Morning Roundtable Forum: Meet the Expert over Breakfast

FFR Utilization in LM PCI

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Left Main Disease Meta-analysis of 1,611 Patients in 4 RCTs

LEMANS

SYNTAX left main

Boudriot et al.

PRECOMBAT

How to treat

PCI

Vs.

CABG



Death/MI/Stroke

TVR

0.77

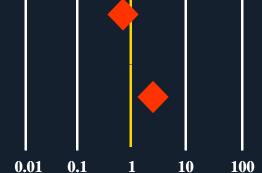
(0.48-1.22)

2.25

(1.54-3.28)



< 0.01



Favors PCI F

Favors CABG





Current Guideline Recommendations for UPLM Revascularization

ACC/AHA ¹		
	lla	Class III angina and >50% LM stenosis who are not eligible for CABG
	Ilb	Alternative to CABG may be considered in pts 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 outcomes
ESC ²		
	lla	Left main (isolated or 1-vessel disease ostium/shaft)
IIb	IIb	Left main (isolated or 1-vessel disease distal bifurcation)
	IIb	Left main plus 2- or 3-vessel disease, SYNTAX score <32
	Ш	Left main plus 2- or 3-vessel disease, SYNTAX score >33

1 ACC/AHA 2009 Focused Updates for STEMI and PCI. Circulation 2009;120:2271–2306 2 Wijns W, Kolh P, et al. Eur Heart J 2010;31:2501-55





Inclusion Criteria

ORIGINAL ARTICLE

Randomized Trial of Stents versus Bypass Surgery for Left Main Coronary Artery Disease

Seung-Jung Park, M.D., Young-Hak Kim, M.D., Duk-Woo Park, M.D.,

tients had to have newly diagnosed unprotected stenosis of more than 50% of the diameter of the left main coronary artery, as estimated visually,

Hyo-Soo Kim, M.D., In-Ho Chae, M.D., Yangsoo Jang, M.D., Myung-Ho Jeong, M.D., Seung-Jea Tahk, M.D., and Ki Bae Seung, M.D.

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Acute and Late Outcomes of Unprotected Left Main Stenting in Comparison With Surgical Revascularization

Pawel E. Buszman, MD, FACC,*‡ Stefan R. Kiesz, MD, FACC,†‡ Andrzej Bochenek, MD,* Ewa Peszek-Przybyla, MD,§ Iwona Szkrobka, MD,§ Marcin Debinski, MD,§

Bozena Bialkowska, MD. & Dariusz Dudek, MD. || Agata Gruszka, MD. & Aleksander Zurakowski, MD. &

Krzyszto Jan Szyr Katowici

We enrolled 105 patients with >50% narrowing of UL-MCA, with or without multivessel conary artery disease suitable for equal revascularization both with PCI and CABG. All patients had to be symptomatic with docu-

vasculariz

Background Methods Unprotected left main coronary artery (ULMCA) stenting is being investigated as an alternative to bypass surgery

We randomly assigned 105 patients with ULMCA stenosis to percutaneous coronary intervention (PCI; 52 patients) or coronary artery bypass grafting (CABG; 53 patients). The primary end point was the change in left venticular election fraction (IVES) 12 months after the intervention. Secondary and points included 30-day major Outcomes in Patients With De Novo Left Main Disease Treated With Either Percutaneous Coronary Intervention Using Paclitaxel-Eluting Stents or Coronary Artery Bypass Graft Treatment in the Synergy Between Percutaneous Coronary Intervention With TAXUS and Cardiac Surgery (SYNTAX) Trial

Marie-Claude Morice, MD; Patrick W. Serruys, MD, PhD; A. Pieter Kappetein, MD, PhD; Ted E. Feldman, MD; Elisabeth Ståhle, MD; Antonio Colombo, MD; Michael J. Mack, MD; David R. Holmes, MD; Lucia Torracca, MD; Gerrit-Anne van Es, PhD; Katrin Leadley, MD;

target vessel stenous with stable or unstable angina. LM disease was defined as at least 50% tenosis by visual assessment in the LM with twee and vessel or LM equivalent (defined as at least 50% stenosis of the LLM ostium of the left anterior descending artery and the ostium of the left circumflex) with or without stenosis in other vessels. Key exclusion beginning the left of the latter of the left of the left

randomized to P.J. with pacinized-citting stents or CABG in the SYN FAX that. Major adverse cardiac and cerebrovascular event rates at 1 year in LM patients were similar for CABG and PCI (13.7% versus 15.8%; 22.1% [95% confidence interval –3.2% to 7.4%). P.=.0.40. At 1 year stroke was cisnificantly higher in the CABG arm (2.7% versus 0.3% A.–2.4% [95%].

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CLINICAL RESEARCH

Interventional Cardiology

Randomized Comparison of Percutaneous Coronary Intervention With Sirolimus-Eluting Stents Versus Coronary Artery Bypass Grafting in Unprotected Left Main Stem Stenosis

Enno Boudriot, MD,* Holger Thiele, MD,* Thomas Walther, MD,† Christoph Liebetrau, MD,*

Patients age 18 to 80 years with stenosis (\$\geq 50\%) of the ULM with or without additional multivessel coronary artery disease were included in this multicenter study. Patients had

Background

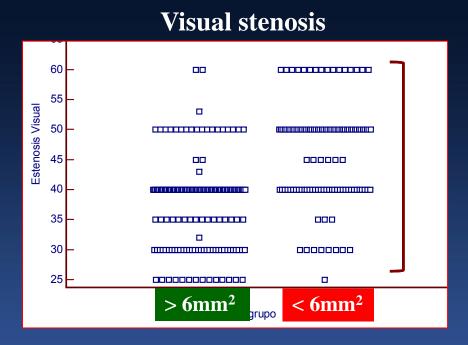
CABG is considered the standard of care for treatment of ULM. Improvements in percutaneous coronary intervention (PCI) with use of drug-eluting stents might lead to similar results. The effectiveness of drug-eluting stenting versus surgery has not been established in a randomized trial.

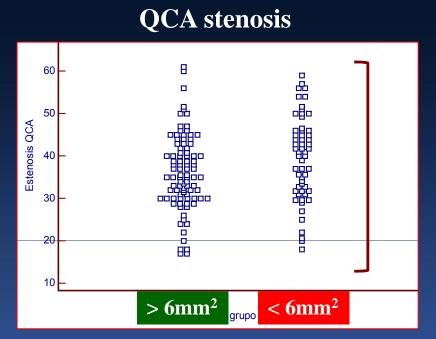
Methods

In this prospective, multicenter, randomized trial, 201 patients with ULM disease were randomly assigned to

Left Main Lesion Assessment

Angiographic measurements are unreliable in the assessment of intermediate LMCA lesions





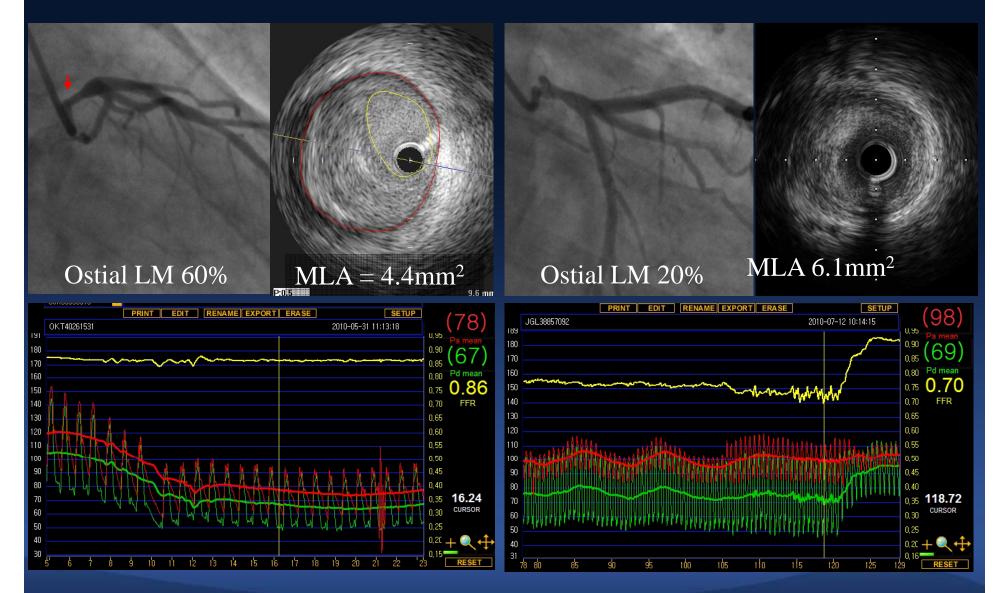
Wide variability in visual and quantitative angiographic assessment of LMCA lesions with MLA <6 mm²





47/M Stable angina

50/M Stable angina

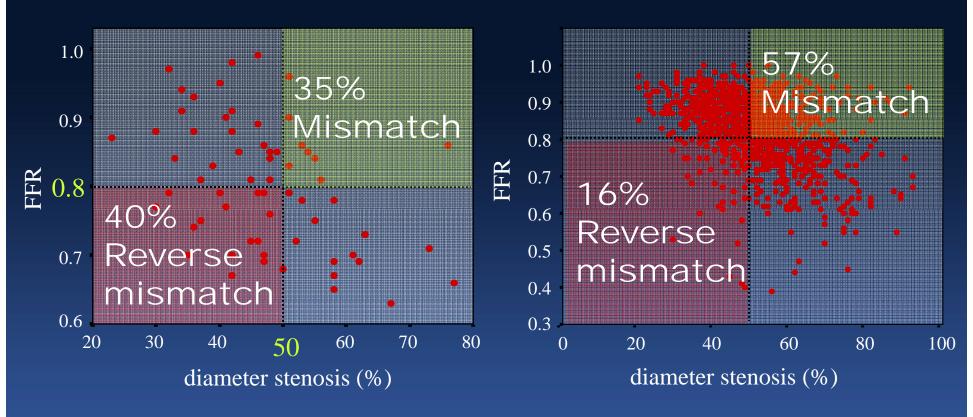




QCA-FFR Discordance: LM vs. Non-LM

63 LM lesions

1066 Non-LM lesions



Angiographic underestimation of stenosis degree Relatively large myocardial territory of LM

AMC data



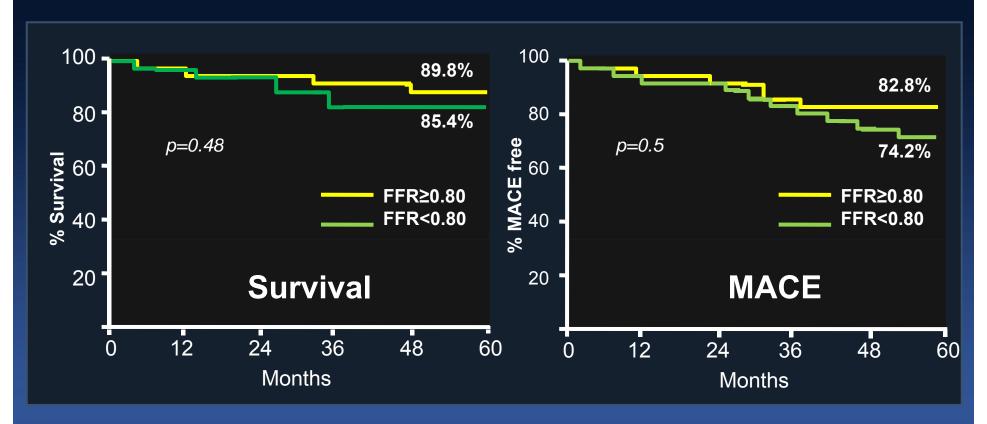


Decision Making of LM treatment



FFR guided PCI in Equivocal LMCA

- In 213 patients with an equivocal LMCA stenosis
- FFR ≥0.80: Medication (n=138) vs. FFR<0.80: CABG (n=75)



An FFR-guided strategy showed the favorable outcome.





Treatment strategy (deferral vs. revascularization) should be based on "Functional significance"

Author	Comparison	Results	р
Lindstaedt ¹	CABG (FFR<0.75) vs. Medical (≥0.80)	4-year Survival 81% vs. 100% MACE-free 66% vs. 69%	NS
Jasti ²	CABG (FFR<0.75) vs. Medical (≥0.75)	38-month Survival 100% vs. 100% MACE-free 100% vs. 90%	NS
Courtis ³	Revasc (FFR<0.75) vs. Medical (≥0.80)	14-month MACE 7% vs. 13%	NS
Bech ⁴	Revasc (FFR<0.75) vs. Medical (≥0.75)	29-month Survival 100% vs. 97% MACE-free 83% vs.76%	NS
Hamilos ⁵	CABG (FFR<0.80) vs. Medical (≥0.80)	5-year Survival 85% vs. 90% MACE-free 74% vs. 82%	NS

¹Am Heart J 2006;152:156, ²Circulation 2004;110:2831–6, ³Am J Cardiol 2009;103:943-9 ⁴Heart 2001;86:547-52, ⁵Circulation 2009;120:1505-12





Clinical Outcomes After Deferral of Revascularization

Left Main Coronary Artery (6 studies, 296 patients)

Outcomes Incidence (%/year)

All Death 2.6 (1.3-5.2)

Cardiac Death 2.6 (1.3-5.2)

Myocardial Infarction 2.0 (0.7-5.1)

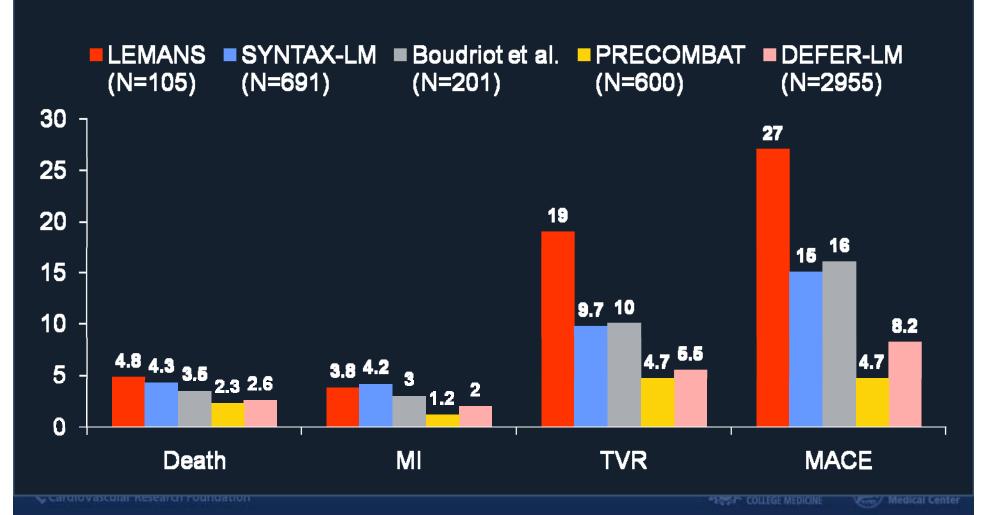
TVR 5.5 (3.3-8.8)

MACE 8.2 (5.5-12.1)



Clinical Outcomes After Deferral of Revascularization

LM Coronary Artery

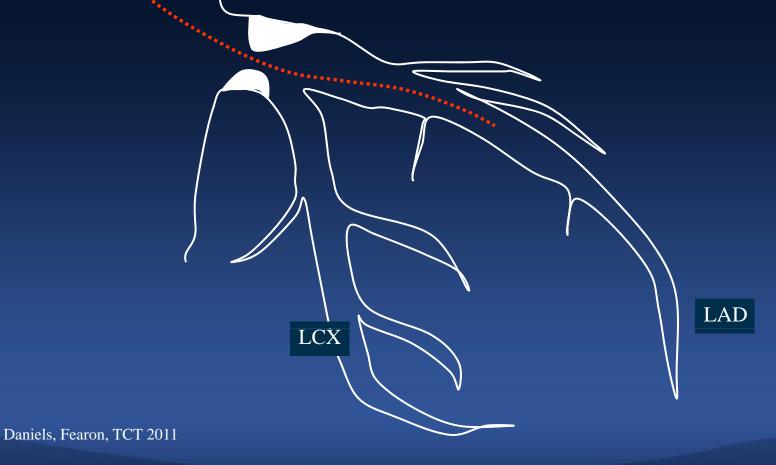


Limitations of FFR measurement in LMCA stenosis



True FFR of LM disease

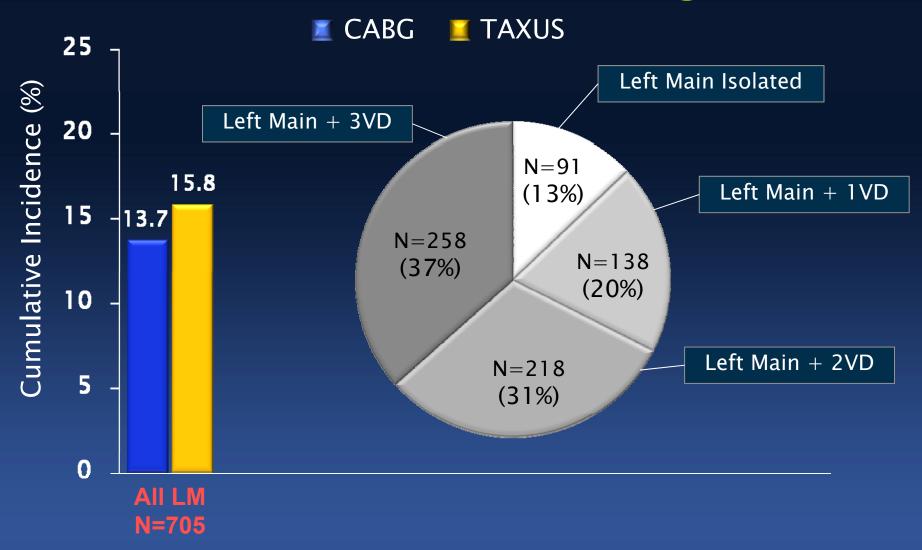
Isolated LMCA Stenosis





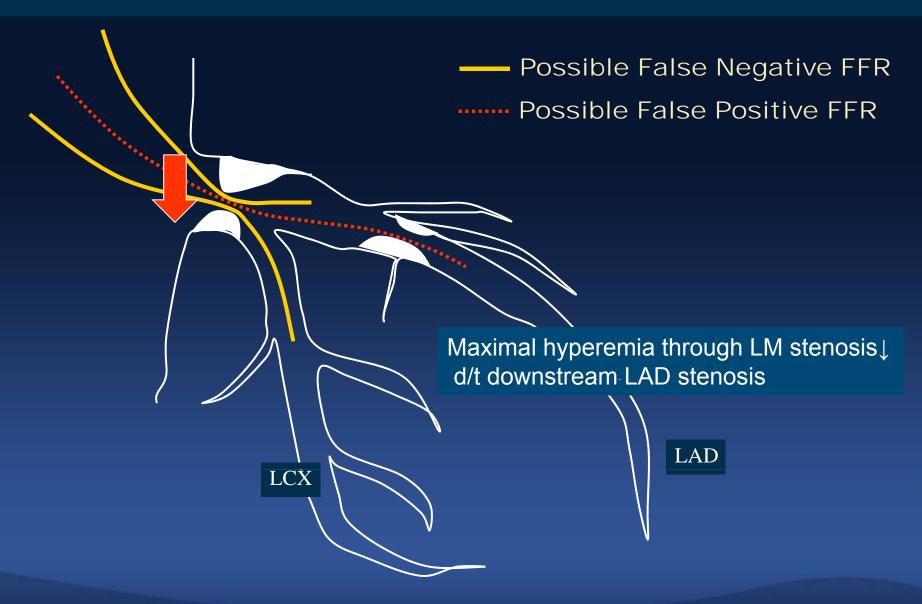


SYNTAX Left Main Subgroup



Comparisons for the LM and 3VD subgroups are observational only and hypothesis generating

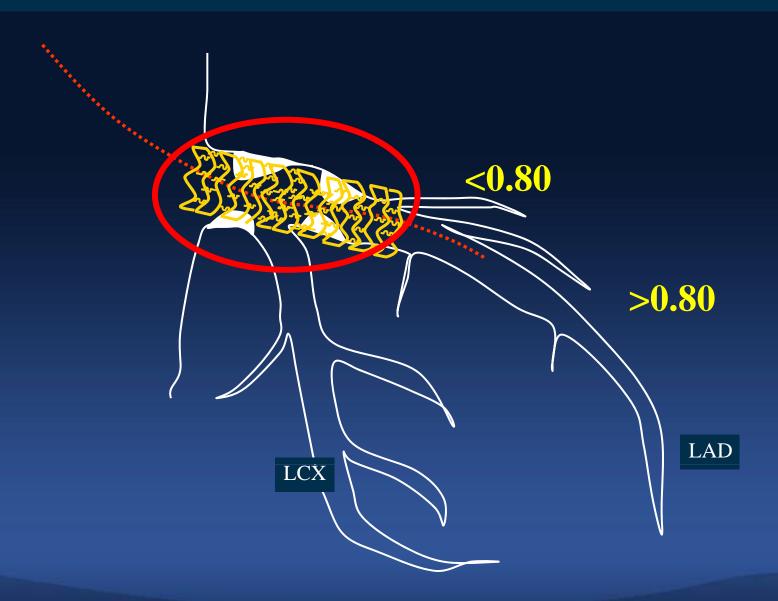
Conceptual Limitations of FFR for LM Disease





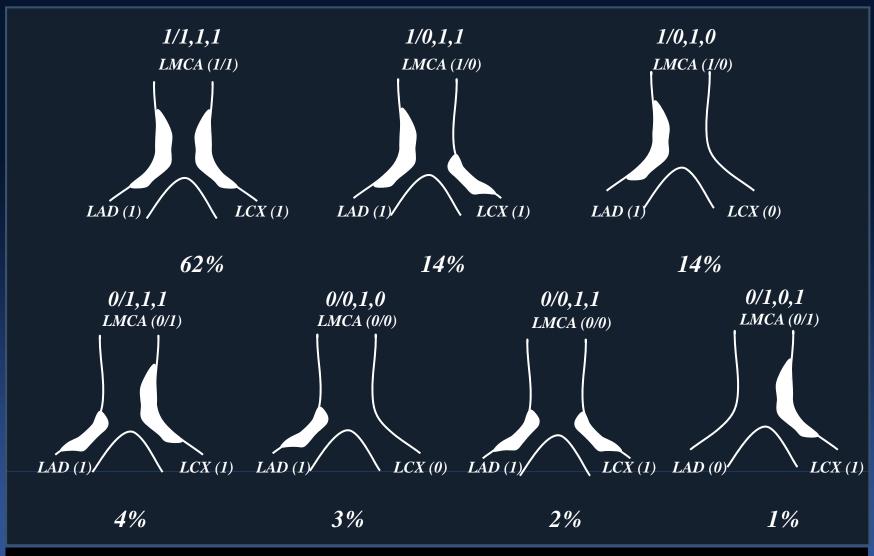


Limitations of FFR Assessment for LM Disease





Plaque Distribution by IVUS (n=140)

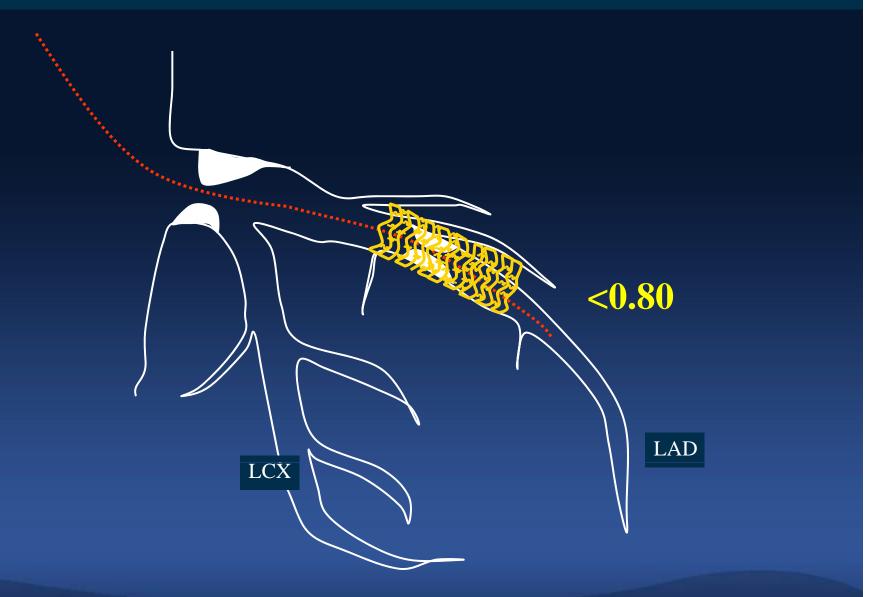


In 90% plaque extends from LMCA-LAD





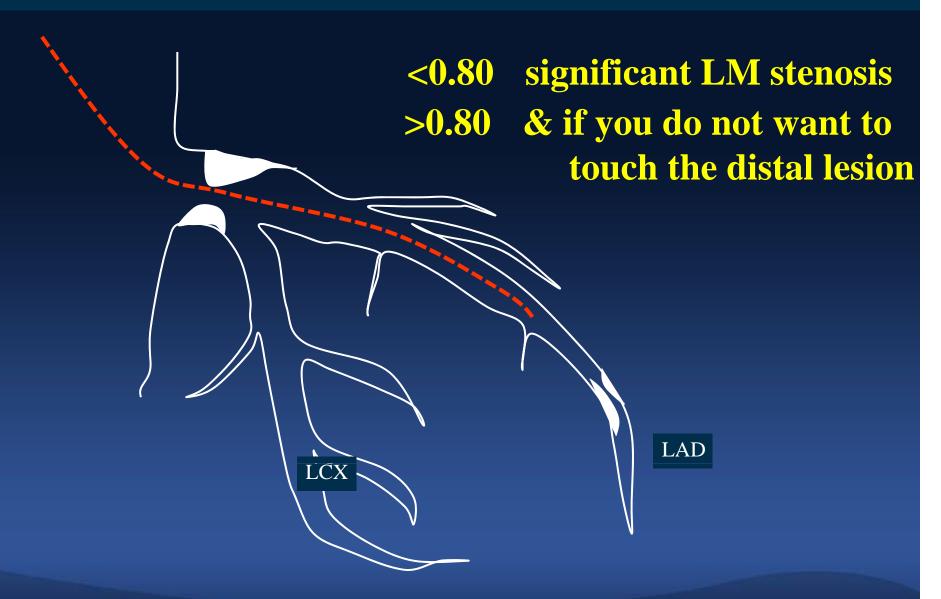
Limitations of FFR Assessment for LM Disease







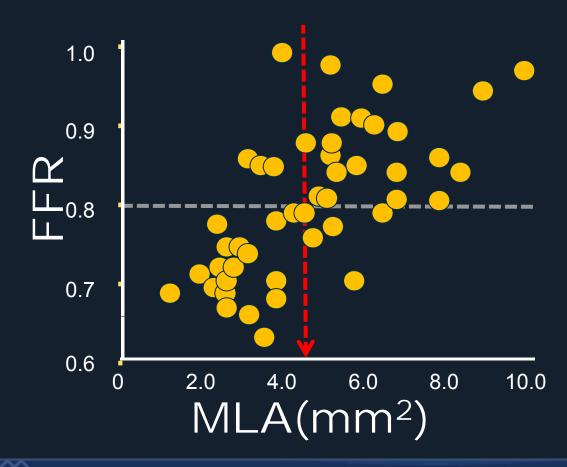
Limitations of FFR Assessment for LM Disease





Significant LM Stenosis

MLA 4.8mm² New IVUS Criteria



Sensitivity 83%
Specificity 83%
PPV 83%
NPV 83%
Accuracy 83%

47 isolated LM disease With 30-80% stenosis



Summary

- Similarly to the non-LMCA stenosis, an FFRguided strategy for LMCA stenosis showed the favorable clinical outcomes.
- Limitation of FFR measurement in LMCA stenosis, due to the downstream disease should be keep in mind.
- Contrary to the non-LMCA stenosis, IVUS MLA may be helpful to decide the ischemic potential of LMCA stenosis.

