


Assesement of Left Main Stenosis with FFR and IVUS

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Objectives

- ▶ Left Main disease is found in approximately 5% of patients with stable angina
- ▶ The clinical decision making could be difficult in patients with borderline lesions of the Left Main coronary artery
- ▶ Angiography in Left Main disease has significant intraobserver and interobserver variability
- ▶ More detailed anatomic information obtained with IVUS and FFR can provide useful clinical information to compliment the angiographic assesement

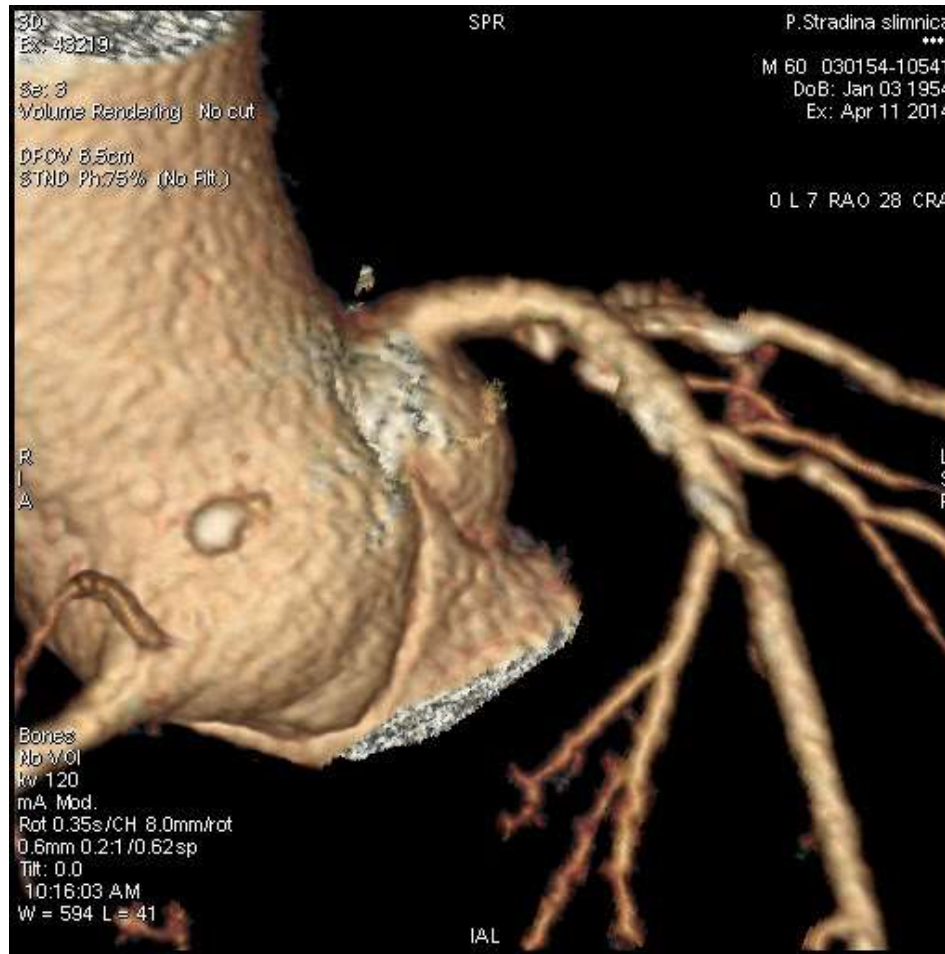
Clinical characteristics

- ▶ Male
 - ▶ 60 y.o.
 - ▶ Unclear chest discomfort
 - ▶ Unable to perform stress test because of hip problem
 - ▶ Hypertension
 - ▶ Hypercholesteremia
 - ▶ EF = 60%
 - ▶ PCI with DES RCA
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CT CAG

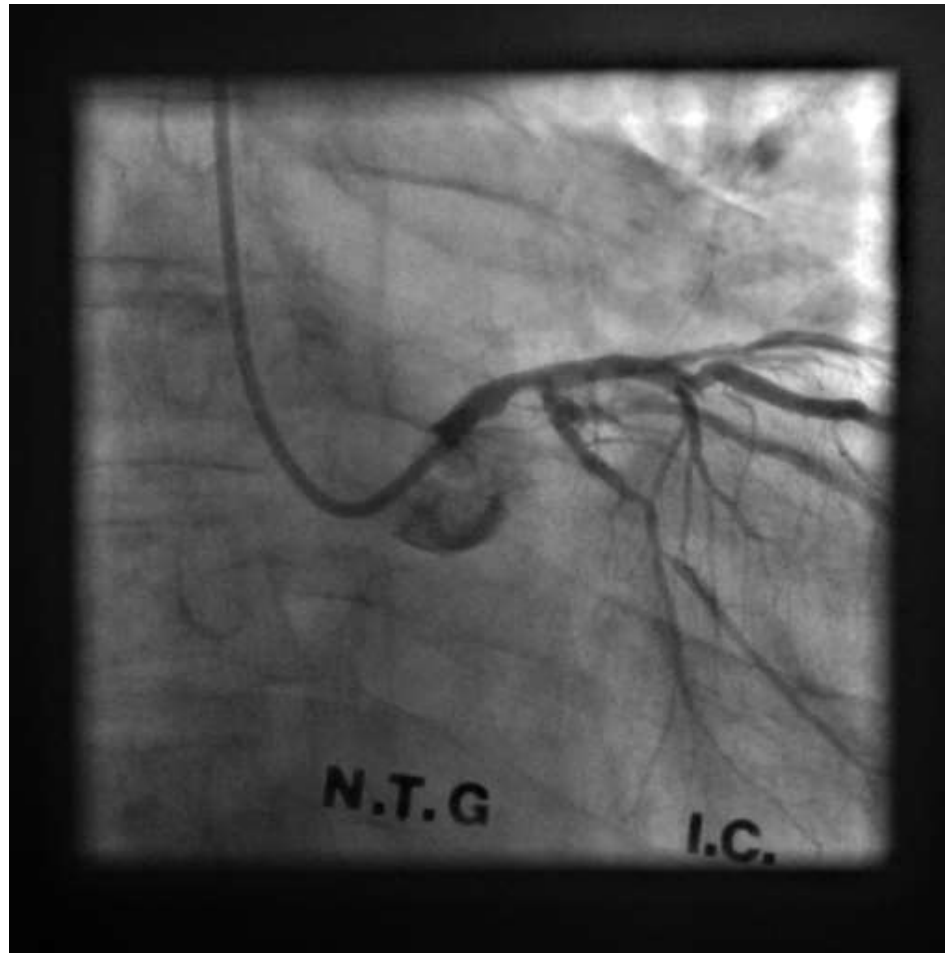


CT CAG 3D



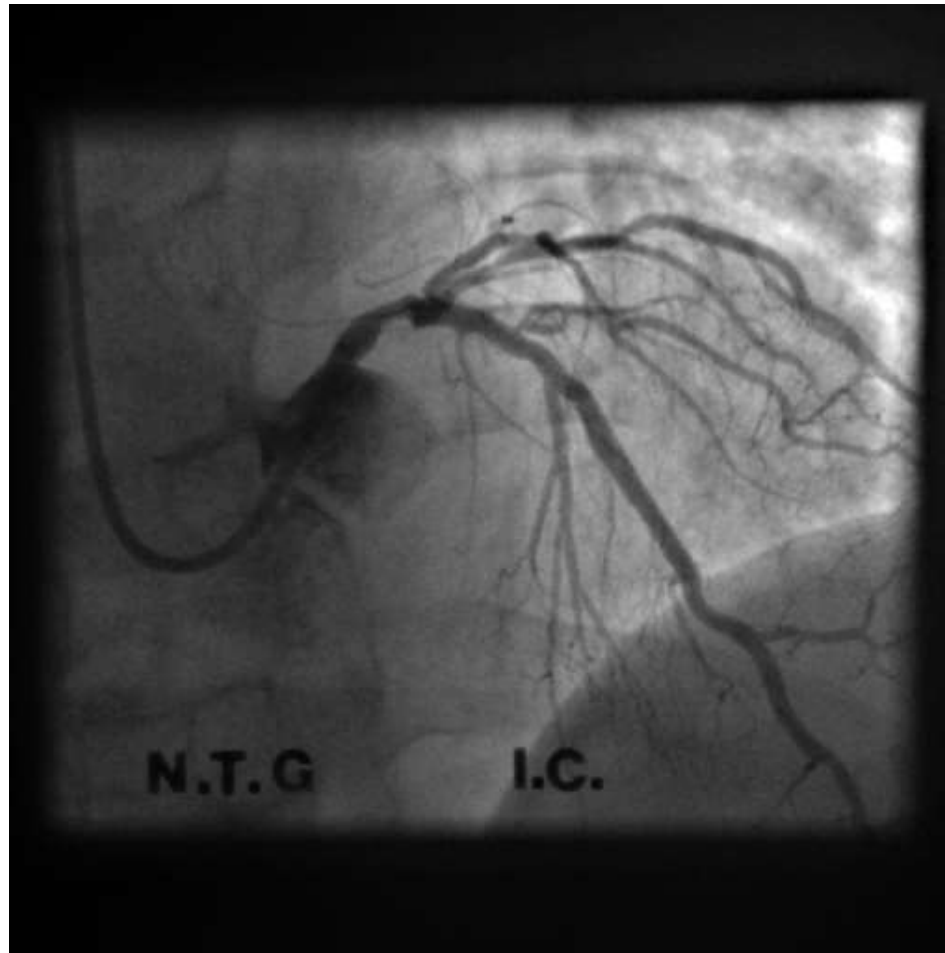
CAG

LM stenosis 60%

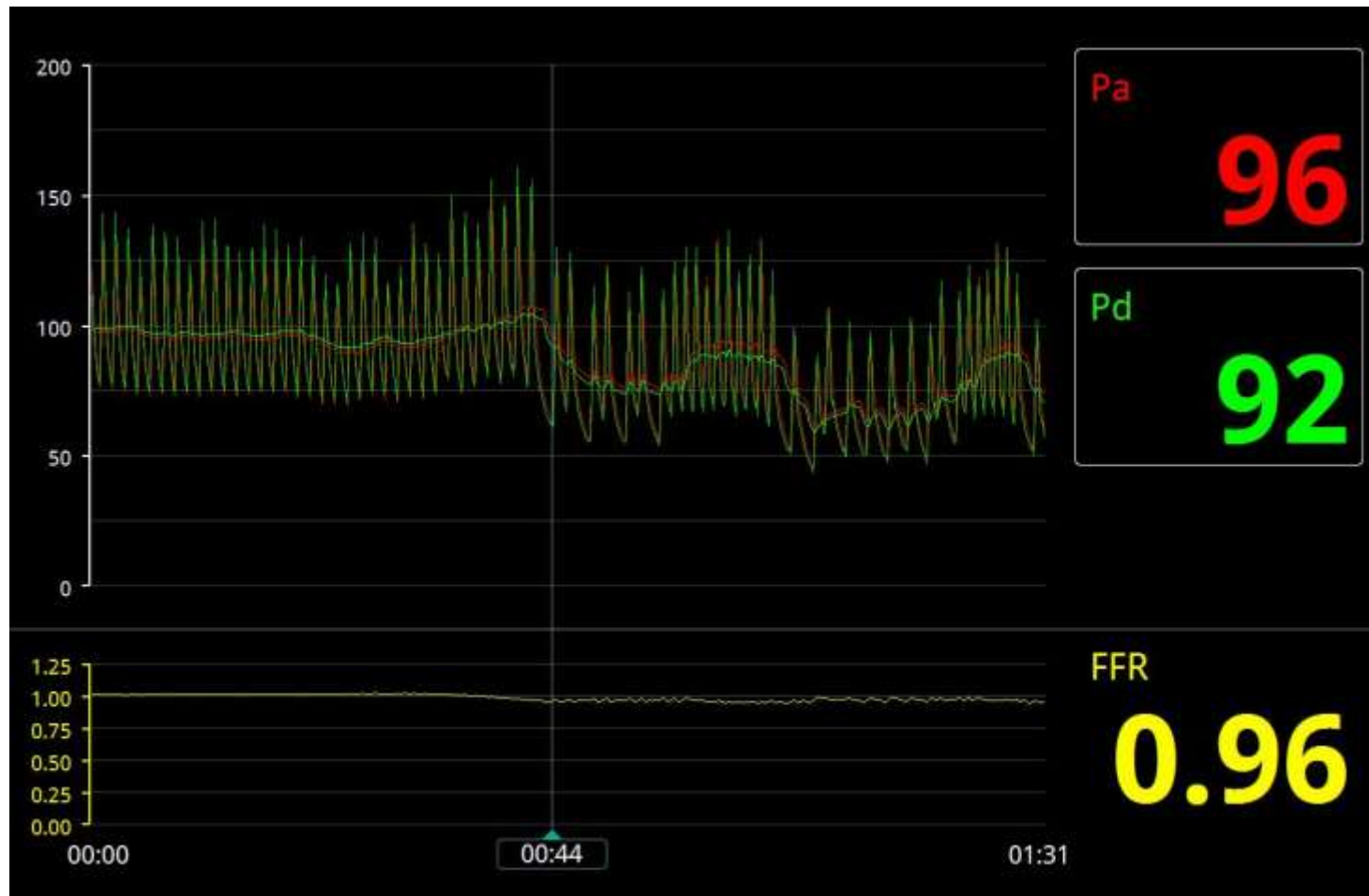


CAG

LM stenosis 60%



FFR to LAD



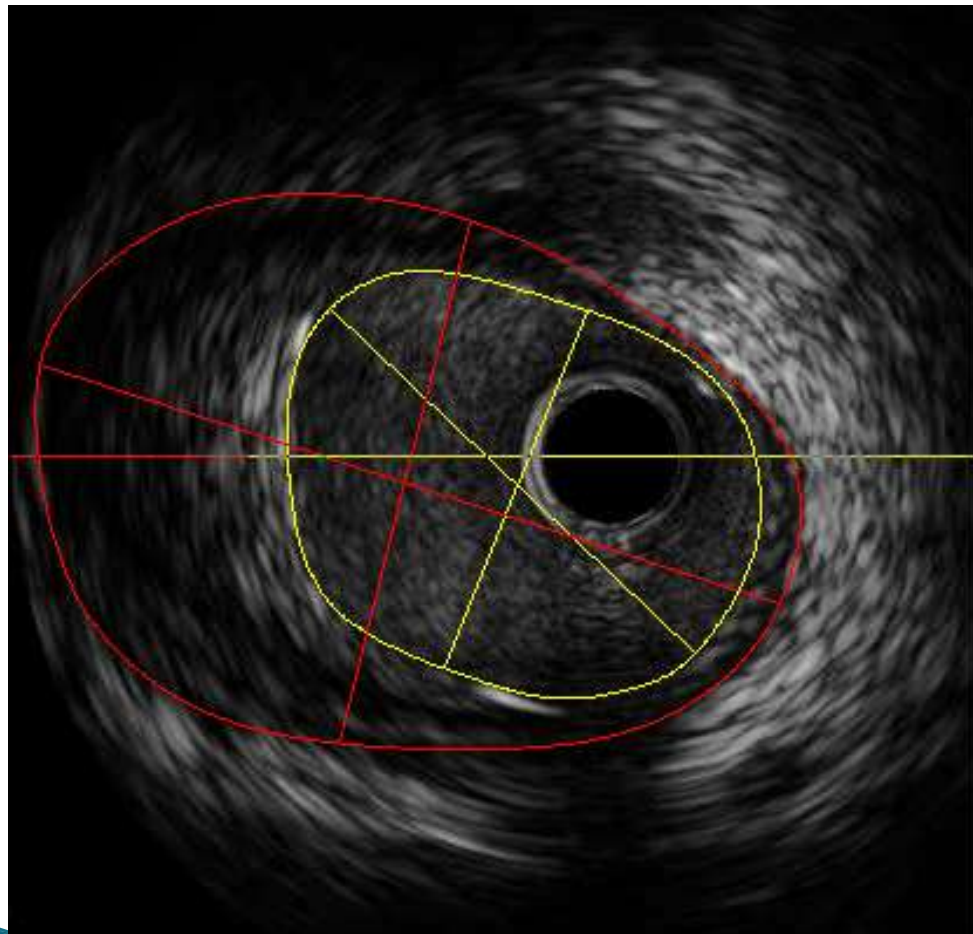
FFR to LCX



TABLE II. Using Fractional Flow Reserve to Guide Unprotected Left Main Intervention

Study	N	Defining iLM (%)	FFR cutoff	Follow-up (mo)	Defer	Revascularization of LM	Survival defer (%)	Survival revascularization (%)	RR CI [95% CI]
Bech et al. [17] ^a	54	40–60	0.75	29 ± 15	24	30 CABG	100	97	0.80 [0.05–12.13]
Jiménez-Navarro et al. [18] ^a	27	30–50	0.75	26 ± 12	20	7 CABG	100	86	7.87 [0.35–173.98]
Legutko et al. [19] ^a	38	30–60	0.75	24 (12–36)	20	12 CABG, 5 PCI, 1 OMT	100	89	5.526 [0.28–107.96]
Suemaru et al. [20]	15	25–75	0.75	32.5±9.7	8	7 CABG	100	100	Excluded
Lindstaedt et al. [21] ^a	51	40–80	0.75–0.80	29 ± 16	24	27 CABG	100	81	8.03 [0.45–141.94]
Courtis et al. [22] ^b	142	30–60	0.75	14± 11	82	54 CABG, 6 PCI	96	95	1.36 [0.28–6.53]
Hamilos et al. [23] ^a	213	30–70	<0.80	36 (6–99)	138	75 CABG	89.8	85.4	1.84 [0.67–5.04]
Total	540				316	224	96	90	2.28 [1.12–4.60] ^c

IVUS



Measurements

Frame Range and Volume Stent Struts

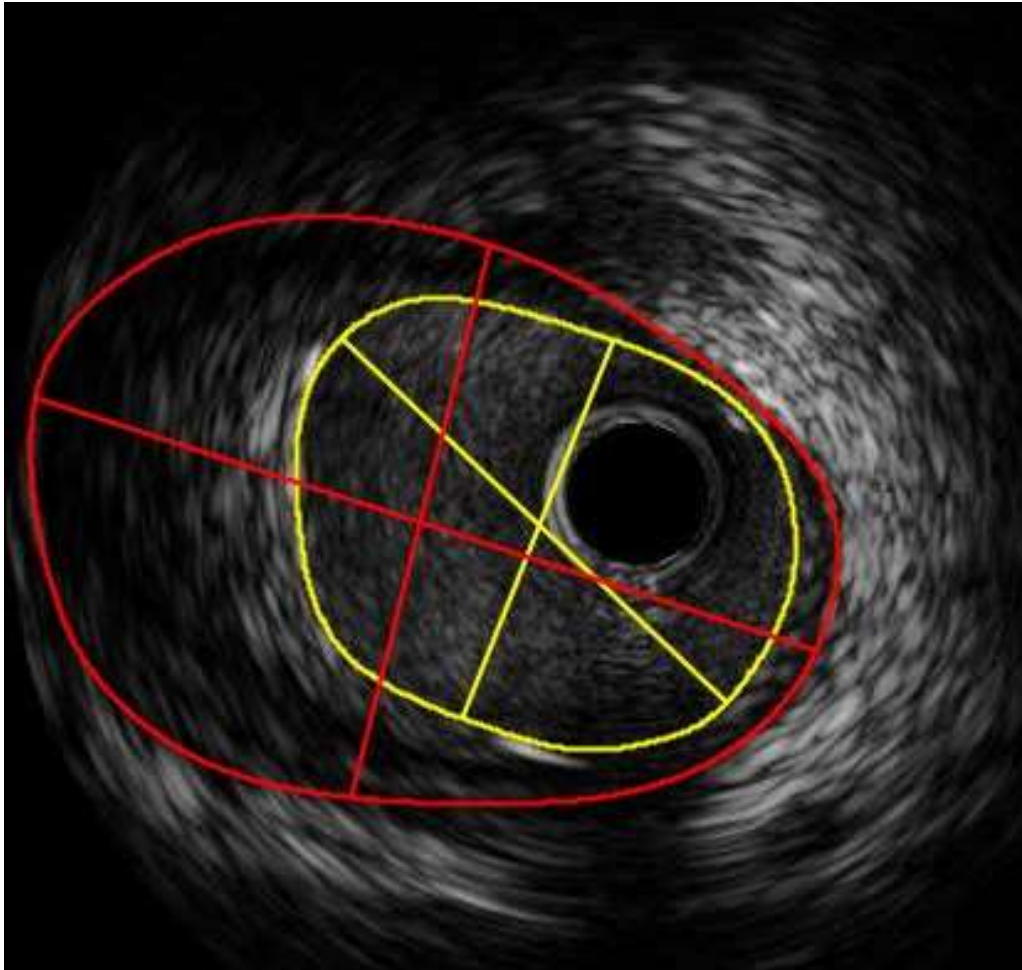
Area and Diameter

	Area (mm ²)	Diameter (mm)			
		Mean	Min	Max	Min/Max
<input type="text"/> Lumen	8.77	3.34	2.87	3.76	0.76
<input type="text"/> Vessel	18.59	4.83	4.01	5.82	0.69
<input type="text"/> Stent					
<input type="text"/> Plaque	9.83 (52.8% of Vessel)				
<input type="text"/> NIH					
<input type="text"/> Malapp					

Intimal Thickness

	Mean	Min	Max	Min/Max
<input type="text"/> Intimal Thickness	0.68	0.08	1.92	0.04
<input type="text"/> Neo-Intimal Thickness				

IVUS

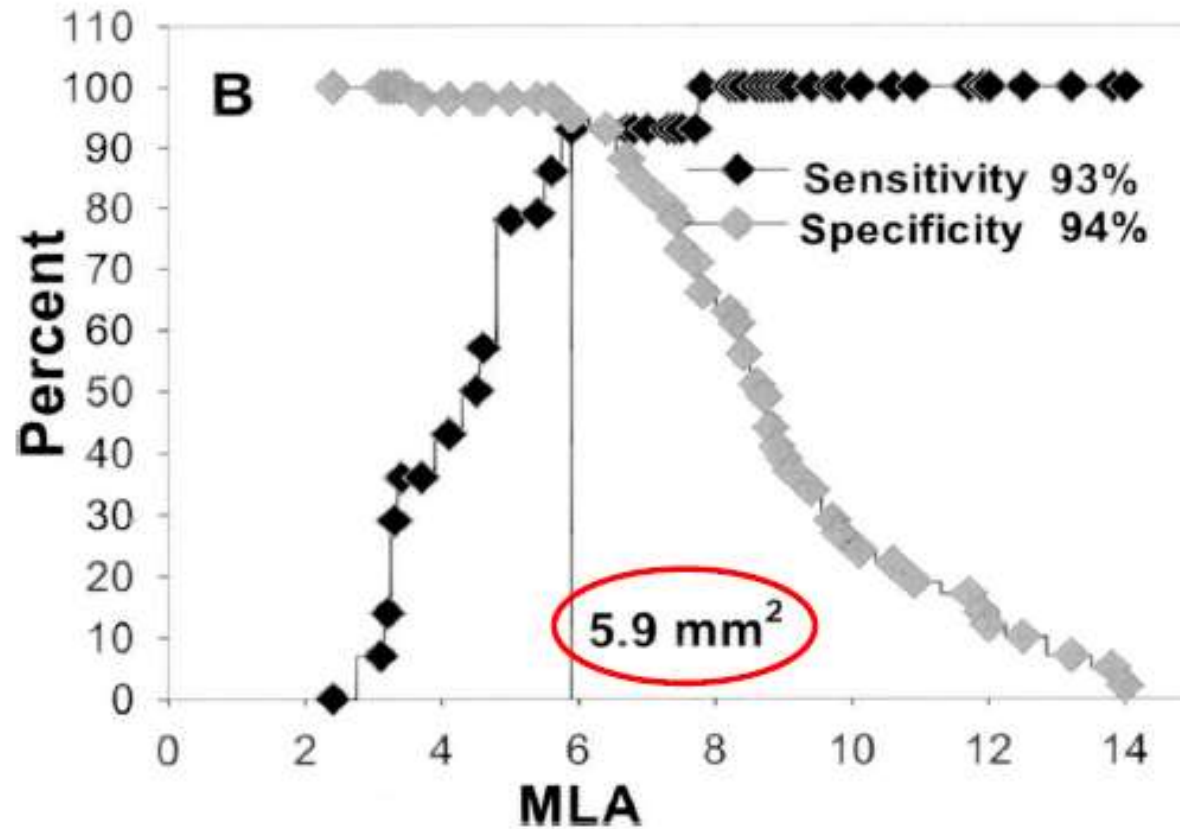


Mean lumen diameter 3.34 mm
Min. lumen diameter 2.87 mm
Mean vessel diameter 4.01 mm

Lumen area: 8.77 mm²
Vessel area 18.59 mm²

Variability of IVUS Cutoff Values

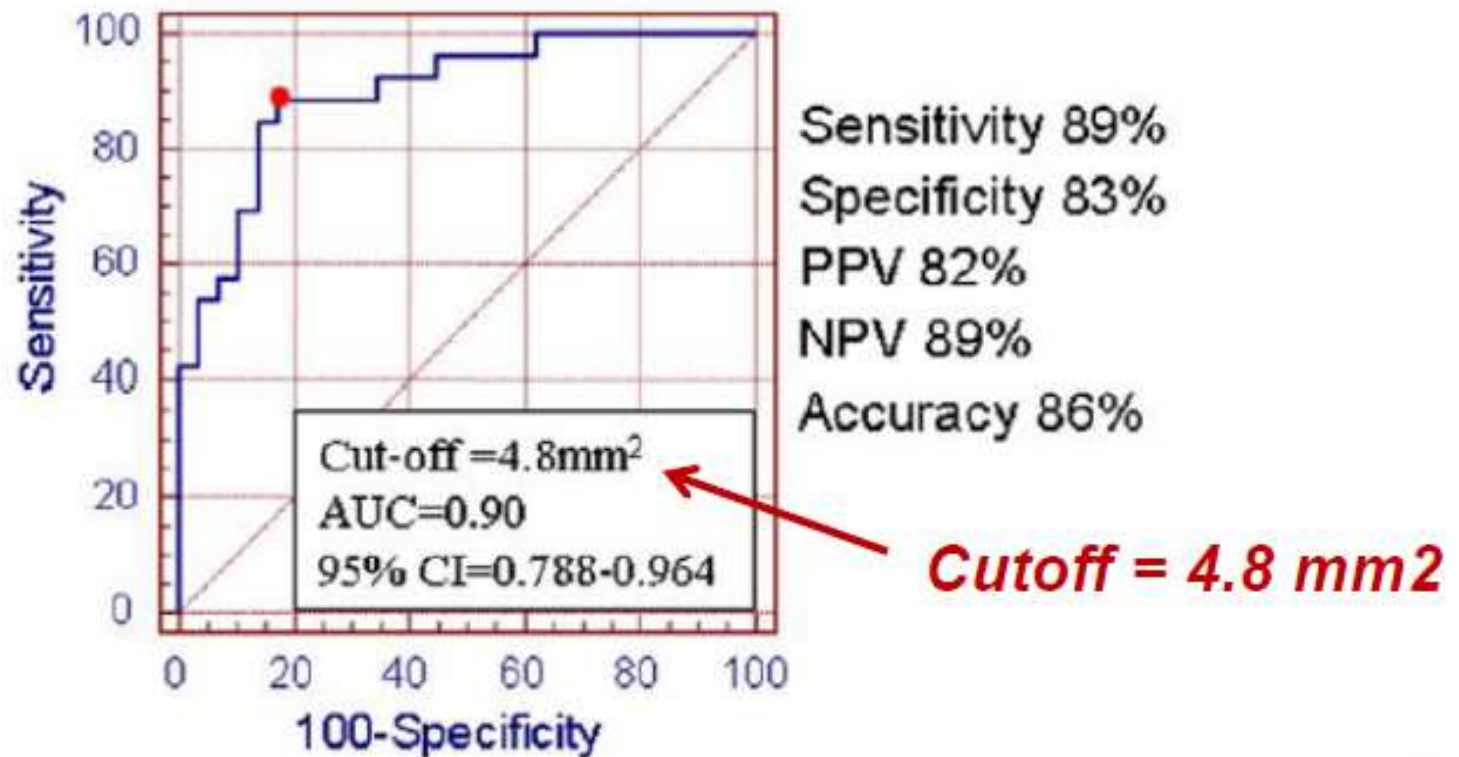
55 patients with ambiguous left main disease



Variability of IVUS Cutoff Values

55 patients with 30-80% LM and FFR and IVUS

A. MLA predicting FFR<0.80



Summary

- ▶ FFR and IVUS are helpful tools to assess borderline Left Main stenosis