



Chinese Registry of Unprotected Left Main Coronary Artery Stenting - CHANCE Study -



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On behalf of the CHANCE investigators



Background

- **Stenting has been used for treatment of unprotected LMCA stenosis recent years**
- **The immediate outcome is good, particularly in good CABG candidate**
- **The long-term outcomes of stent implantation for unprotected LMCA stenosis are still unclear**
- **The factors affecting the long-term outcome are also not determined**



Objectives

- **To evaluate the immediate and long-term outcomes of stenting for unprotected left main coronary artery stenosis**
- **To approach the factors affecting the outcomes following unprotected LMCA stenting**



Inclusion Criteria

- **Patients with elective stenting of unprotected LMCA stenosis**
- **Follow-up at least 6 months**



Exclusion Criteria

- **Protected LMCA stenosis**
- **Acute myocardial infarction**
- **Bail-out stenting of LMCA due to dissection of ostia of LM induced by catheter or dissection induced by LAD or LCX stenting**



Methods



- **Multicenter Center retrospective registry, 23 hospitals to be involved**
- **From May, 1997 to March, 2003, all patients with elective LMCA stenting were enrolled into the registry**
- **The investigators were requested to fill in CRF for all patients enrolled**



INVESTIGATORS (1)



		Patients
Runlin Gao		
Jilin Chen	Fu Wai Hospital	52
Yaling Han	Northern Hospital, Shenyang	32
Zhanquan Li	Liaoning Provincial People's Hospital	24
Shuzheng Lu	Beijing Anzhen Hospital	21
Xiaoyong Qi	Hebei Provincial People's Hospital	12
Yong Huo	First Hospital, Beijing University	11
Lefeng Wang	Beijing Chaoyang Hospital	10
Junzhu Chen	First affiliated Hospital, Zhejiang University	9
Weifeng Shen	Shanghai Ruijin Hospital	8
Weiyi Fang	First affiliated Hospital, Dalian Medical University	8
Sanqing Jia	Beijing Friendship Hospital	7
Likun Ma	Anhui Province Hospital	5



INVESTIGATORS (2)



		Patients
Jinhua Li	Shanghai Renji Hospital	5
Guishuang Li	Qilu Hospital, Shandong University	4
Luyue Gai	PLA General Hospital	3
Yong Xia	Xuzhou Medical College Hospital	3
Fujun Yu	PLA Baheun International Peace Hospital	3
Feng Xu	Beijing Hospital	2
Yan Wang	Xiamen Zhongshan Hospital	1
Zhenguo Ji	Third Hospital, Shijiazhuang	1
Guizhou Tao	First affiliated Hospital, Jinzhou Medical College	1
Yali Hu	Cangzhou People's Hospital	1
Wei Wang	Taihe Hospital, Shiyan	1



Results (1) – Patient Data

- **224** cases of elective unprotected LMCA stenting were enrolled
- Male **166 (74.1%)**, Female **58 (25.9%)**
- Mean age of **60.1±12.0 (22-88)** yrs
- Combined with multivessel disease in **98 cases (43.8%)**
- LVEF **63.9 ±12.3%**

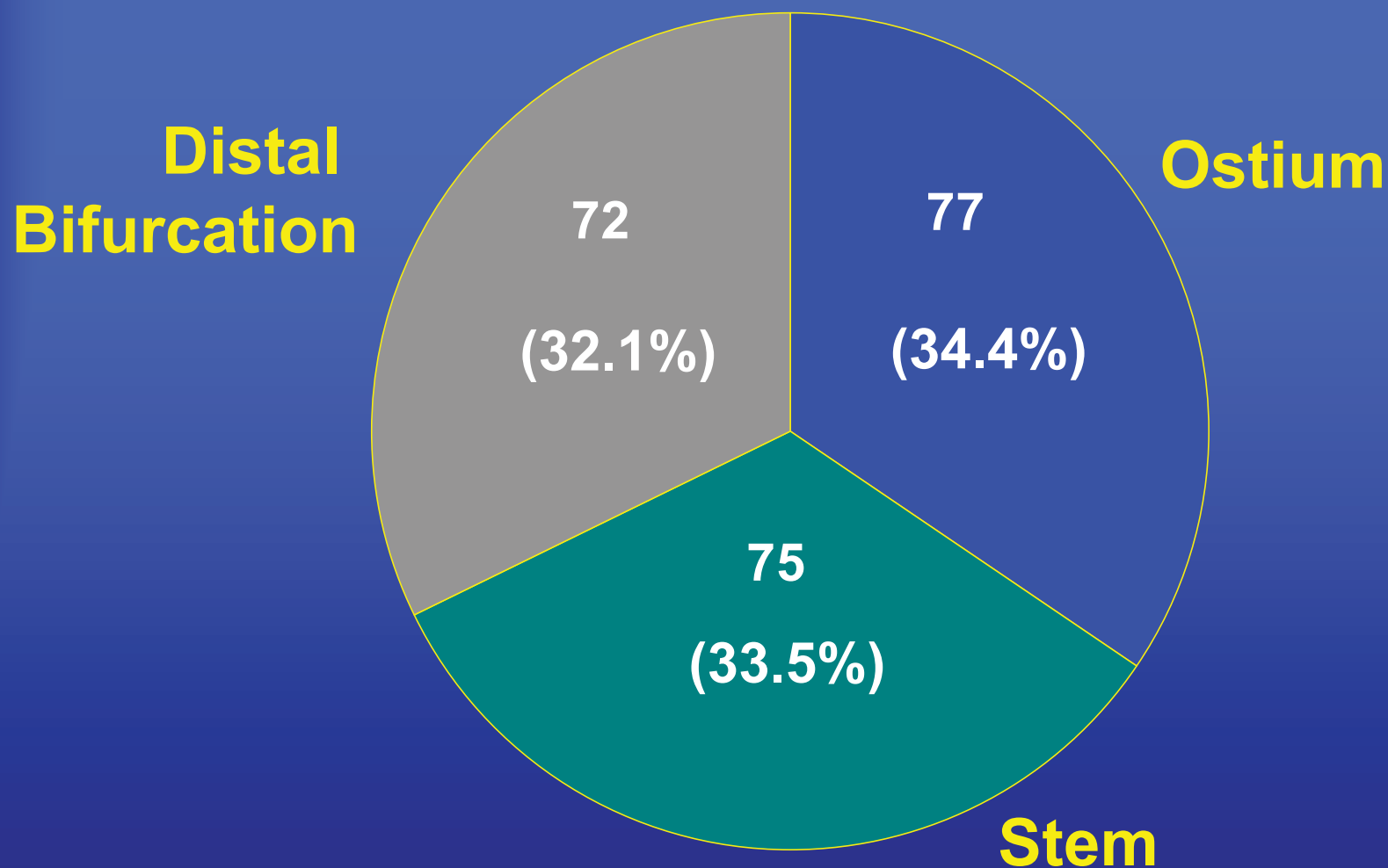


Results (2) - Baseline Clinical Features

	N	%
Stable Angina	40	17.9
Unstable Angina	175	78.1
Prior MI	53	23.7
Anterior	35	15.6
Inferior	12	5.4
Anterior+Inferior	6	2.7
Diabetes Mellitus	45	20.1
Hypertension	124	55.4
Hyperlipidemia	87	38.8
Current Smoker	65	29.0



Results (3) - LM Lesion Location





Results (4) - Baseline Angiographic Characteristics

➤ Mean stenosis of LMCA 81.2 ± 12.8 (50~100)%

LAD lesion in 68 cases, mean stenosis $84.6 \pm 11.7\%$

LCX lesion in 34 cases, mean stenosis $81.9 \pm 16.4\%$

RCA lesion in 44 cases, mean stenosis $86.5 \pm 12.2\%$

➤ Isolated LMCA in 126 cases (56.3%)

➤ Triple vessel disease in 10 cases (4.5%)

Double vessel disease in 28 cases (12.5%)

Single vessel disease in 60 cases (26.7%)

By Visual estimate



Procedural Technique

Balloon pre-dilatation	155 (69.2%)
Cutting Balloon	14 (9.0%)
DCA	2
Rotablator	1
Direct Stenting	68 (30.4%)
Diameter of Stent on LM	3.69 ± 0.41mm
Length of Stent on LM	12.3 ± 5.0mm
Max. pressure of Stent on LM	14.7 ± 2.5atm
Compromising LCX after 1st LM Stenting	39 (54.2%)
Retreating	17 (43.6%)
Kissing Balloon Technique only	11
Provisional T-Stenting	6
IVUS usage	18 (8.0%)



Stents Used

Bx VELOCITY + SONIC	49
Multi-Link (D+TR+TE+P)	33
NIR	31
AVE (GFX+S670+S7)	20
Express	12
MAC+Arthos	11
Bestent	10
Cypher+TAXUS	8
Others	57



Result (5) – Procedure(N=224)

	N	%
LM Residual %DS		1.09±4.13
Final TIMI 3	224	100
LM Lesion Success	223	99.6
Non-LM Lesions Success	91/98	92.9
Complication during Procedure		
Dissection	4	1.8
Acute Thrombosis	3	1.3
Side Branch Closure	3	1.3
No-Reflow	3	1.3
VT	3	1.3
Cardiac Arrest	1	0.4
Acute Heart Failure	2	0.9



Result (6) – In-Hospital

	N	%
AP Recurrence	4	1.8
Sub-acute Thrombosis	0	
Death (HF-Shock-VF, LAD100% RCA100% LCX 70%)	1	0.45
AMI	1	0.45
Non-Q Wave	1	0.45
TLR (LM)	0	
Non-TLR (Non-LM)	0	
MACE	2	0.89
Clinical Success	221	98.7



Result (7) – Clinical F-U

	N	%
F-U	223	100
AP Recurrence	74	33.2
Re-hospitalization	52	23.3
Death	12	5.4
Cardiac	10	4.5
Non-cardiac	2	0.9
MI	4	1.8
TLR (LM)	26	11.7
Non-TLR (Non-LM)	19	8.5
Cumulative MACE	37	16.5

Average F-U 15.6 ± 12.3 months

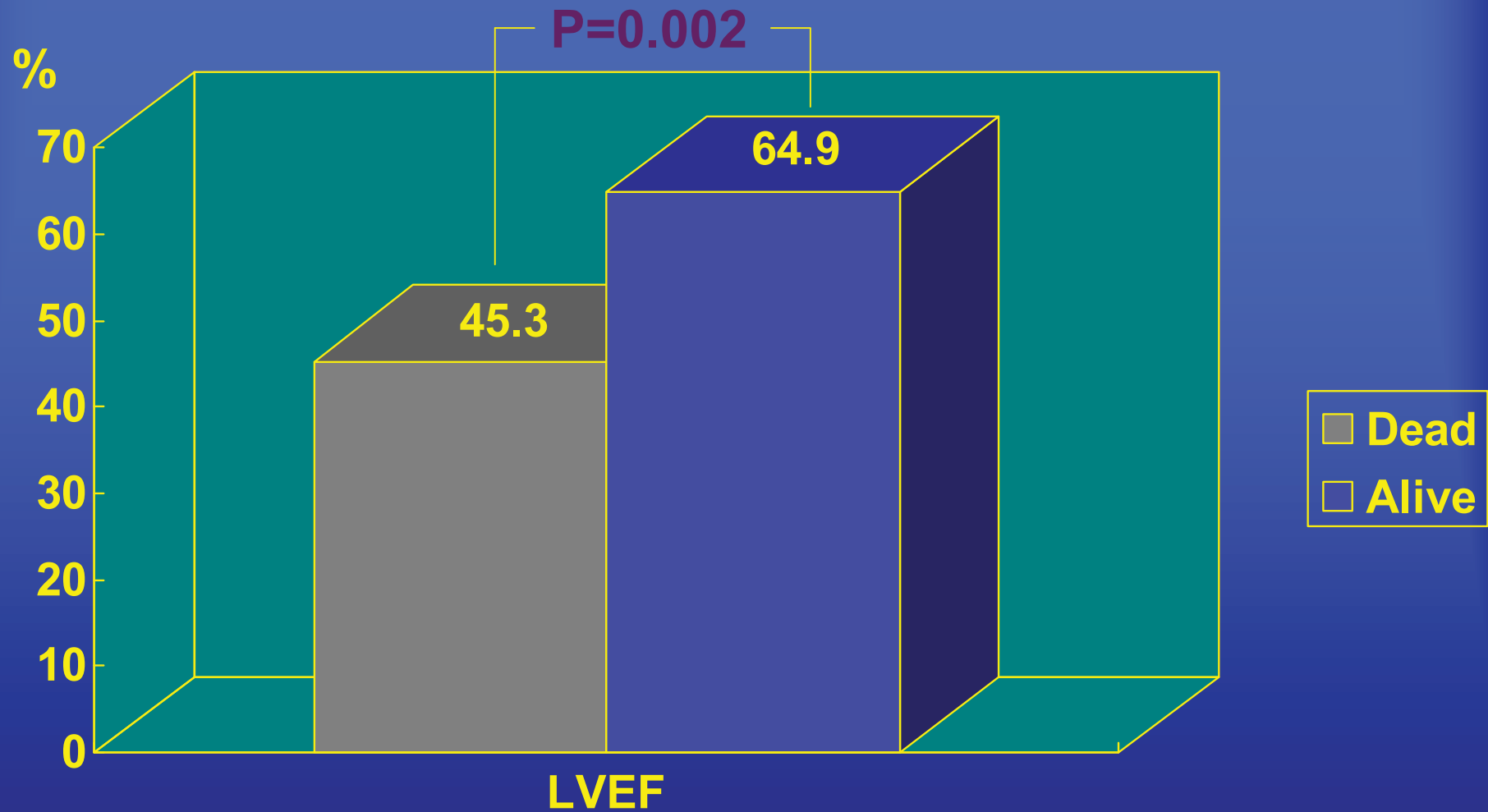


Kaplan-Meier Cardiac Death Free Survival



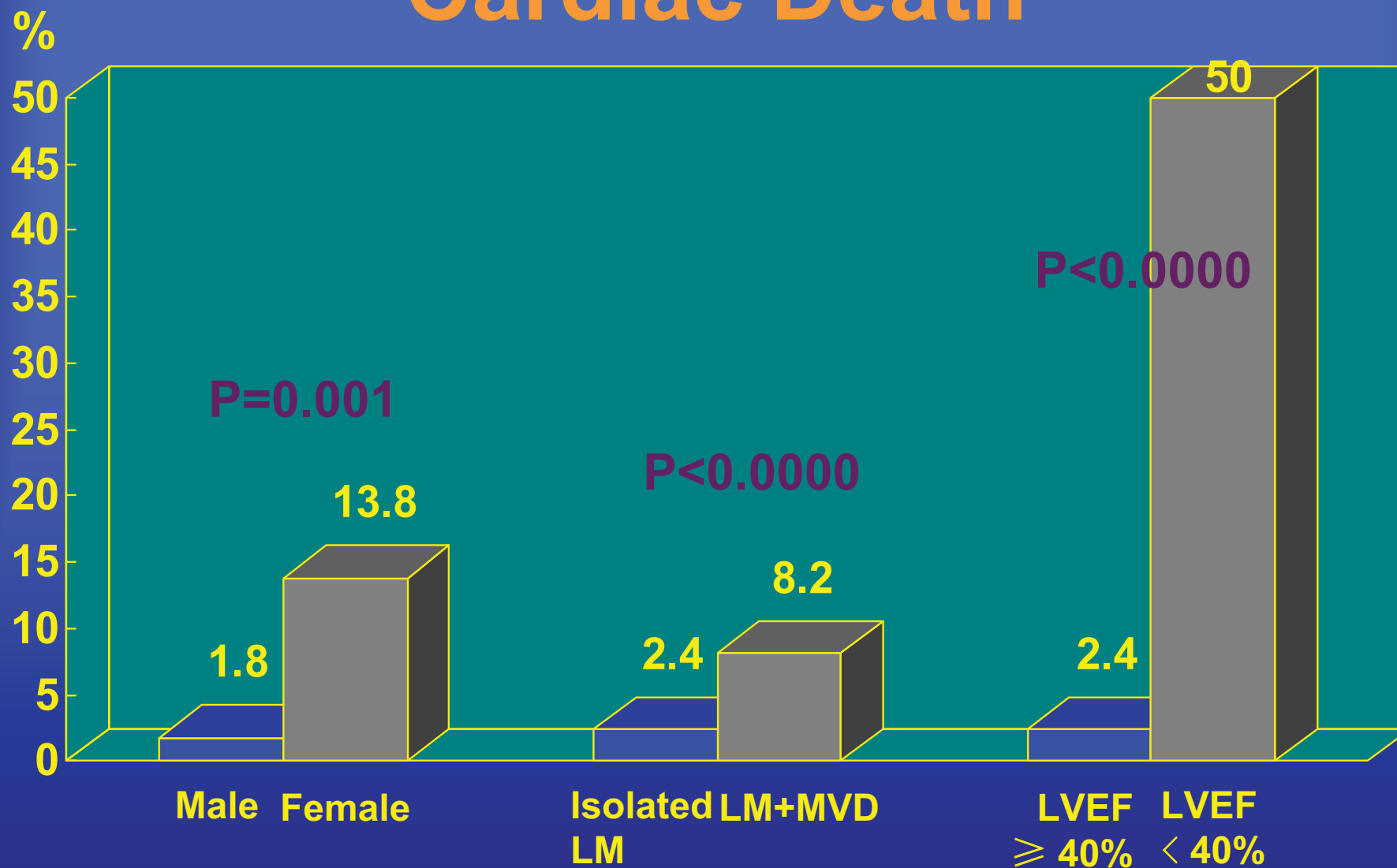


Cardiac Death and LVEF





Cardiac Death





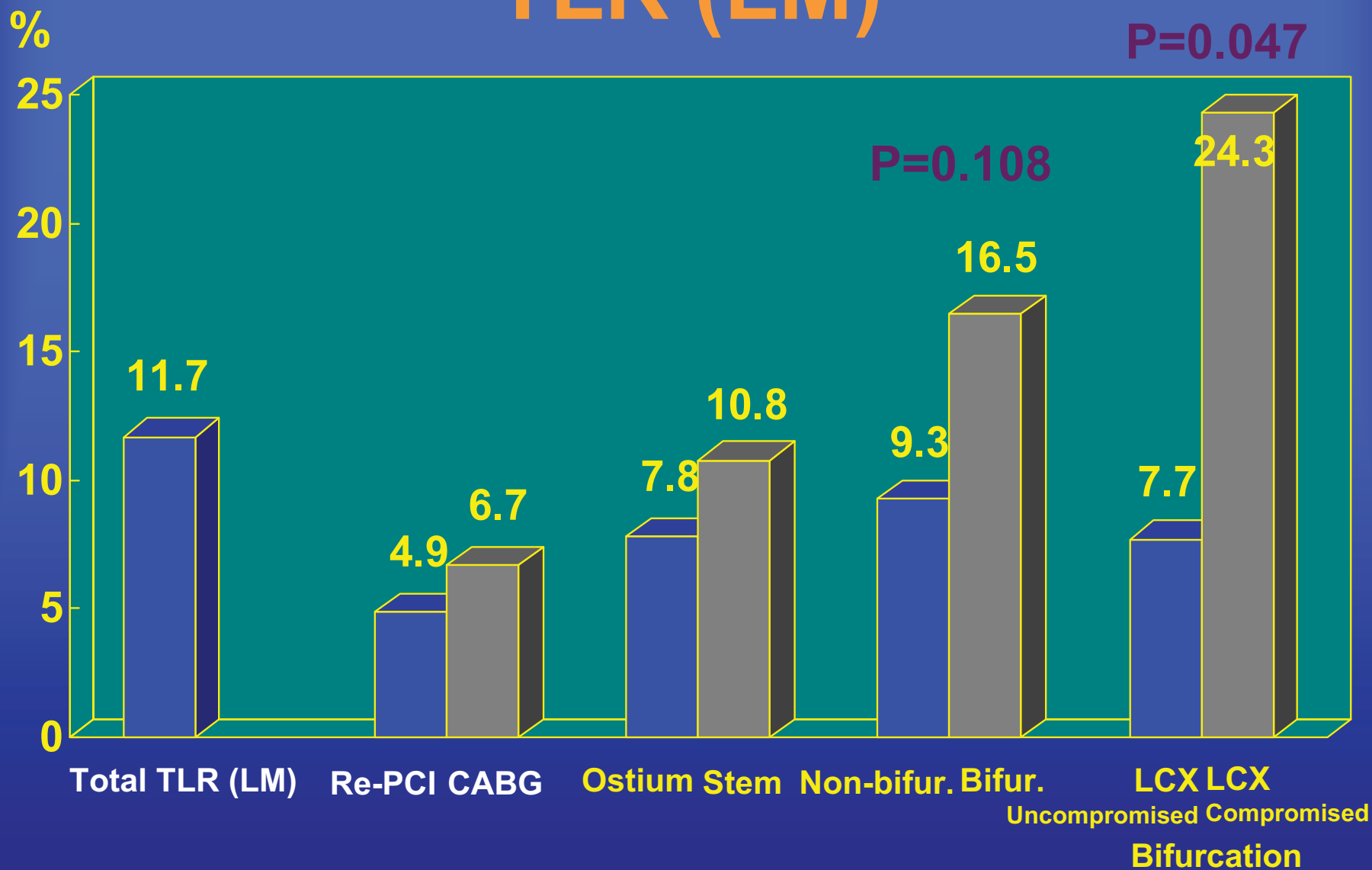
Cardiac Death: Predictors from Multivariable Regression

All patients (n=224)

	OR [95% C.I.]	P
Female	13.629 [2.782, 66.775]	0.001
LVEF \geq 40%	0.059 [0.015, 0.234]	0.000
LM+MVD	1.416 [0.801, 2.503]	0.231



TLR (LM)



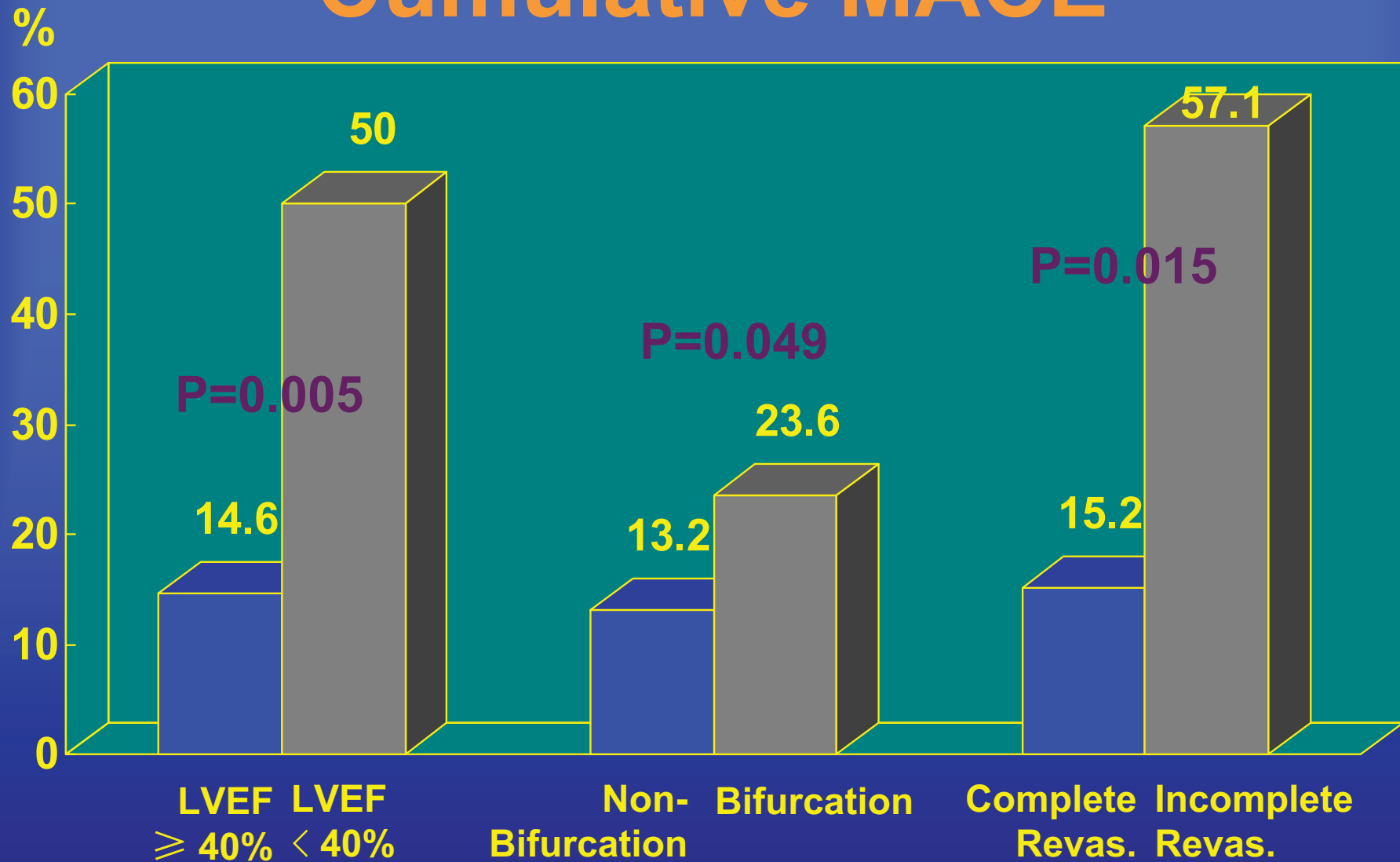


Kaplan-Meier MACE Free Survival





Cumulative MACE





Cumulative MACE: Predictors from Multivariable Regression

All patients (n=224)

	OR [95% C.I.]	P
Female	2.348 [1.172, 4.705]	0.016
LVEF \geq 40%	0.318 [0.120, 0.838]	0.021
Bifurcation LM	1.893 [0.906, 3.953]	0.089
Incomplete Revas.	2.569 [0.805, 8.201]	0.111



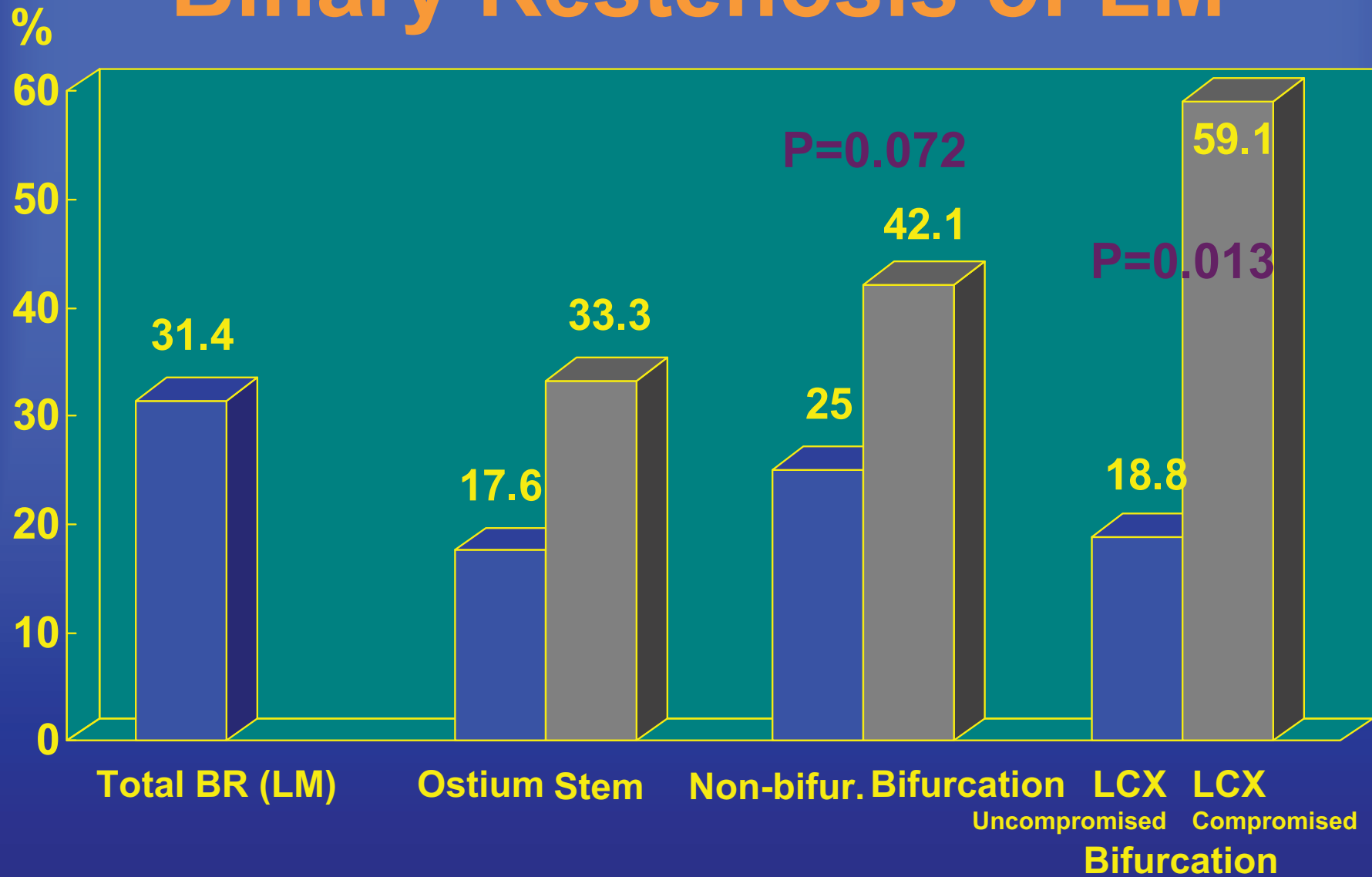
Result (8) – Angiographic F-U

	N	%
Total number of cases	102	45.7
LM %DS Pre-procedure	102	80.6 ± 11.2
LM %DS Post-procedure	102	0.69 ± 2.82
LM %DS at F-U	102	30.7 ± 33.7
LM Binary restenosis	32	31.4
Non-LM %DS	61	44.4 ± 37.9

Average F-U 14.4 ± 12.3 months

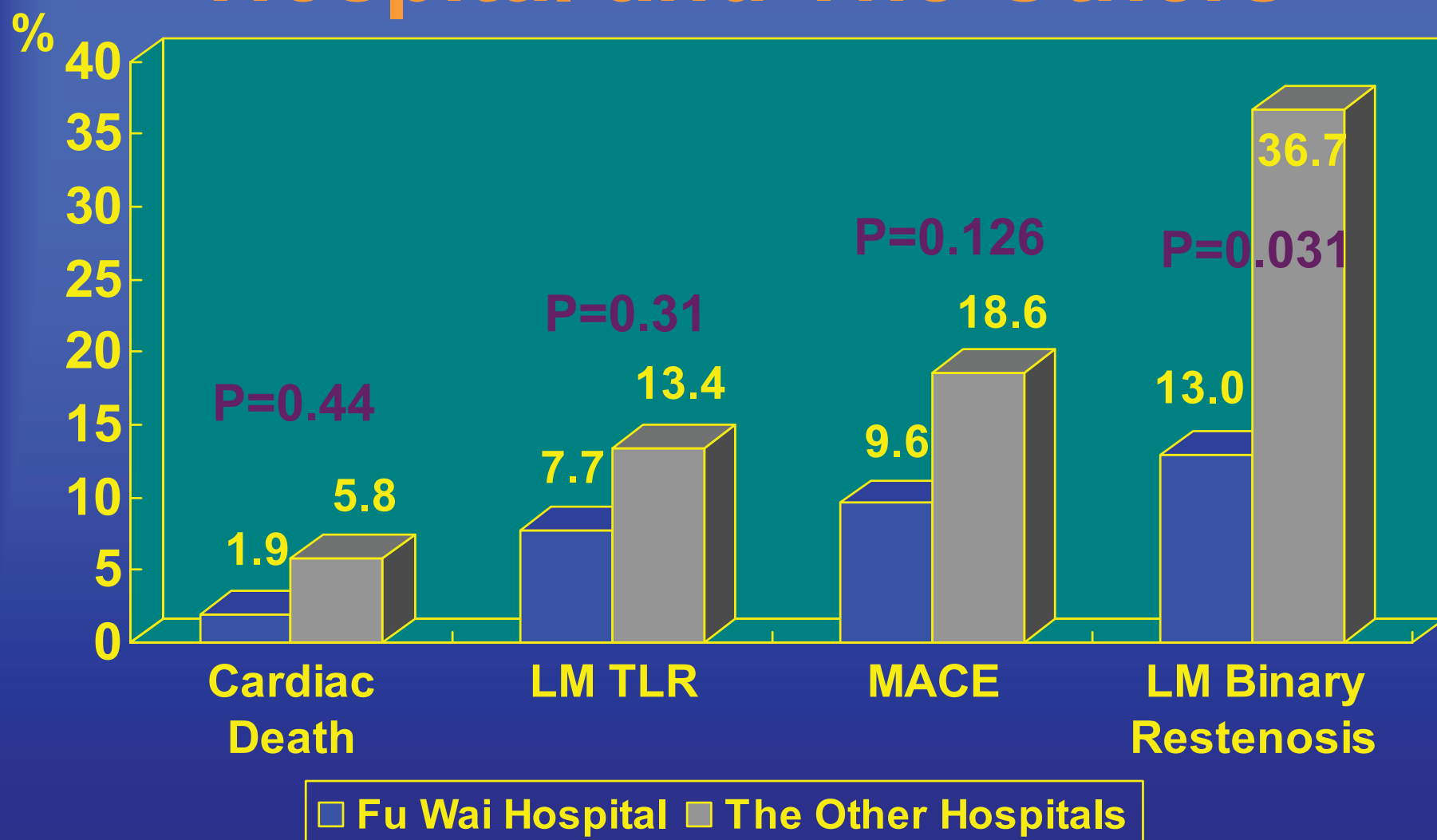


Binary Restenosis of LM





Comparison between Fu Wai Hospital and The Others





Conclusion (1)

- **Stenting for selected patients with ULMCA stenosis is feasible and safe, the TLR rate is similar to conventional PCI of other vessels**
- **The predictors of MACE include LVEF(<40%), multivessel disease without complete revascularization and bifurcation lesions**
- **Among them, LVEF(<40%) and female are independent predictors of cardiac death and MACE**



Conclusion (2)

- The indication for ULMCA stenting should include isolated LMCA stenosis or multivessel disease in which complete revascularization can be achieved and patient with good LVEF(>40%)
- Technical skill for treatment of LM bifurcation lesion is a key point
- The ULMCA Stenting should only be done in high-volume center