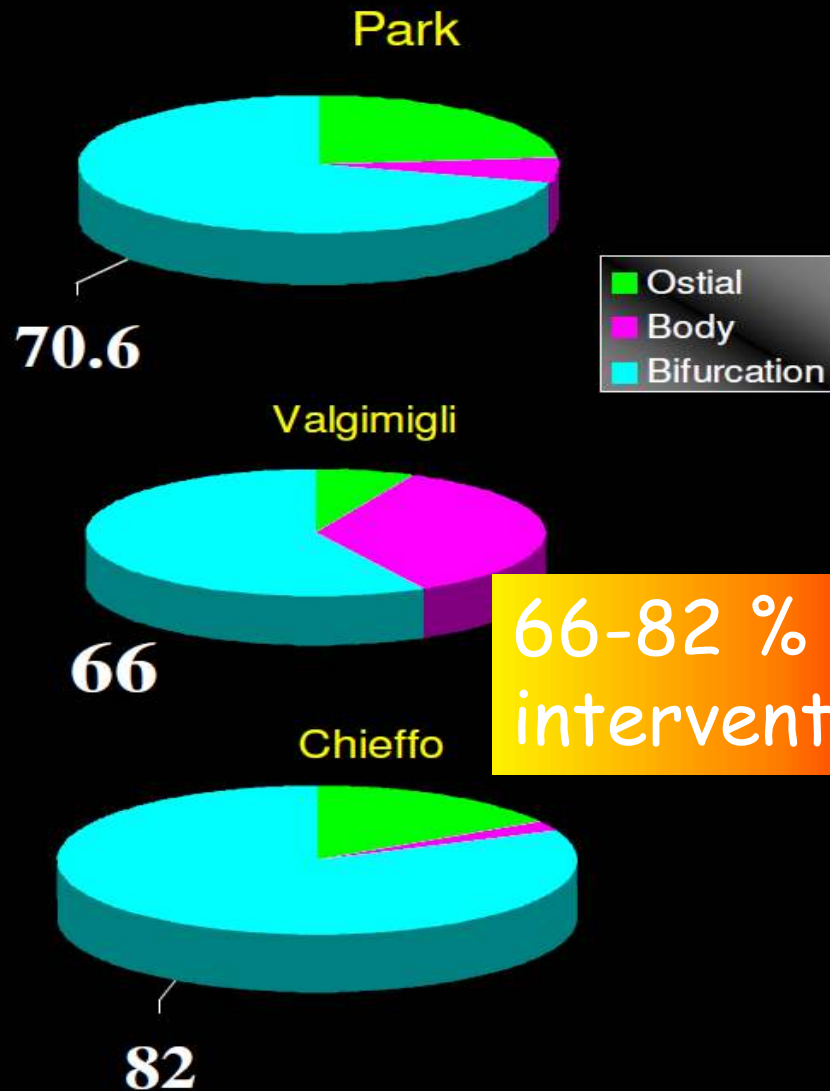
Percutaneous Coronary Intervention With Stent Implantation Versus Coronary Artery Bypass Surgery for Treatment of Left Main Coronary Artery Disease Is It Time to Change Guidelines?

Seung-Jung Park, MD, PhD; Duk-Woo Park, MD, PhD

The Distal Left Main Stem



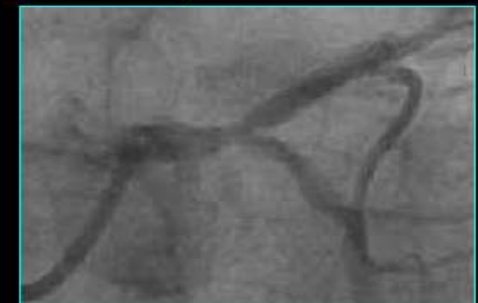
Distal Left Main Involvement



Park JACC 2005;45:351

Chieffo A, Circ 2005;111:791

Valgimigli M. Circ 2005;111:1383

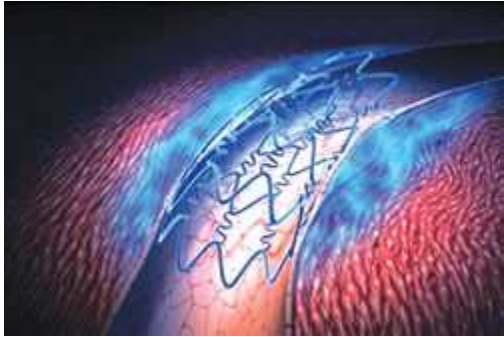


66-82 % of interventions !

Outcomes in Distal LMS 2006

Is this still true in
2010 ?





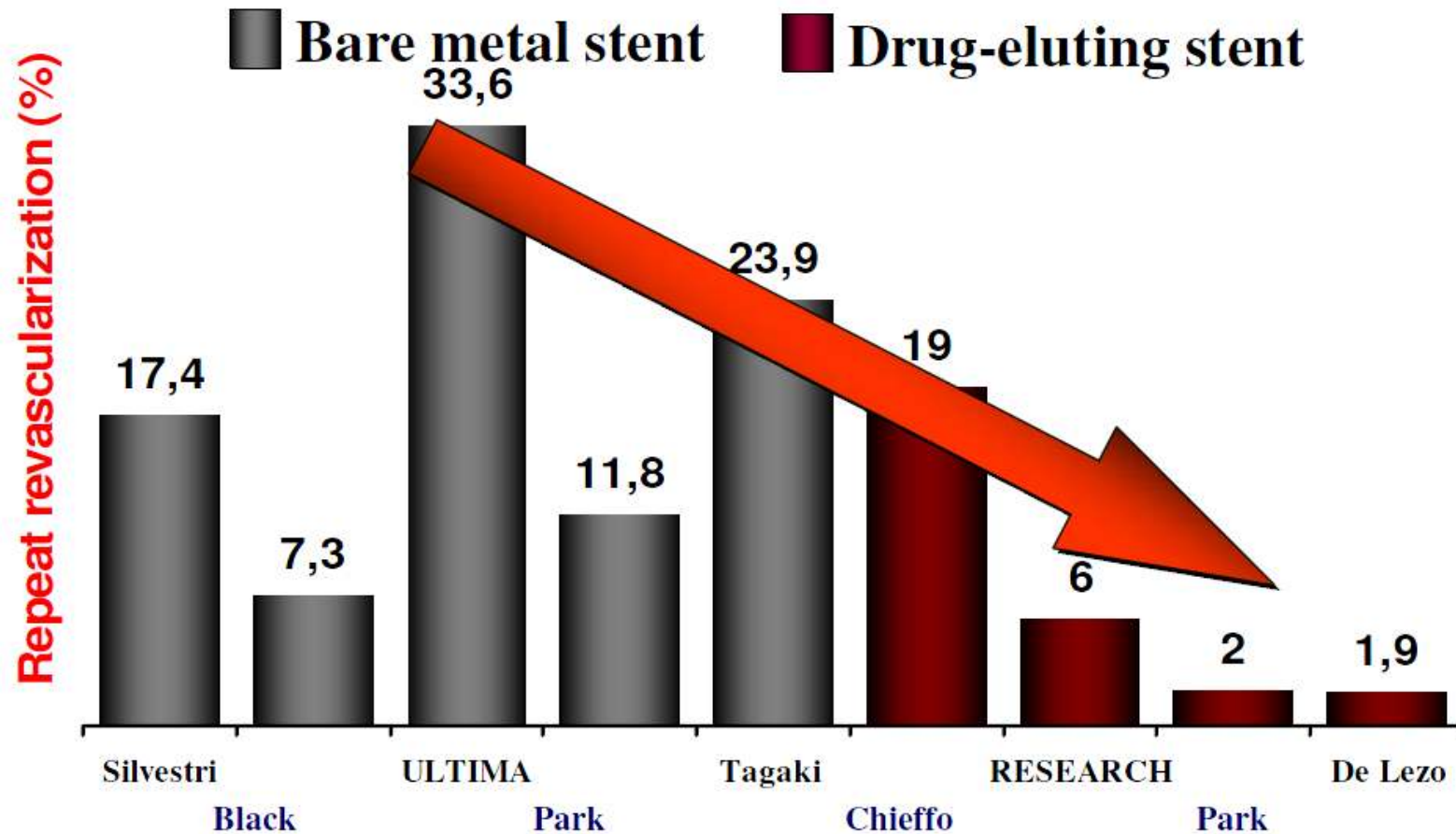
- Safety
- Longterm outcome
- Results in the distal left main stem ?

Optimal Treatment of distal Left Main 2010

DES VS BMS

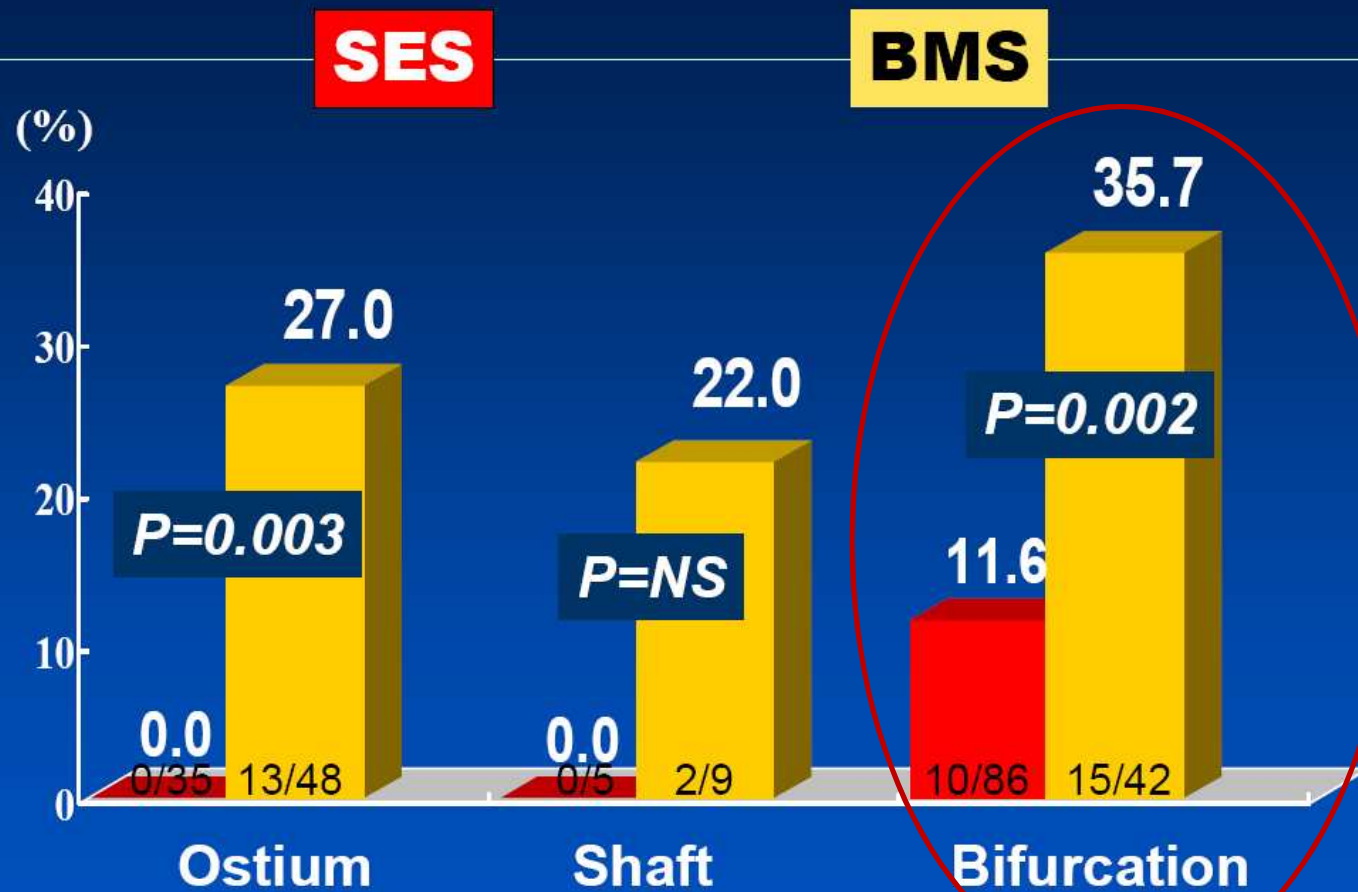
Significant Reduction of TLR with DES

Unprotected Left main stenting



DES vs. BMS in Distal LMS

Overall Restenosis Rate : 7.9 %



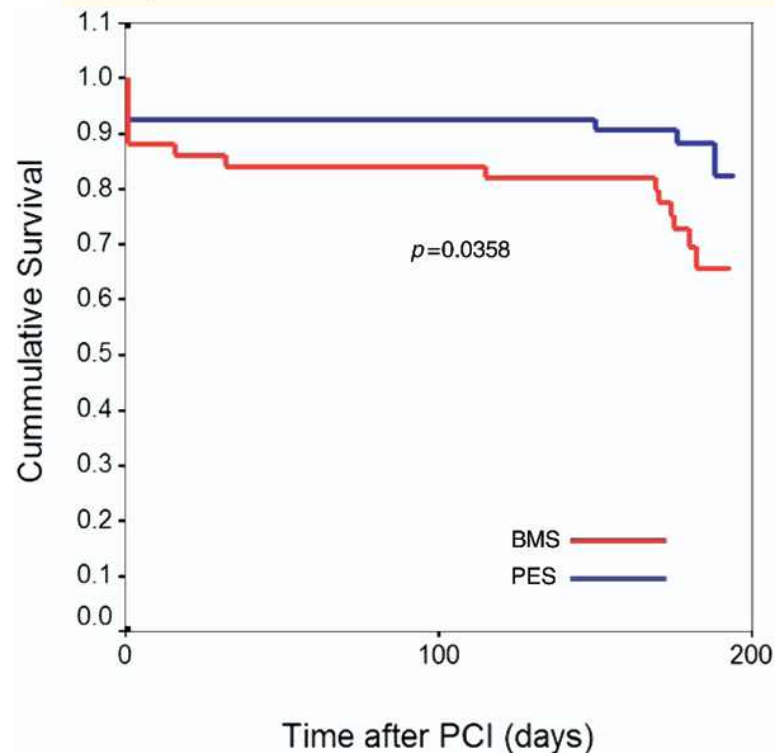
CLINICAL RESEARCH

Clinical Trials

A Randomized Comparison of Paclitaxel-Eluting Stents Versus Bare-Metal Stents for Treatment of Unprotected Left Main Coronary Artery Stenosis

Andrejs Erglis, MD, PhD, FESC, FACC,* Inga Narbute, MD,* Indulis Kumsars, MD,*
Sanda Jegere, MD,* Iveta Mintale, MD,* Ilja Zakke, MD, FESC,* Uldis Strazdins, MD,*
Andris Saltups, MD, FACC, FRACP, MRACP†

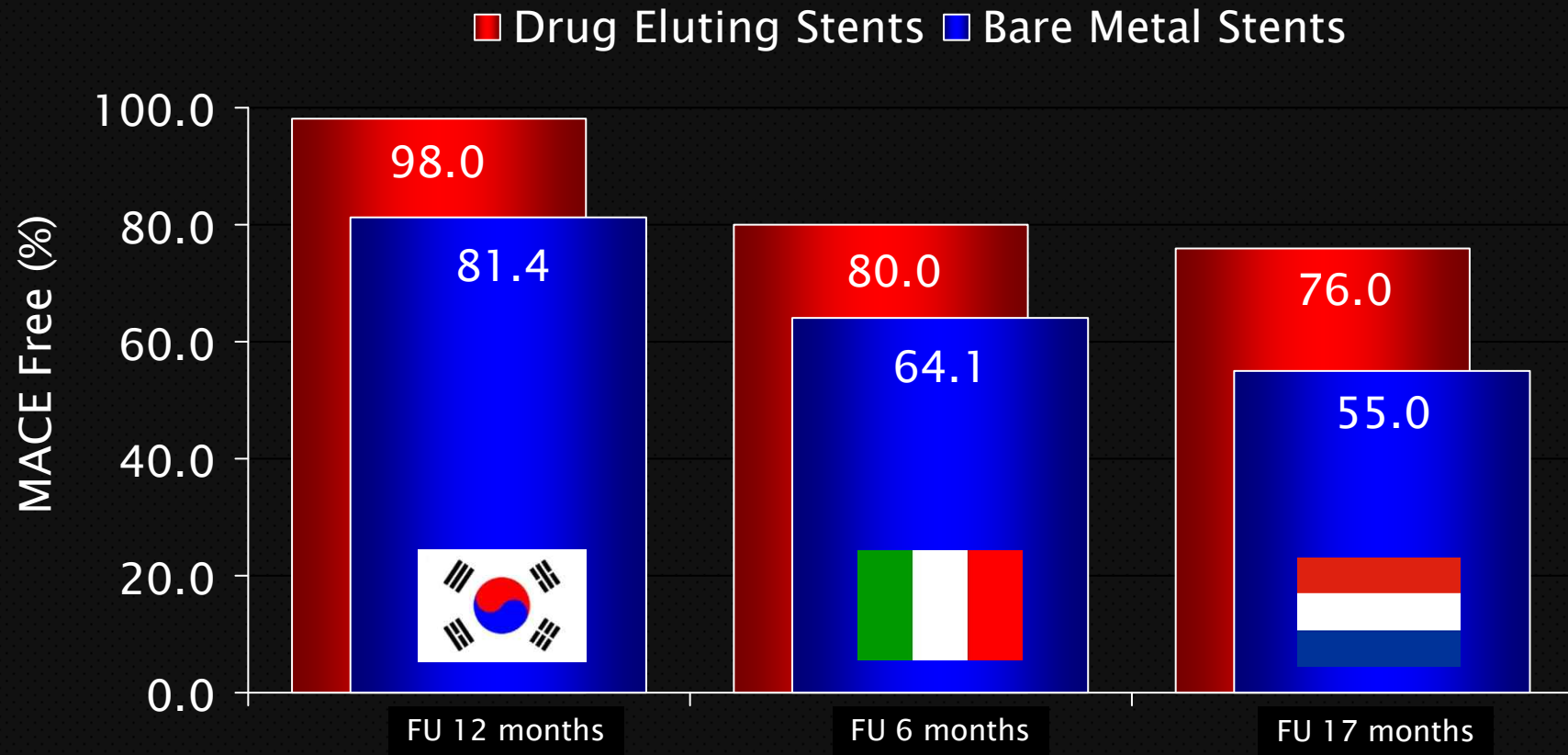
Riga, Latvia; and Melbourne, Australia



N: 103
Distal Left Main 68 / 82 %
IVUS guided
Provisional T

DES better than BMS

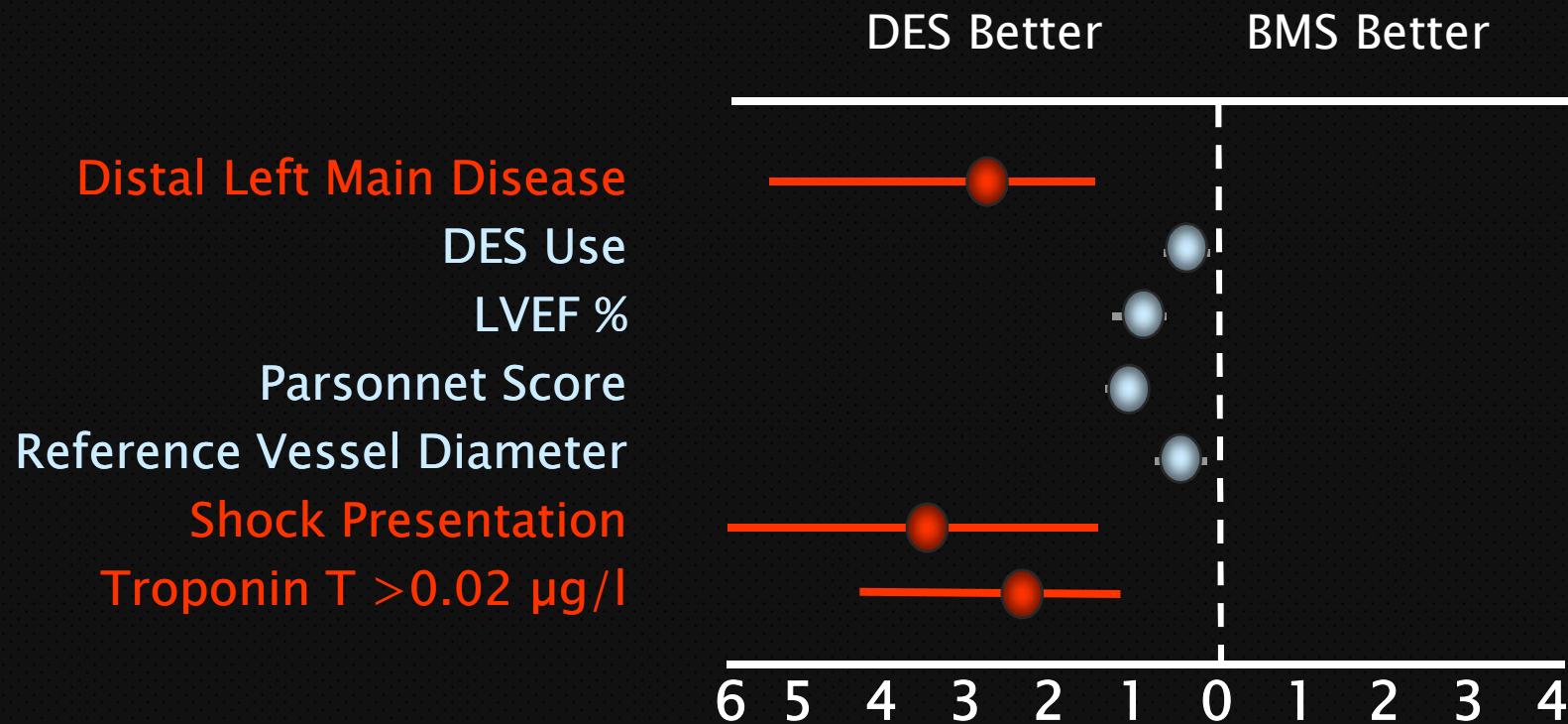
Left Main: Major Adverse Cardiac Events



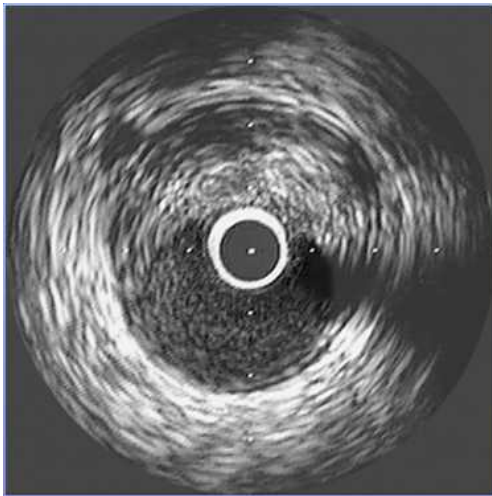
DES better than
BMS

Park S-J. J Am Coll Cardiol 2005;45:351-356
Valgimigli M. Circ 2005;111:1383-1389
Chieffo. Circ 2005;111:791-795

Multivariate Predictors



DES better than BMS in
Distal Left Main



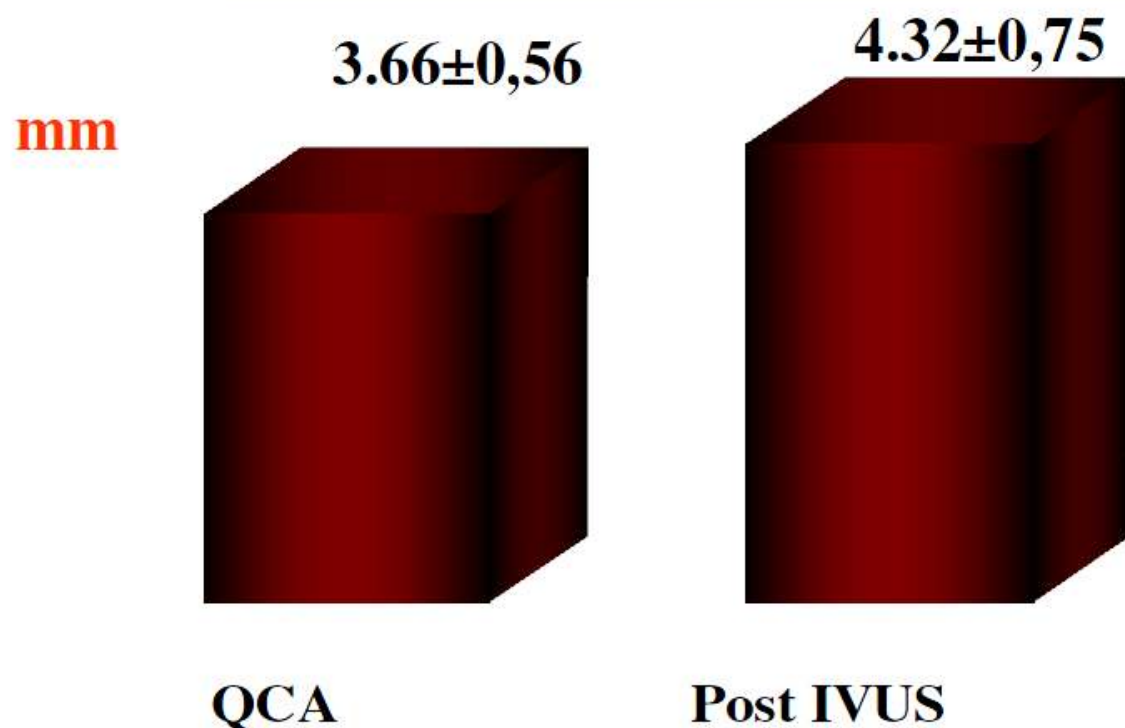
Plaque burden and calcium
Side branch involvement
Assessment of procedural result
Postdilatation

Optimal Treatment of Distal LMS in 2010

IVUS GUIDANCE

Role of IVUS for LM Stenting

Balloon size QCA vs IVUS



IVUS led to bigger balloon size in 67% of cases

Elective Stenting of Unprotected Left Main Coronary Artery Stenosis

Effect of Debulking Before Stenting and Intravascular Ultrasound Guidance

Seung-Jung Park, MD, PhD, FACC,* Myeong-Ki Hong, MD, PhD,* Cheol Whan Lee, MD, PhD,*
Jae-Joong Kim, MD, PhD,* Jae-Kwan Song, MD, PhD, FACC,* Duk-Hyun Kang, MD, PhD,*
Seong-Wook Park, MD, PhD, FACC,* Gary S. Mintz, MD, FACC†

Seoul, Korea and New York, New York

‘The post-stenting MLD was significantly larger
in the IVUS guided group in this study.
However, the angiographic restenosis rate was
not different between the IVUS-guided and
angiography-guided procedures’

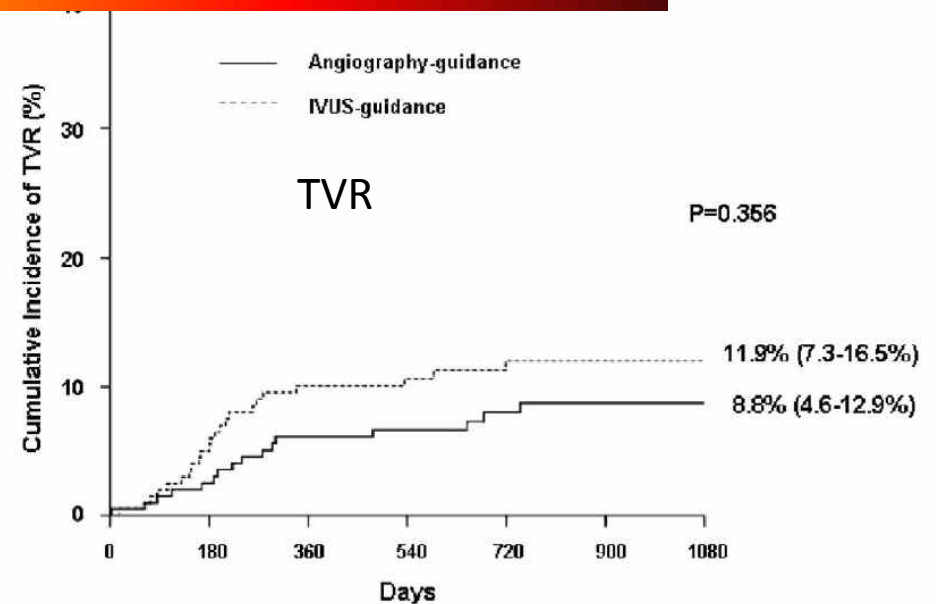
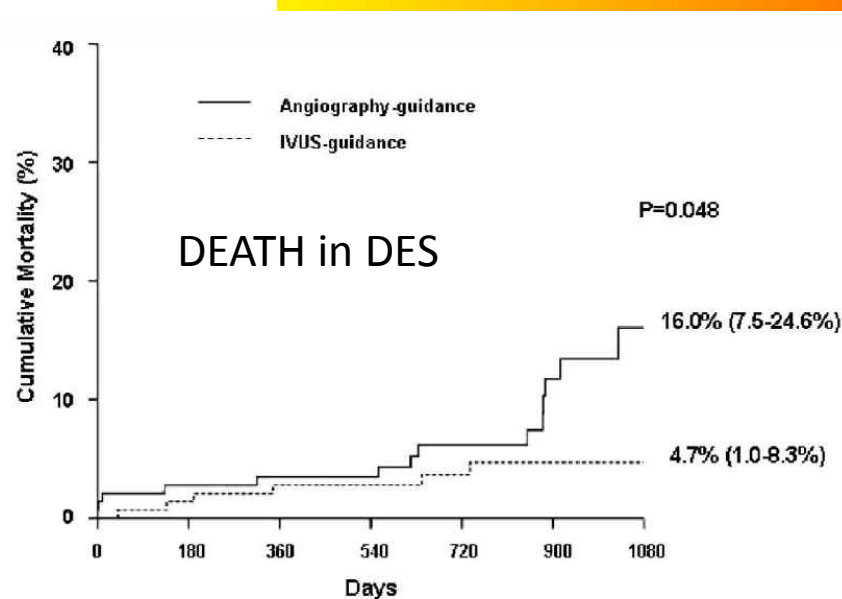
Impact of Intravascular Ultrasound Guidance on Long-Term Mortality in Stenting for Unprotected Left Main Coronary Artery Stenosis

Seung-Jung Park, MD, PhD*; Young-Hak Kim, MD, PhD*; Duk-Woo Park, MD, PhD; Seung-Wan Cho, MD, PhD; Seung-Won Choi, MD, PhD; Cheol Eun Baik, MD, PhD

N:756 IVUS/ 219 non-IVUS

No significant overall benefit !

Late mortality reduced in DES subgroup





High Jeopardy Score
Cases with RCA occlusion
Reduced LV function
Immediate hemodynamic compromise

Optimal Treatment of Distal Left Main in 2010

CIRCULATORY SUPPORT

Elective vs provisional IABP

N: 219 (1993-2006)

Non randomised

Choice of strategy according to risk score

Severe hemodynamic compromise 8% vs 0%
favouring the elective strategy

BCIS-1



$LVEF \leq 30\%$
 $BCIS-1$ Jeopardy Score ≥ 8



Randomize

***Elective IABP
Insertion***



***No Planned
IABP***

PCI

*Remove IABP 4-24 hrs
after PCI*

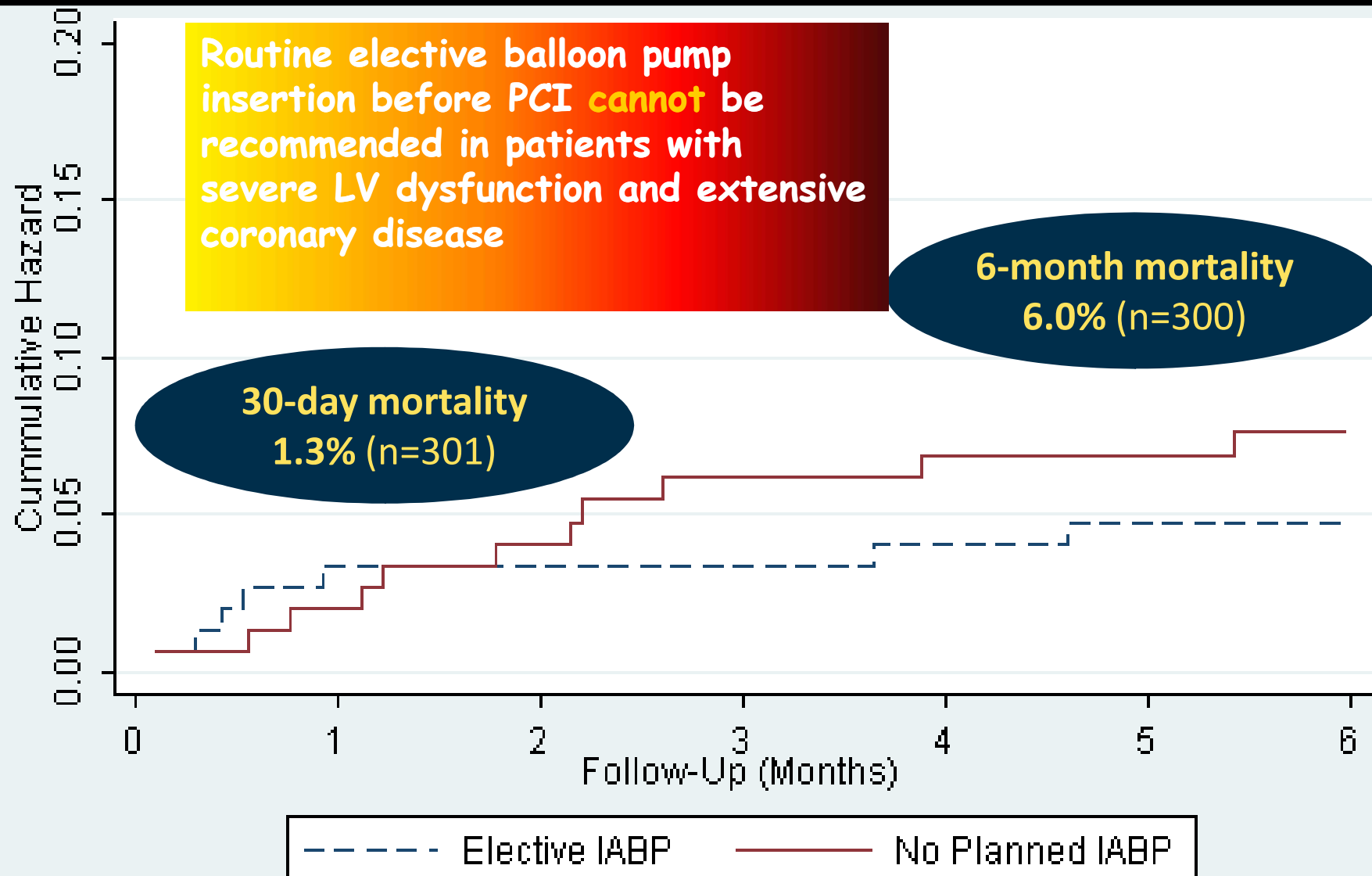


Hospital Follow-up
To discharge or 28 days



6 month follow-up
ONS / GROS

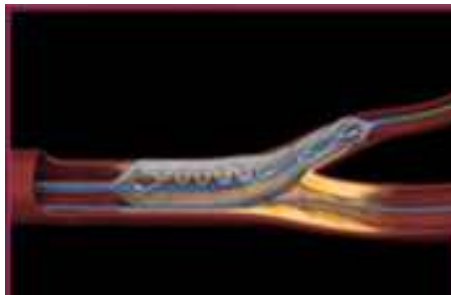
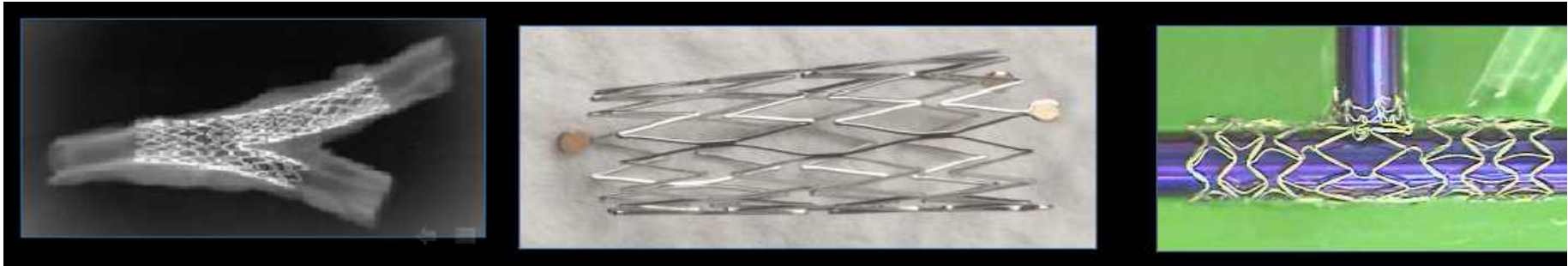
Secondary Outcome: 6 month Mortality



Intention	M	A	D	S
Final	Main prox. first	Main Across side first	Distal first	Side branch first
1 st stent	 PM stenting	 MB stenting across SB	 DM stenting	 SB ostial stenting
After balloon	 Skirt	 MB stenting + SB balloon	 MB stenting + kissing	 SB minicrush
2 stents	 Skirt + DM	 Elective T stenting	 V stenting	 Syst. T Stenting
3 stents	 Extended V	 Culotte	 Trouser legs and seat	 Crush

Optimal Treatment of distal Left Main 2010

TECHNIQUE



Optimal Treatment of distal Left Main 2010

DEDICATED BIFURCATION SYSTEMS

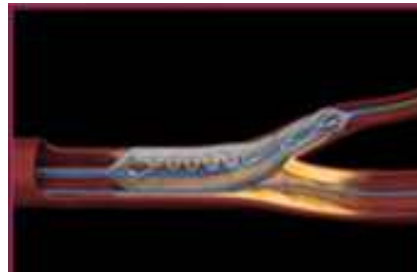
Published Literature for LMS

PETAL: 0



AXXES: 26 cases*

TRYTON: 1 case**



Conceptually interesting.
No data to support use of these devices

*Hasegawa T et al, Catheter Cardiovasc Interv 2009; 1: 34

** Pasceri V et al. J Cardiovasc Med 2010 (Epub)

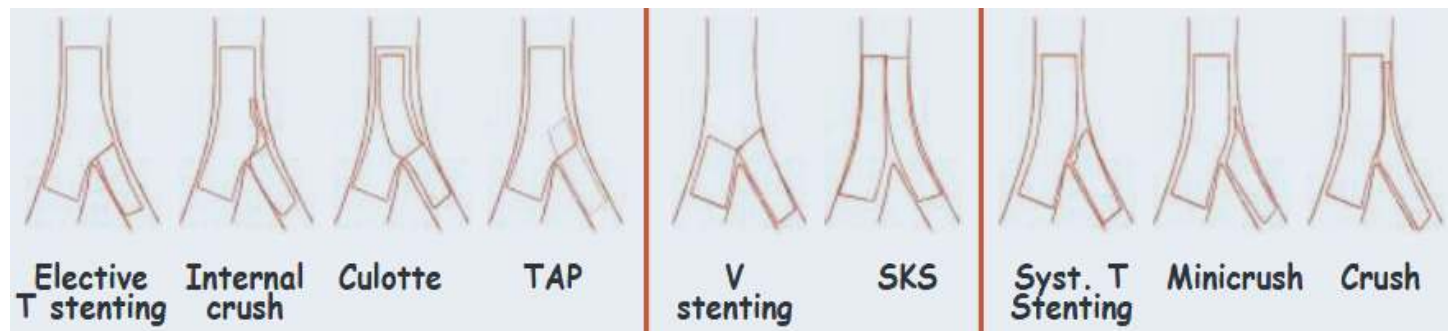
One Stent vs Two Stents

Provisional T stenting



+/- Kiss

T-Stent
Culotte
Crush



Comparison 1 stent vs 2 stents

Impact of Bifurcation Technique on 2-Year Clinical Outcomes in 773 Patients With Distal Unprotected Left Main Coronary Artery Stenosis Treated With Drug-Eluting Stents

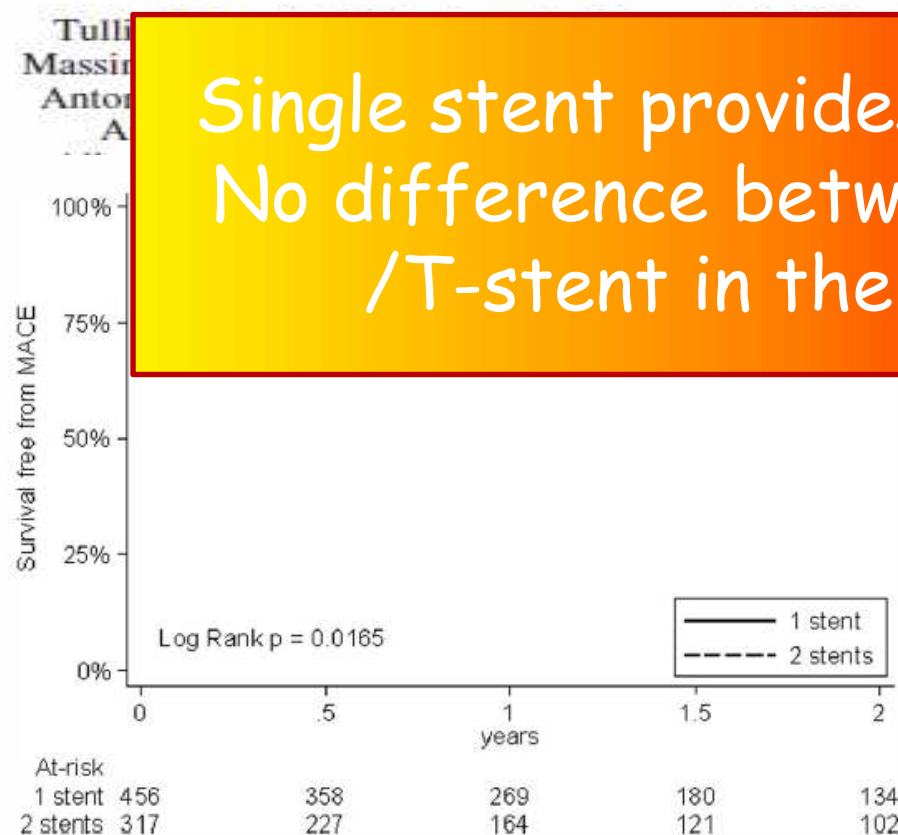


Figure 1. Kaplan–Meier analysis of survival free from MACE in patients treated with 1 stent compared with patients treated with 2 stents.

N: 773

Non randomised registry of LMS procedures

Group1: single stent (456)

Group 2: two stents (317)

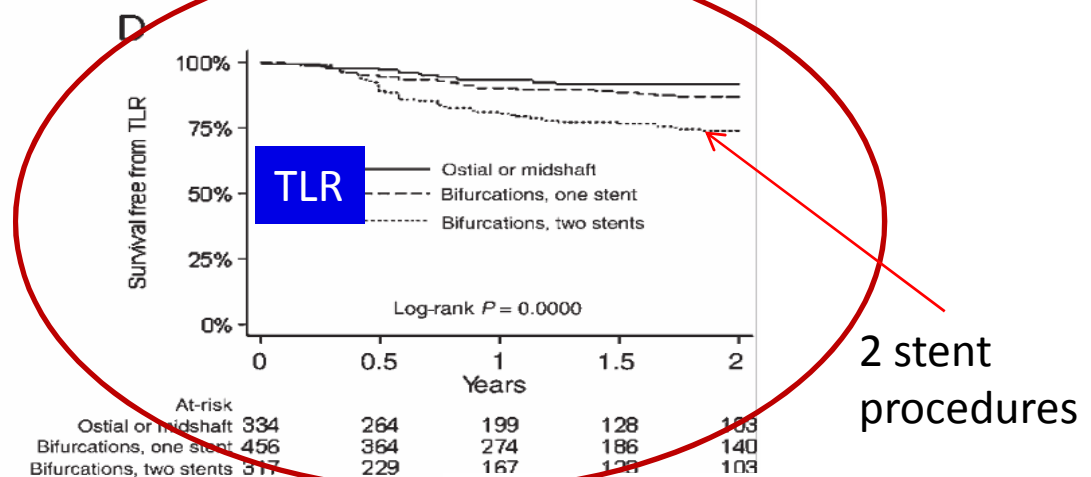
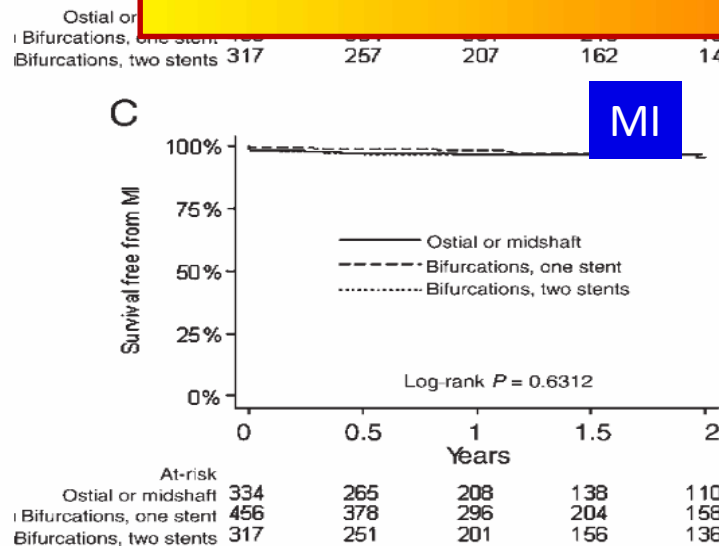
Distal LMS and Stent Strategy

Italian Registry: N:1111

777 bifurcations/ 334 non-bifurcation

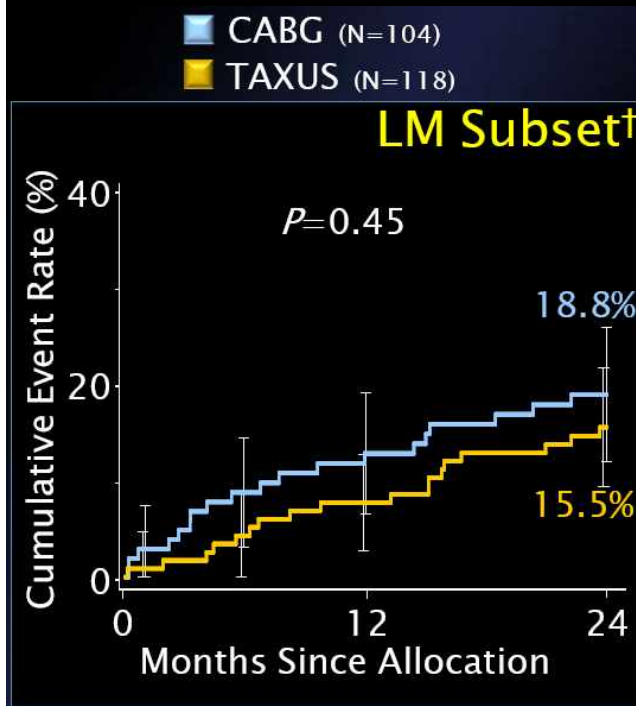
No difference between ostial/shaft and bifurcations treated with one stent

Increased TLR in 2stent procedures

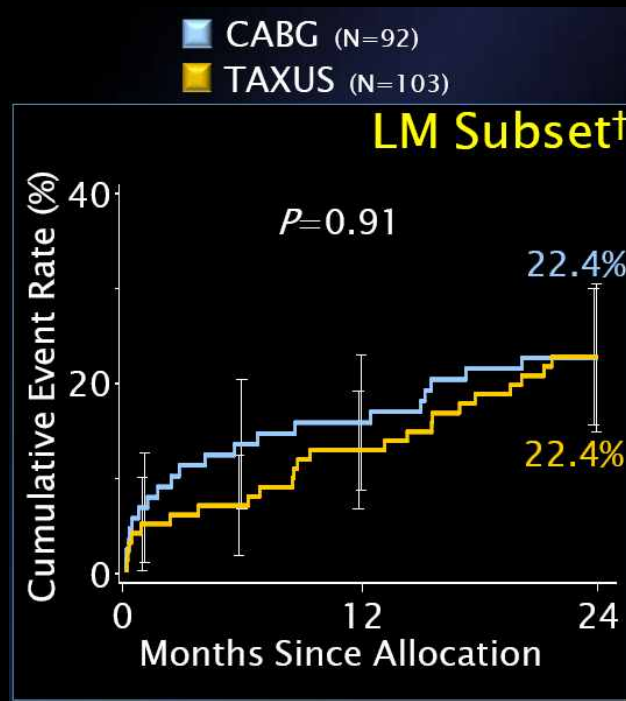


SYNTAX Left Main Subset

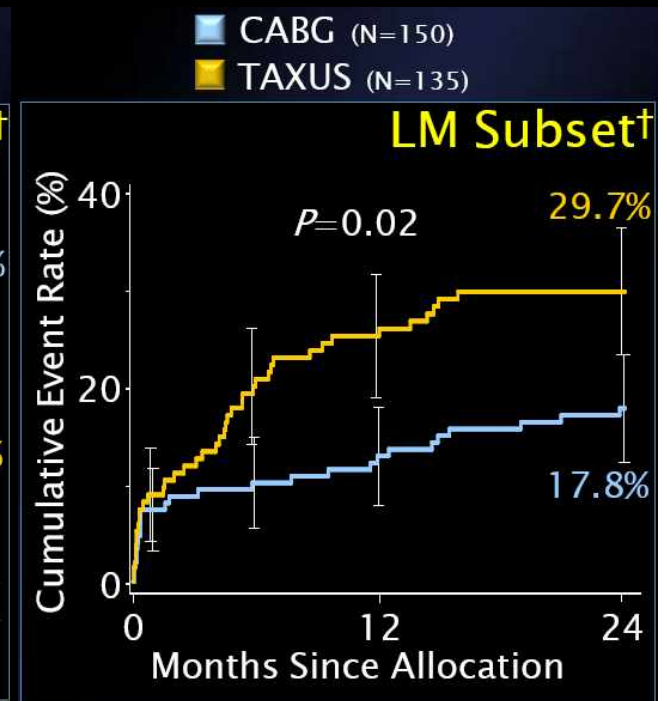
2 Year MACE According to Syntax Score Tertile



0-22



23-32



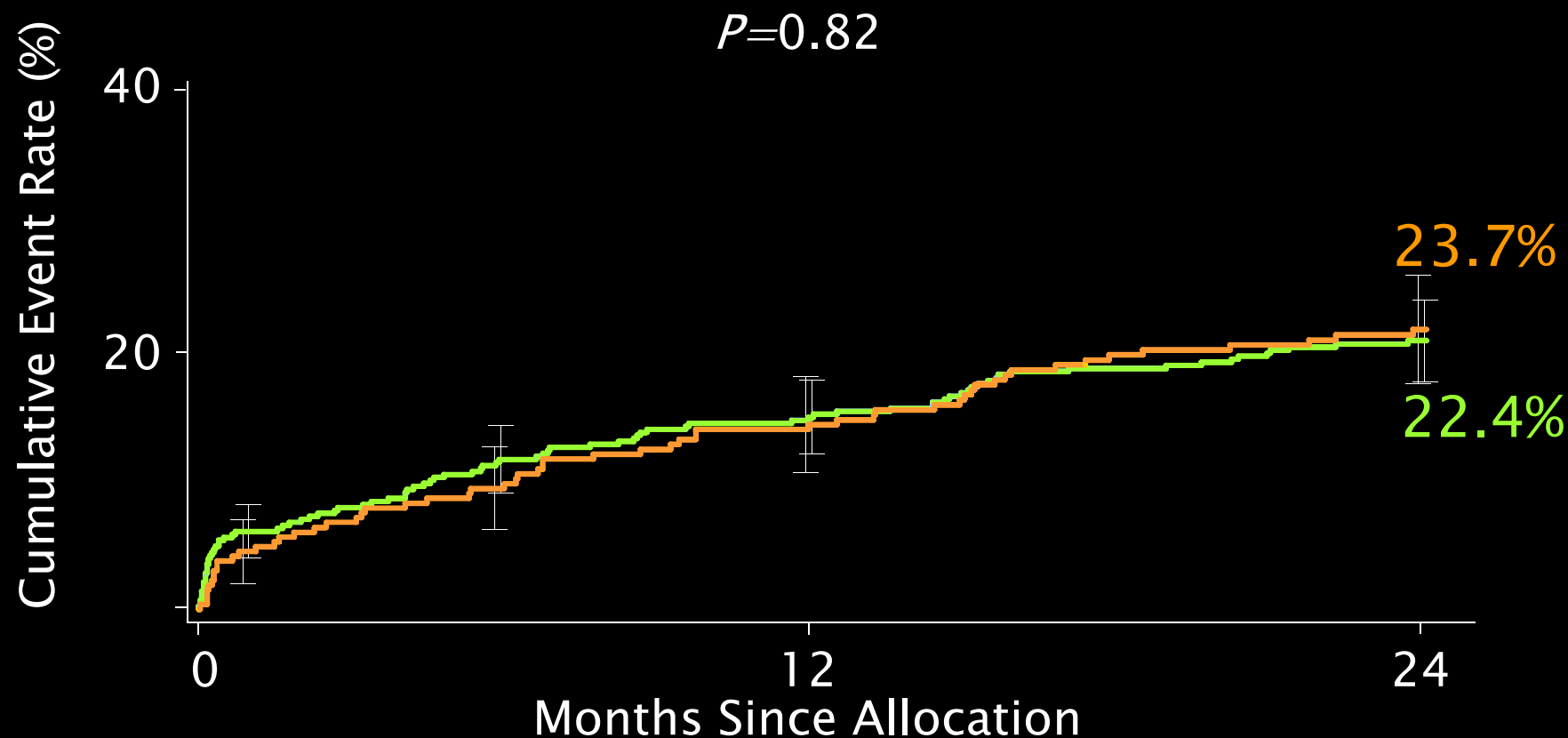
33+

MACCE to 2 Years

LM PCI Subset: Distal vs Non-distal Lesions

SYNTAX[®]

■ Distal (n=229) ■ Non-distal* (n=128)



Event Rate \pm 1.5 SE, log-rank P value
Site-reported data

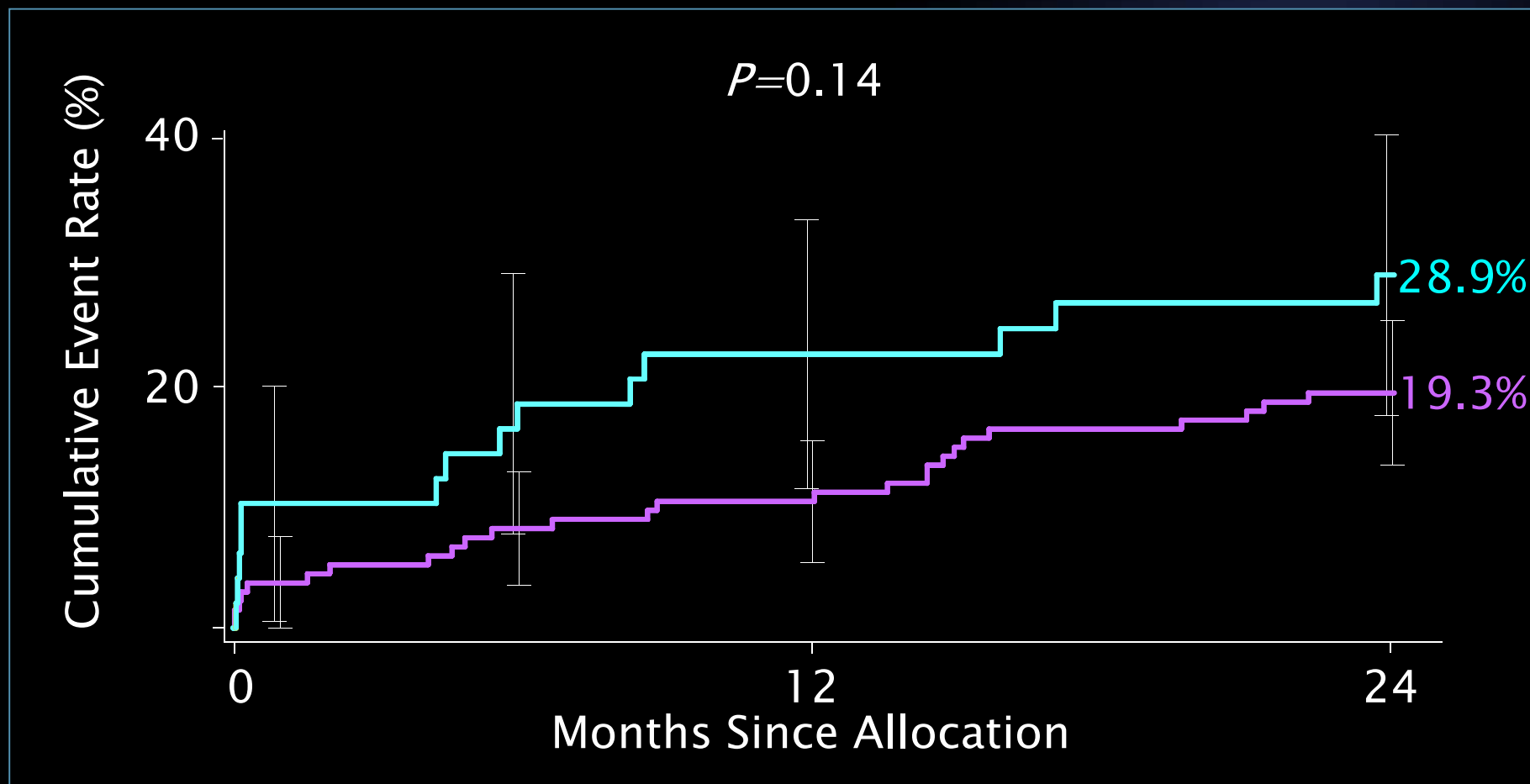
*Includes both aorto-ostial and mid-shaft lesions
Patients with LM, LM+1,2,3VD included
ITT population

MACCE to 2 Years

LM Distal PCI: T-stenting vs Non T-stenting

SYNTAX)

■ T-stenting (n=135) ■ Non T-stenting (n=49)



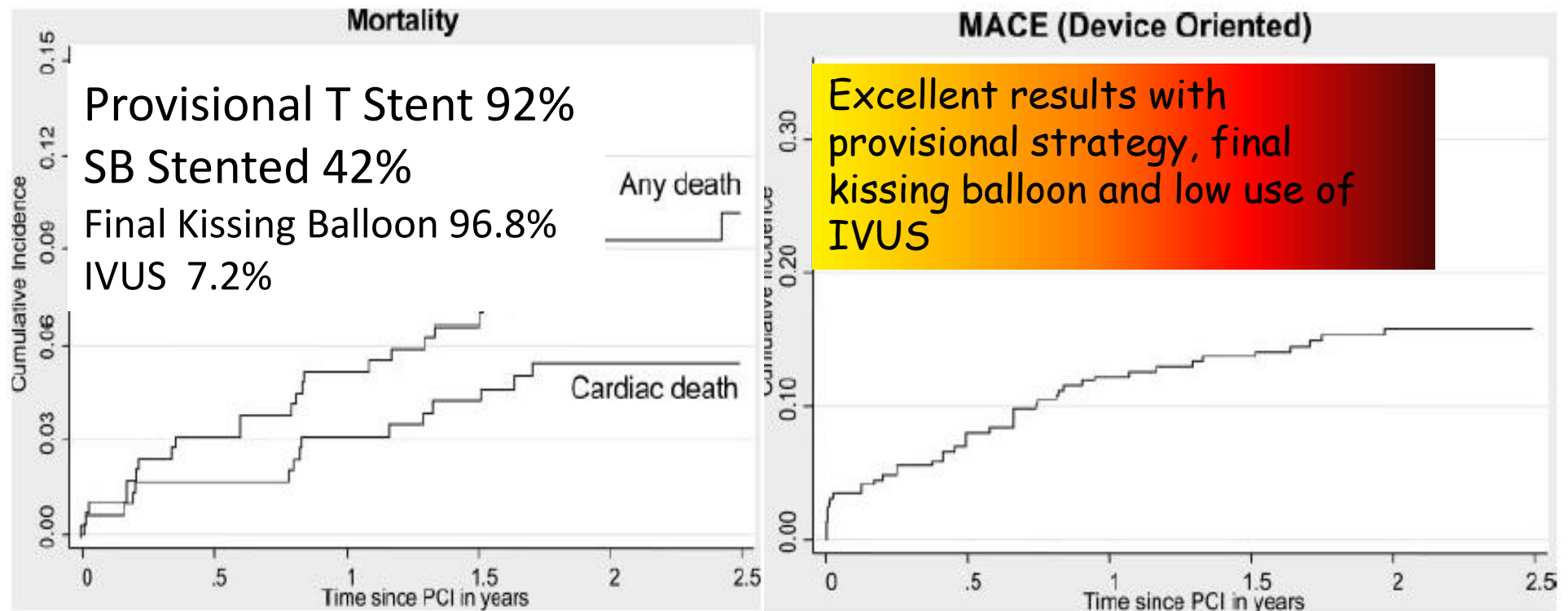
Event Rate \pm 1.5 SE, log-rank P value
Site-reported data

ITT population
Patients with LM, LM+1,2,3VD included

Provisional T Stent Strategy

Unprotected Left Main Stenting in the Real World Two-Year Outcomes of the French Left Main Taxus Registry

Beatriz Vaquerizo, MD; Thierry Lefèvre, MD; Olivier Darremont, MD; Marc Silvestri, MD;
Yves Louvard, MD; Jean Louis Leymarie, MD; Philippe Garot, MD; Helen Routledge, MD;
Federico de Marco, MD; Thierry Untersee, MD; Marcel Zwahlen, PhD; Marie-Claude Morice, MD



SUMMARY

DES provide superior outcomes

IVUS guidance is recommended but not essential

Routine use of IABP support not recommended

Recent trials show improved outcomes for
bifurcation LMS, particularly if treated with a
single stent strategy

Final Kiss ?



It is a matter of technique

(If you have a CRUSH, you must finish with a kiss)

Registry data seem to support general use

In France, they always do it.....