How Would I do:
NSTEMI and Instent Restenosis in LM & 3VD

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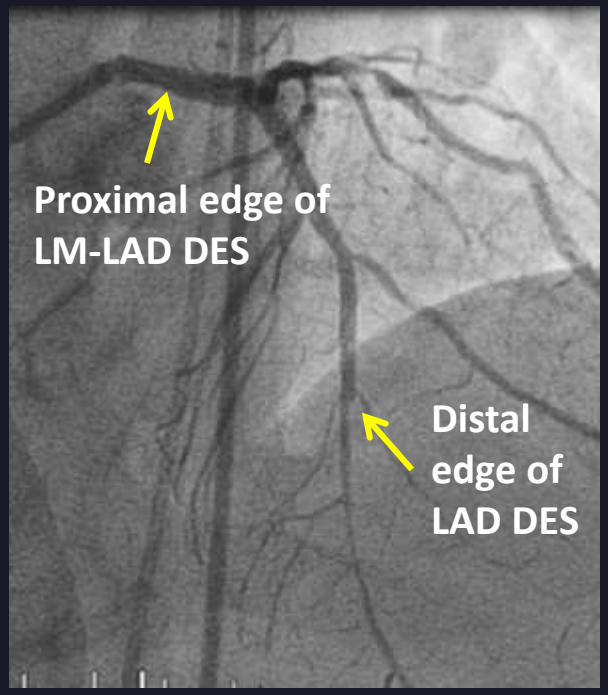
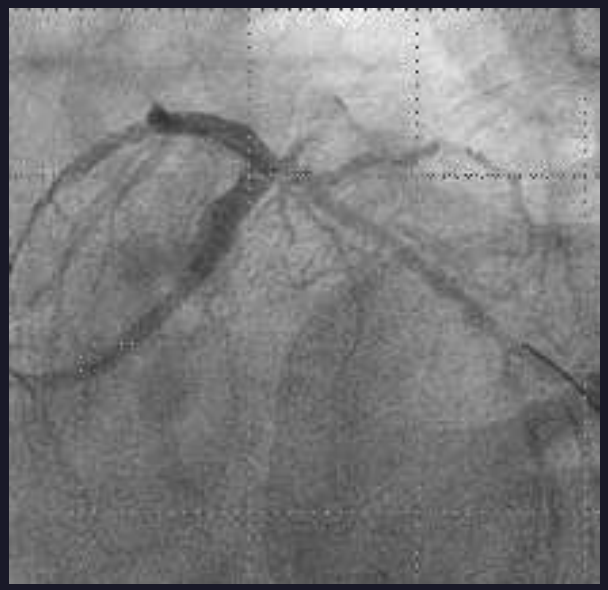
PCI 8 months ago





PCI with 3 DES in LAD to dLM:

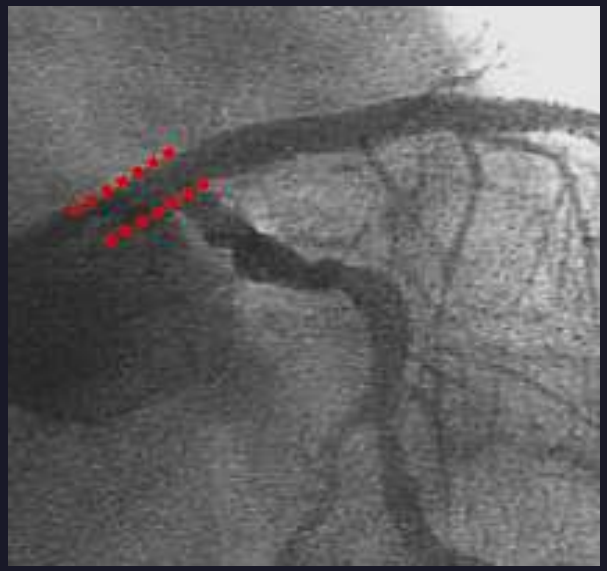
- **2.25x24 mm in mLAD,**
- **2.75x19 mm in pLAD,**
- **3.5x13 mm in pLAD to mLM**

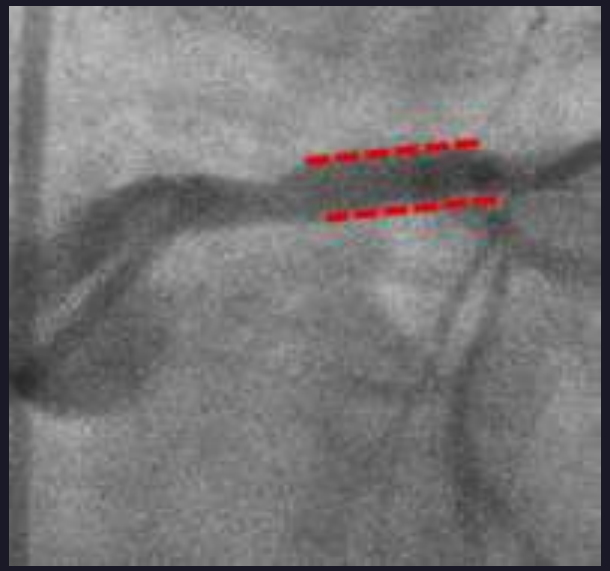
Results of previous PCI was suboptimal

	My interpretation
LM	*Disease extent might actually extend to LM ostium*. If dLM is stented, the ostium should also be covered (IVUS will help)
LAD	Overlapping stents in long, calficied (? CKD) lesions with small caliber vessel (DES 2.25 mm?) *predispose to restenosis*. dLAD still stenotic. DES *too small* (LAD diameter usually ≥ 2.5 mm). *DEB* for dLAD? Was QCA done ? FFR?
LCX	70% stenosis dLCX not treated. *FFR ?*
IVUS	*Not performed?.* No confirmatory data whether results of stenting were acceptable

MITO Registry

Milan and New-TOkyo :
Importance of Full Cover Approach (FCA)





	FCA (252 pts)	No FCA
Overall MB ISR	4.8%	12.6%
MB ostial ISR	0.4%	6.4%

Nakamura et al . EuroPCR. 2012

Predictors Of Instent Restenosis

Patient factors	Vessel factors	Procedure factors*
Female gender	***Lesion location: LAD***	***Non-uniform stent expansion / drug deposition (i.e.: calcification)***
CRF on hemodialysis	***Lesion length > 20 mm***	**Smaller poststent MLD**
Diabetes mellitus	***Small vessel (< 2.75 mm)***	**Stent underexpansion**
Prior MI	***Severe calcification***	**Overdilatation of an undersized stent**
Prior PCI	***Type C lesion***	**Stent fracture**
Drug resistance or hypersensitivity	Instent restenosis	
	Tortuosity	
	Ostial location	
	CTO	

In this patient, there were multitude of factors predisposing to restenosis

*** IVUS or OCT are helpful**

Kim MS. et al, Cardiovasc Ther 2011;29:190-8

Repeat PCI: *How Would I Do ?*

Salient features of presentation:

37 years old man, NSTEMI, with raised cardiac enzymes

ESRD on dialysis. *No information about urine production*

ECG: ST depression V4-6 (reported as T inversion & ST depression in I, aVL).

Good LV on echo

Treatment: ASA 81 mg/d; *Clopidogrel (CPG) 75 mg/d;* Rosuvastatin 40 mg/d ; Enalapril 5 mg/d; Carvedilol 6.25 mg/d.

Chronic kidney disease (CKD) & multivessel disease undergoing revascularization have better short- & long-term survival [1-3]

1. Chertow GM, et al. J Am Soc Nephrol. 2004;15(9):2462–8; 2. Hemmelgarn BR, et al. Circulation. 2004;110(14):1890–5
3. Summaria F, et al. Nephrourol Mon 2015, Jul 7(4): e28099 (on line)

Repeat PCI: *How Would I Do ?*

Treatment was still not adequate:

Assure hydration (esp. if *diuresis was still adequate*) to prevent contrast-induced nephropathy. N-acetylcysteine & NaHCO3 controversial.

ESRD affects platelet function & coagulation cascade resulting in *hemorrhagic tendencies* & *pro-thrombotic state*[1]

Antiplatelet therapy is not adequate: use ASA + clopidogrel (start with *600 mg loading dose*). Ticagrelor may be used, but data are scarce. Prasugrel increases the risk of bleeding in CKD (TRITON, TRILOGY-ACS, ACCOAST). No glycoprtein IIb/IIIa inhibitor.

Pts with ESRD exhibit hyporesponsiveness to CPG which is associated with increased risk of stent thrombosis & mortality[2,3]. Although guidelines confirm no evidence for routine platelets assessment & phenotype testing; in HD pts undergoing PCI, *platelet function testing* has been suggested[1]

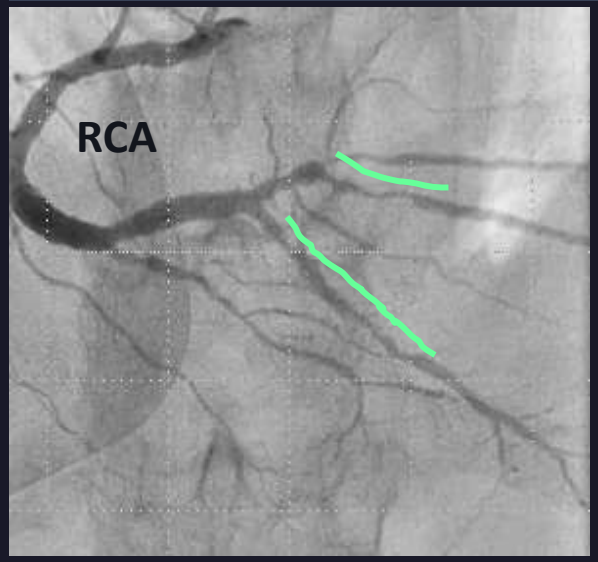
1. Summaria F, et al. Nephrourol Mon 2015, Jul 7(: e28099 (on line);
2. Morel O, et al. J Am Coll Cardiol. 2011;57:399–408; 3. Htun P, et al. J Am Soc Nephrol. 2011;22:627–33.

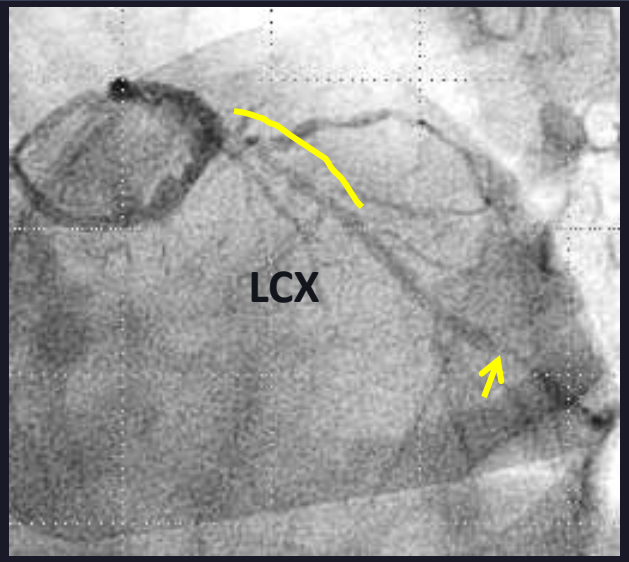
Repeat PCI: *IVUS Guided PCI*

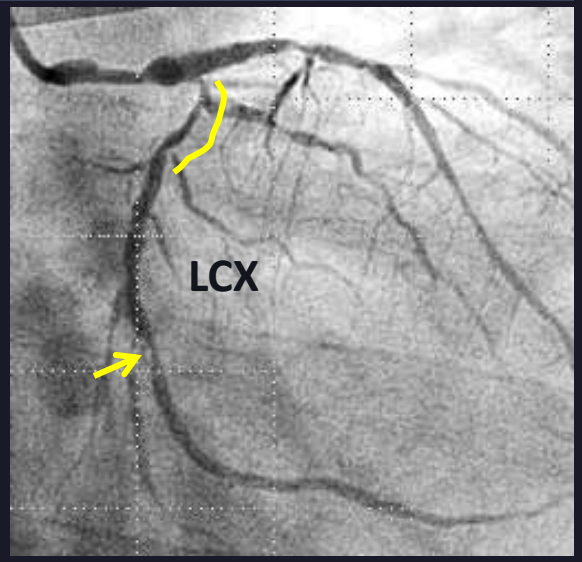
IVUS & FFR: use IVUS to assess LM & LAD & FFR to assess LCX.

IVUS guided PCI allows minimal utilization of contrast agent. *Important if diuresis was still preserved*

Use minimum amount isosmolar contrast agent (iodixanol).



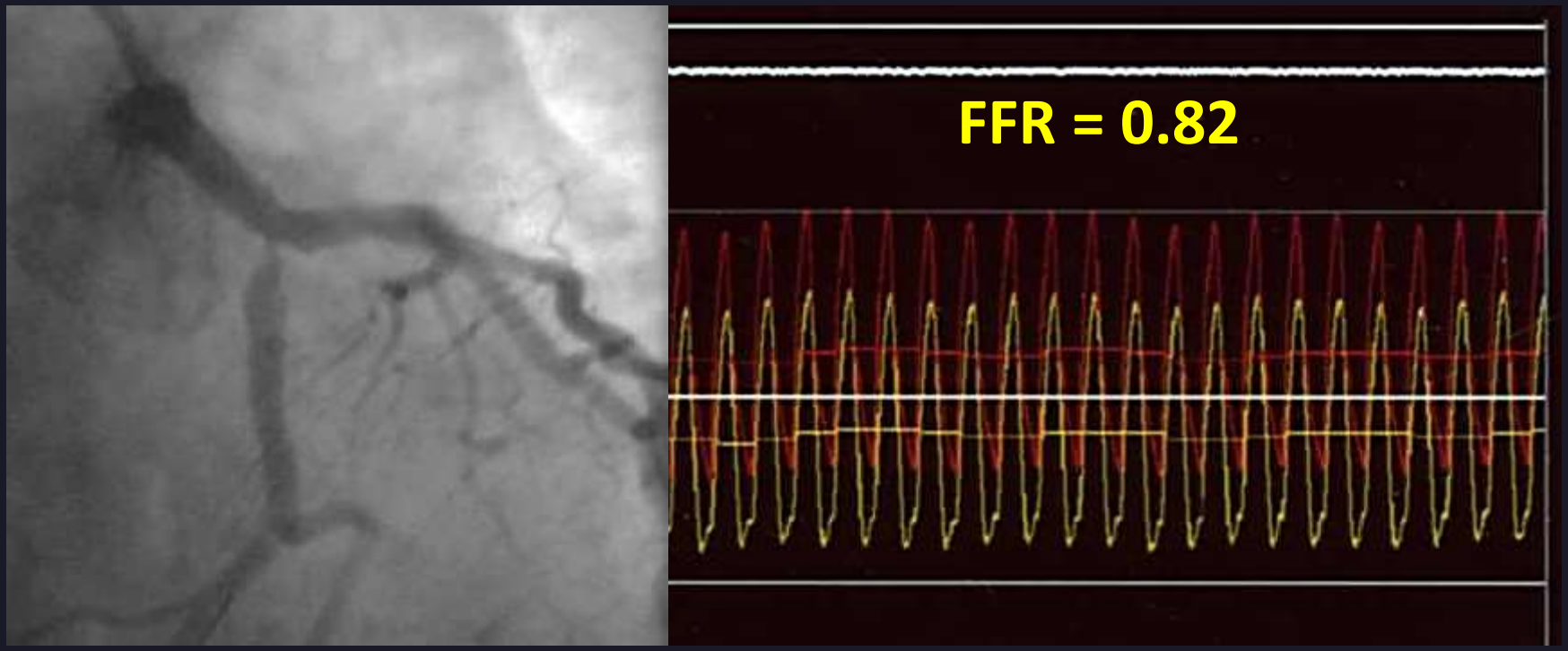




Start with RCA (dominant vessel). Use one projection (PA cranial) to stent RPD (± DEB to RPL).

LCX: if FFR > 0.80 leave it. If < 0.80, open the LCX ostium slightly & stent

Is Ostial LCX Compromised ?



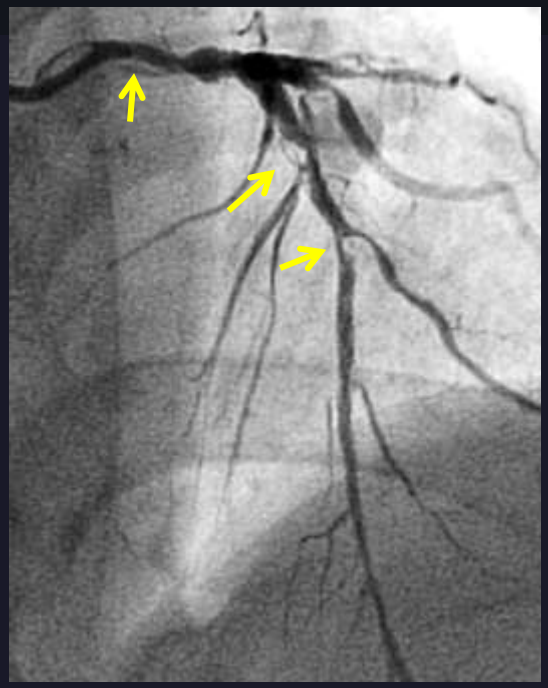
Angio vs FFR (FFR <0.75 = ischemia) : to treat or not treat

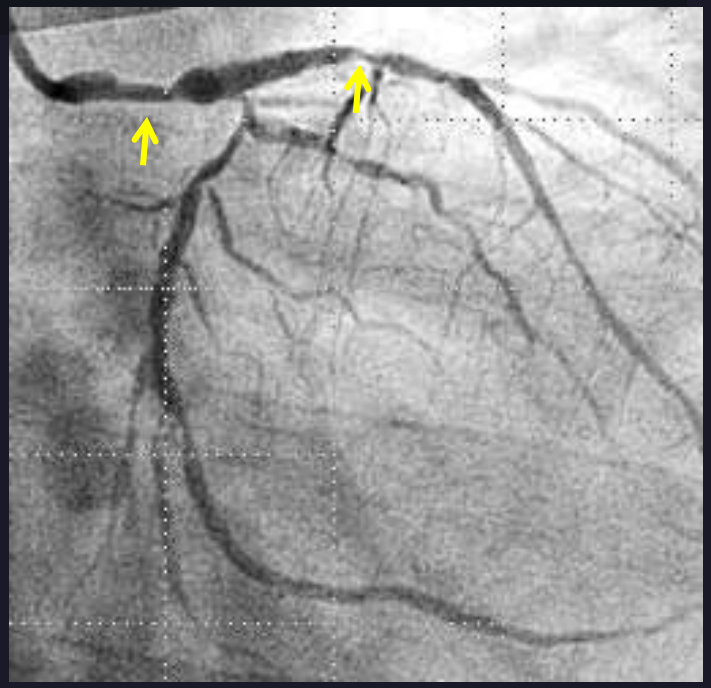
FFR reflects both degree of stenosis & myocardial territory

Repeat PCI: *IVUS Guided PCI*

LAD / LM : after the 1st half-strength contrast injection, use IVUS until finish PCI ***(IVUS-guided PCI),*** then do the last angio

IVUS (&/or OCT) will define the cause of instent restenosis, help tailor therapy and get the optimal result. For OCT, use dextran





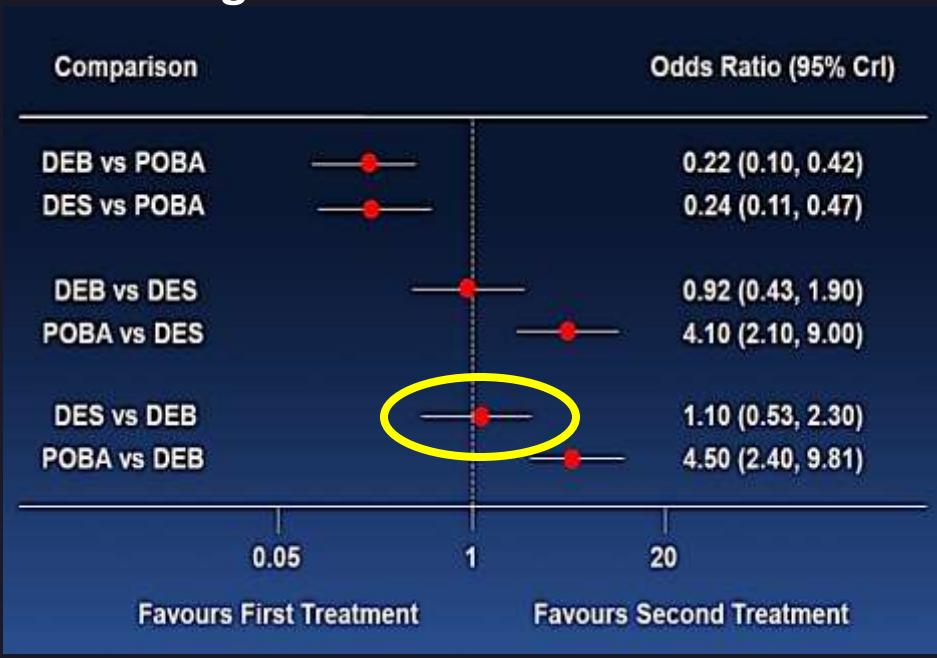
DES or DEB are recommended for the treatment of ISRS (Class I/A recommendation)(ESC Guidelines).

DES for LM shaft/ostium

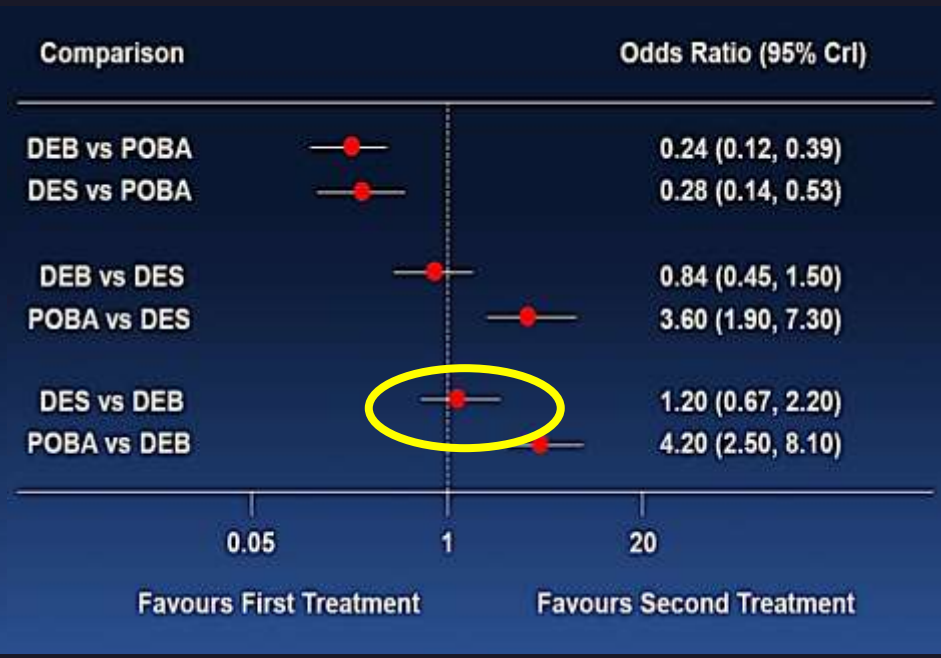
Comparison Among Drug-eluting Balloon (DEB), Drug-eluting Stent (DES) & Plain Balloon Angioplasty (POBA) for Treatment of In-Stent Restenosis: A Network Meta-analysis of 11 RCTs

Total Pts = 2059 , Treatment : POBA = 557; DES = 808; DEB= 694

Target Lesions Revascularization



MACE



JM Lee, TCT 2014

Thank You