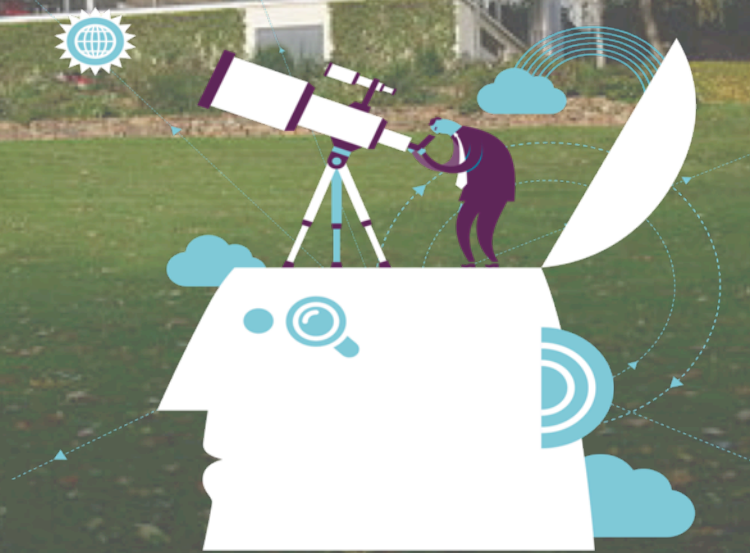


# Less is More

Arnoud van 't Hof

5 april 2019



# Ludwig Mies van der Rohe



‘Minimalistisch design’



# Les is More

DONDERDAG 28 JUNI 2018

Kunst Media Eten Film Leven Mode Fotografie Theater Televisie

de Volkskrant

## Les is more

DONDERDAG FILMDAG

**FILMEDUCATIE** SCHERPT DE BLIK VAN SCHOLIEREN OP CINEMA EN DOET HUN FANTASIE SPRANKELEN. EEN PLEIDOOI OM DE CINEAST IN DE LEERLING WAKKER TE SCHUDDEN



Foto Renate Beense, illustratie Tijmen Snelderwaard

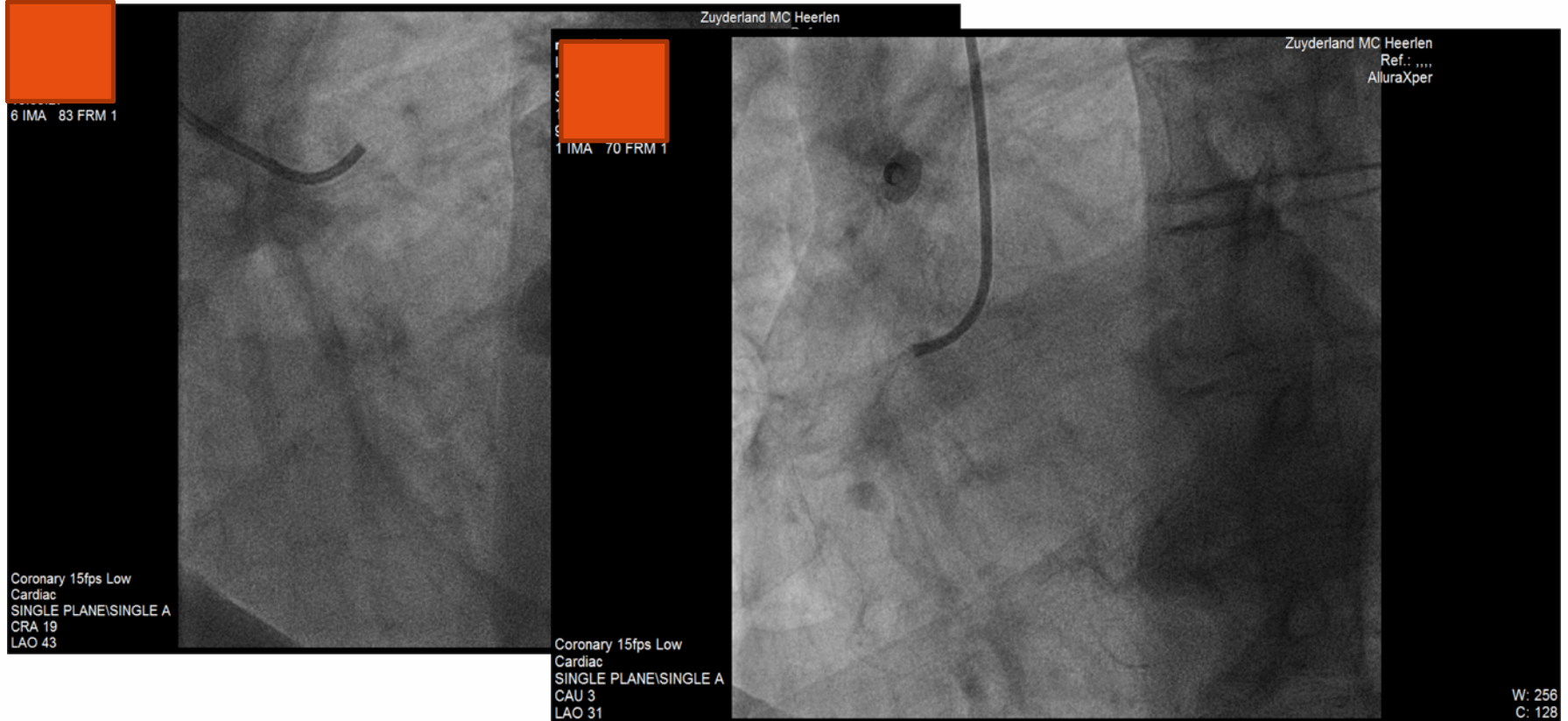


# No Stenosis?

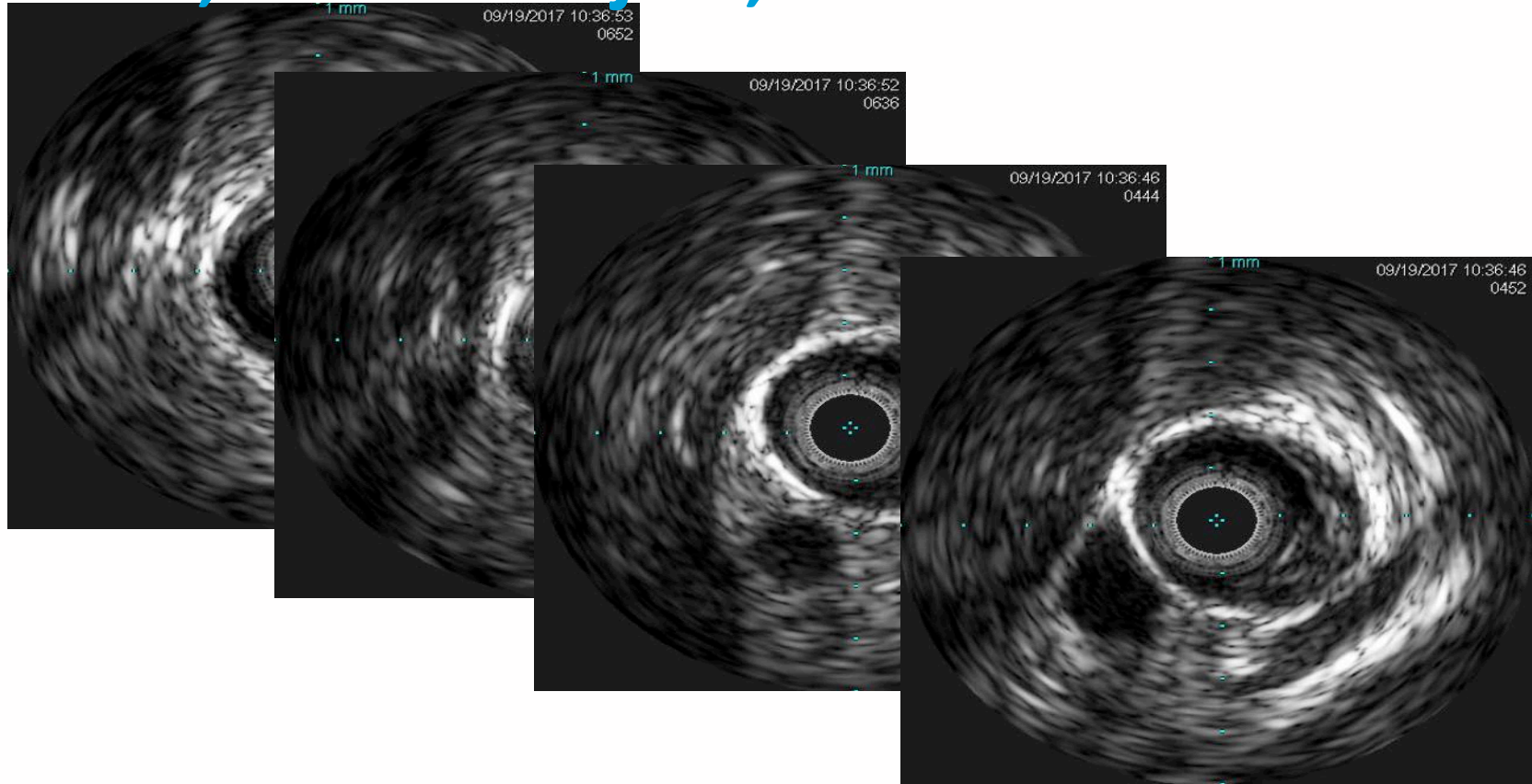


**Less obstruction is more**

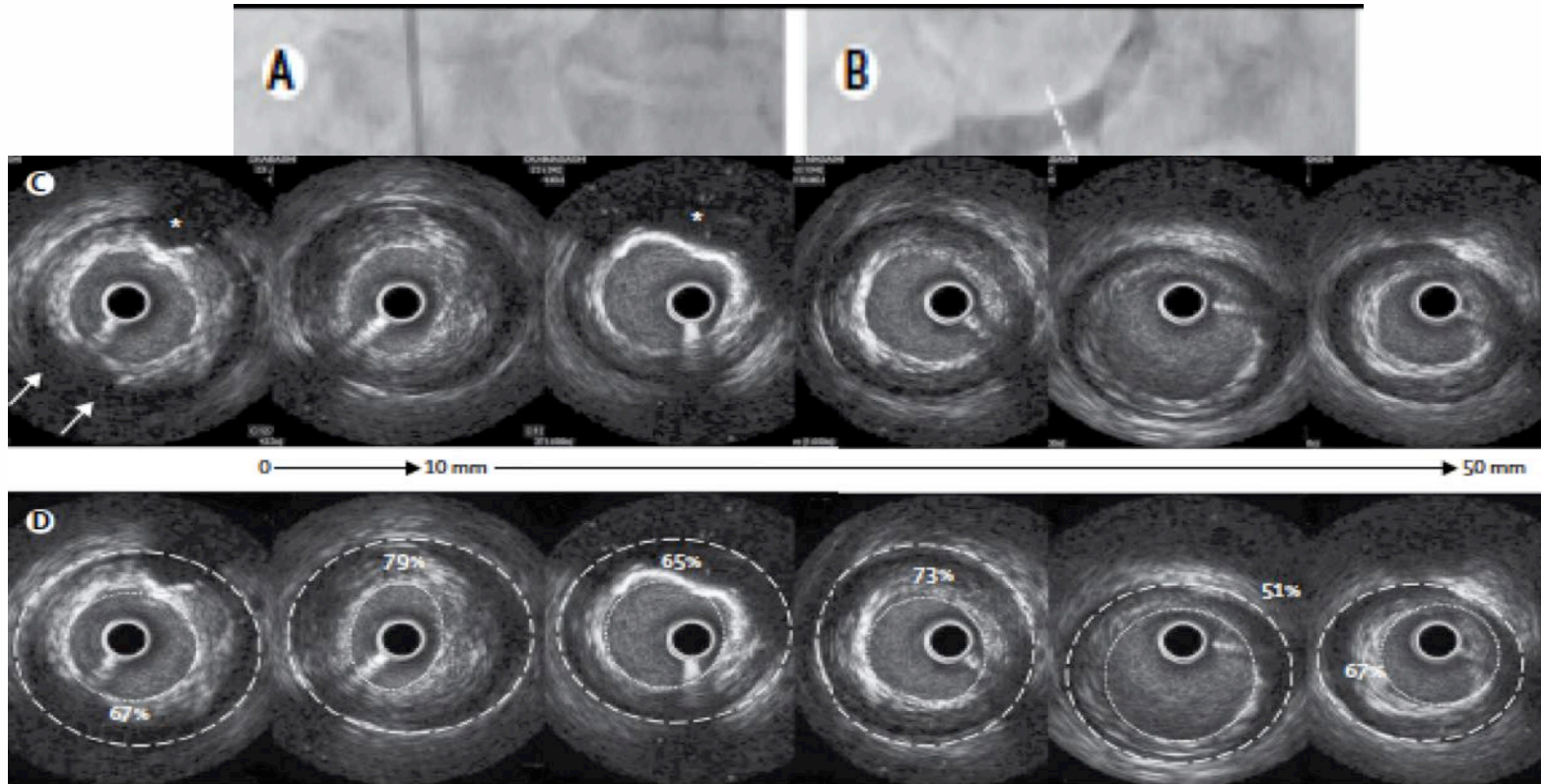
# Casus Vrouw, 60 jaar, NSTEMI, CAG



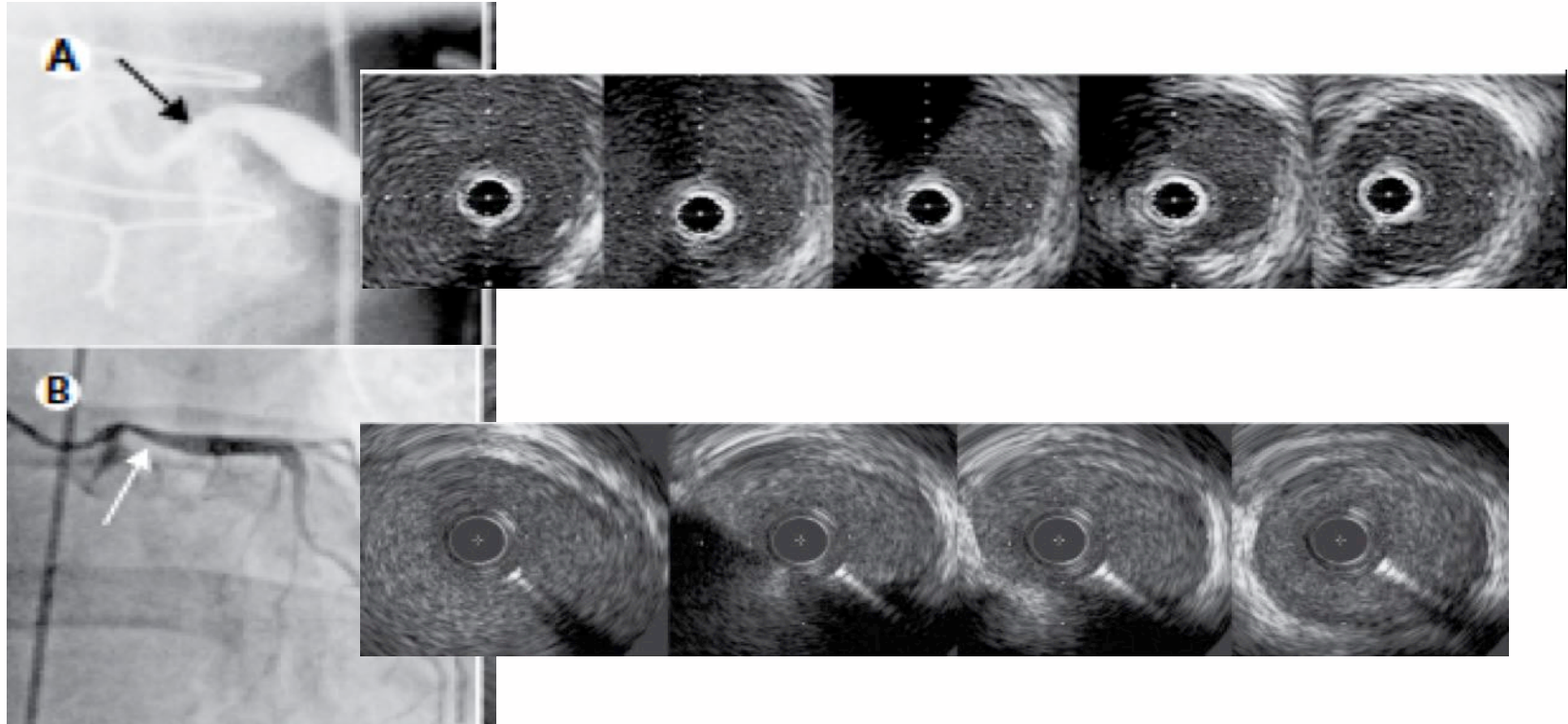
# Casus, Vrouw 60 jaar, IVUS



# No significant CAD?

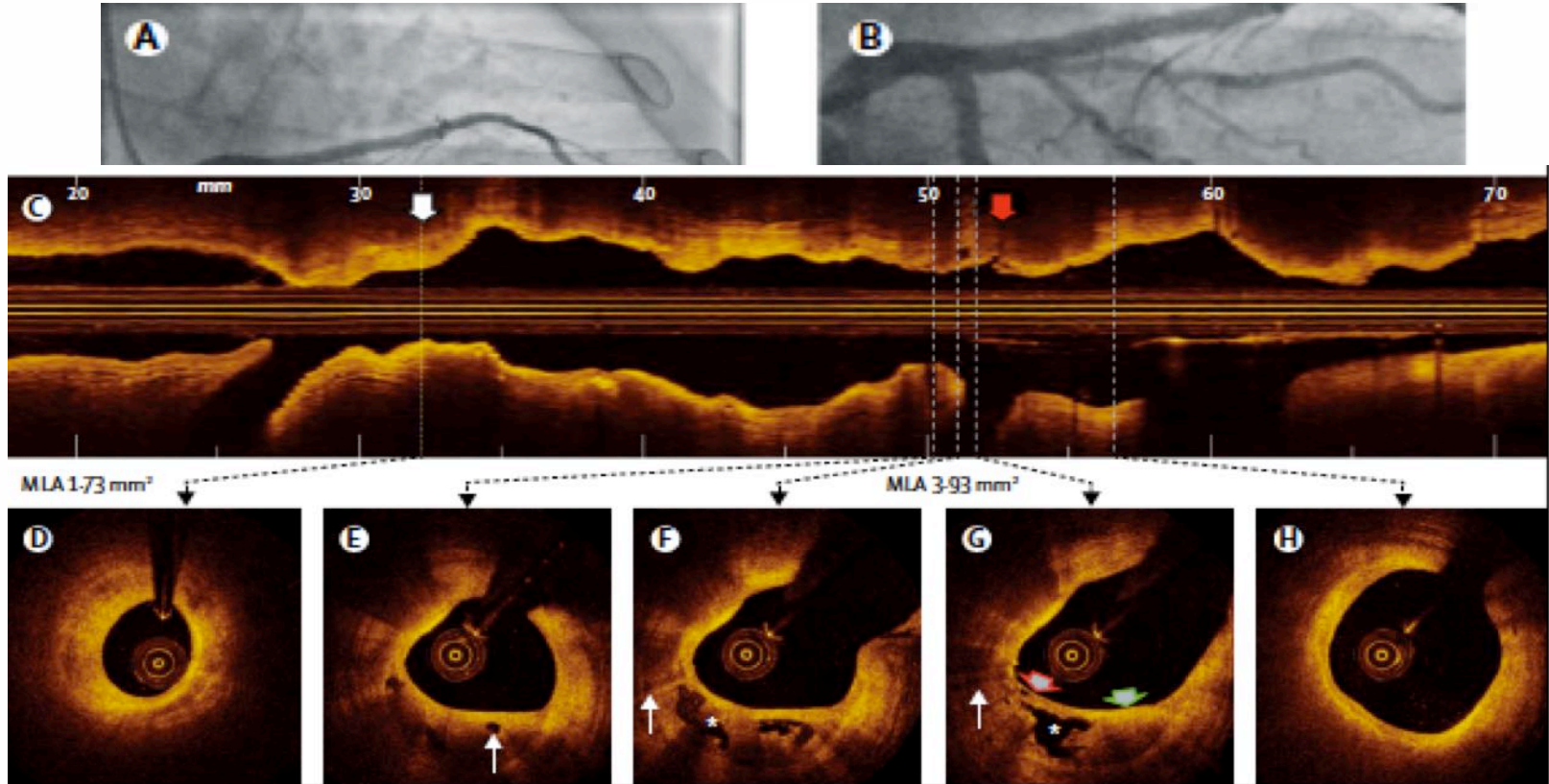


# Significant CAD?





# Culprit?



Mintz G, Guagliumi G. Lancet 2017, 390;793-809

# CAG gold standard?

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

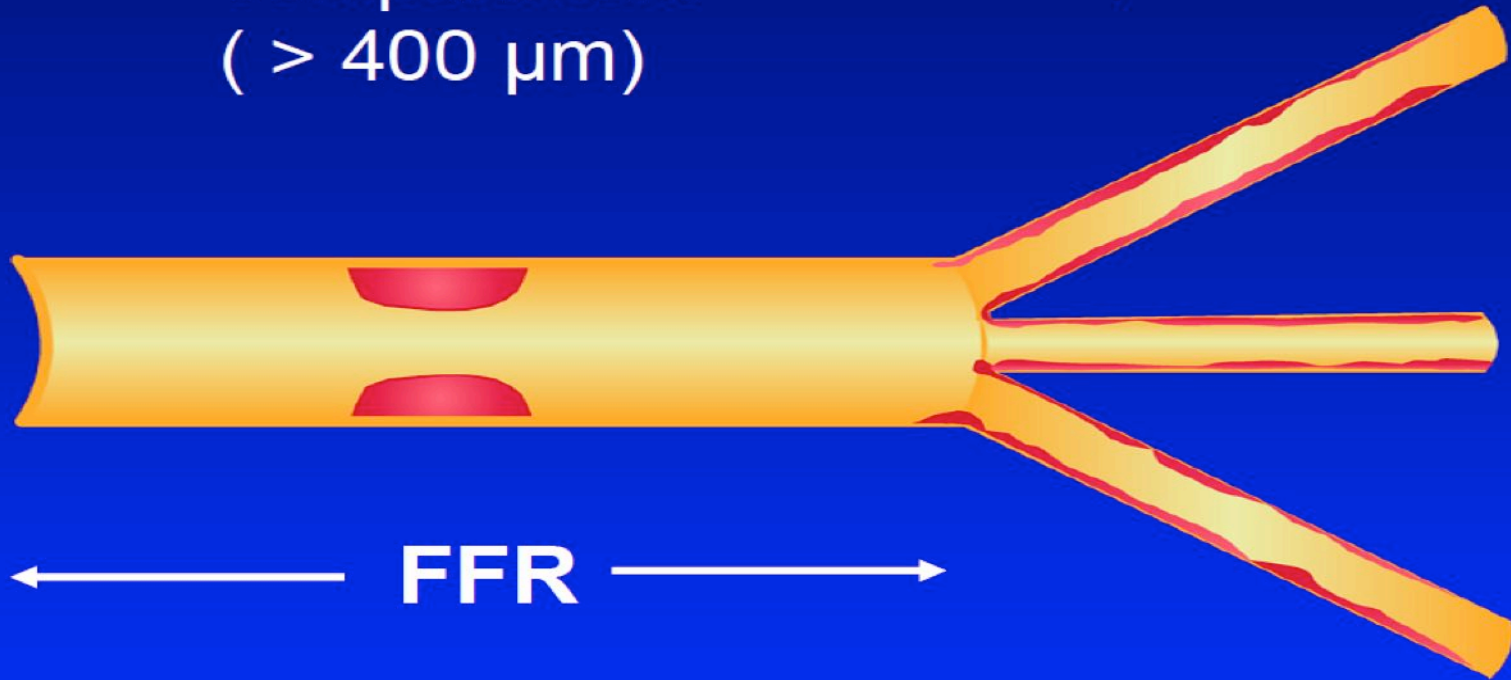
## Low Diagnostic Yield of Elective Coronary Angiography

Manesh R. Patel, M.D., Eric D. Peterson, M.D., M.P.H., David Dai, M.S.,  
J. Matthew Brennan, M.D., Rita F. Redberg, M.D., H. Vernon Anderson, M.D.,  
Ralph G. Brindis, M.D., and Pamela S. Douglas, M.D.

Cath-PCI Registry (NCDR, N=398.000, Obstructive CAD present in 37.6%  
Positive non-invasive test in 68.6%

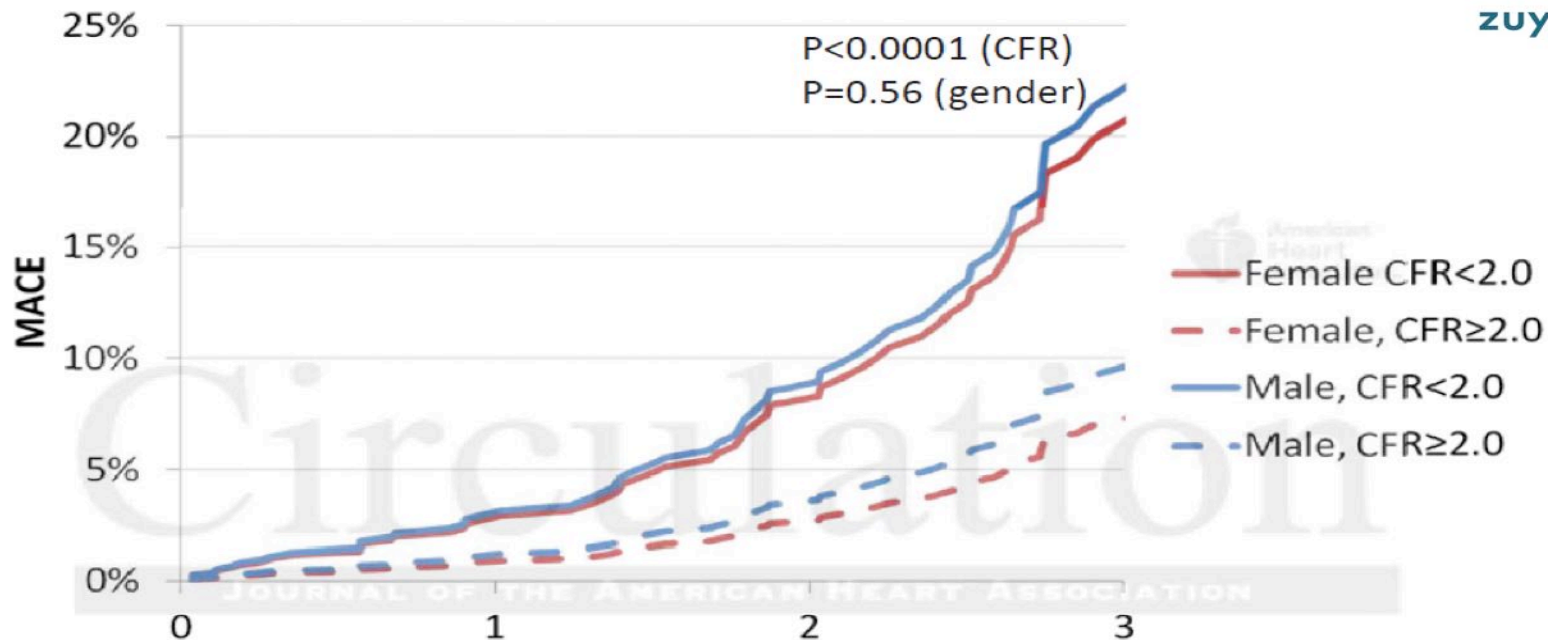
epicardial  
compartment  
( > 400  $\mu\text{m}$  )

microvascular  
compartment



← FFR →

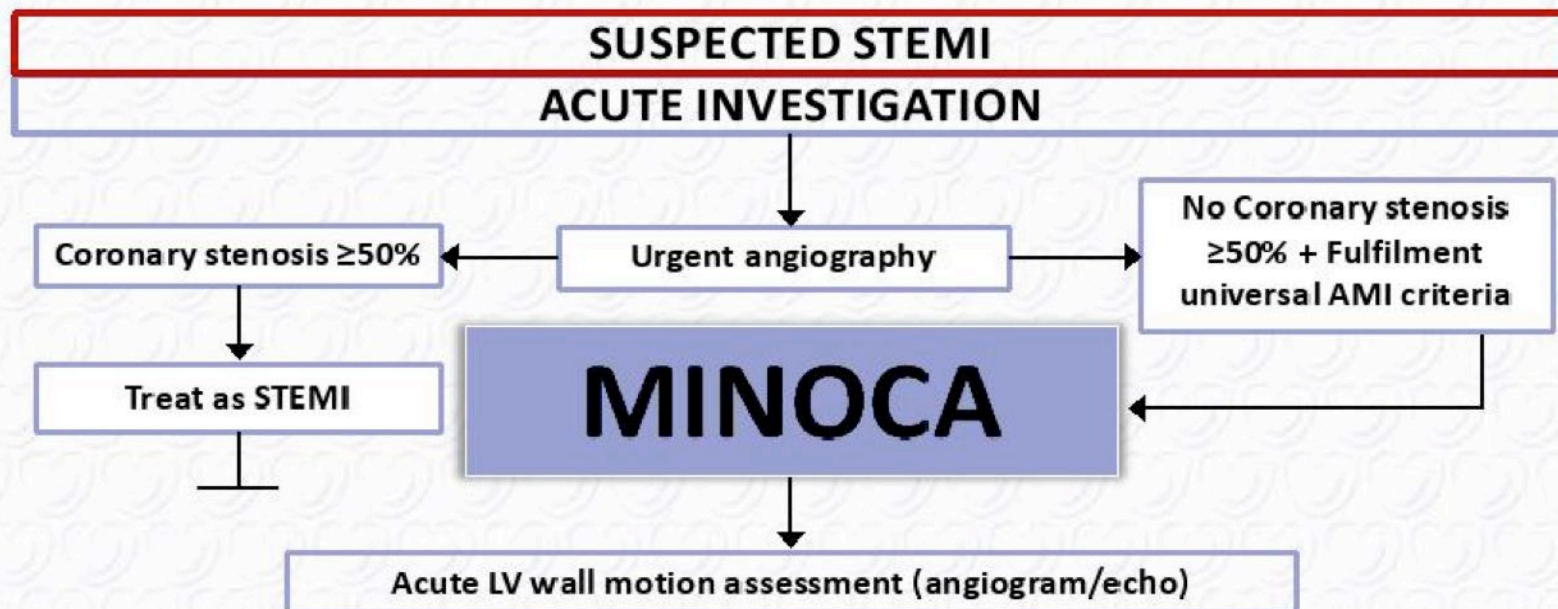
← CFR →



	0	1	2	3
F, CFR < 2.0	435	264	125	43
F, CFR ≥ 2.0	378	250	124	44
M, CFR < 2.0	206	107	51	19
M, CFR ≥ 2.0	199	118	62	31

**Data adjusted for the modified Duke clinical risk score and rest LVEF**

# Diagnostic test flow chart in MINOCA



## Diagnostic test flow chart in MINOCA (continued)

### SUSPECTED DIAGNOSIS AND FURTHER DIAGNOSTIC TESTS

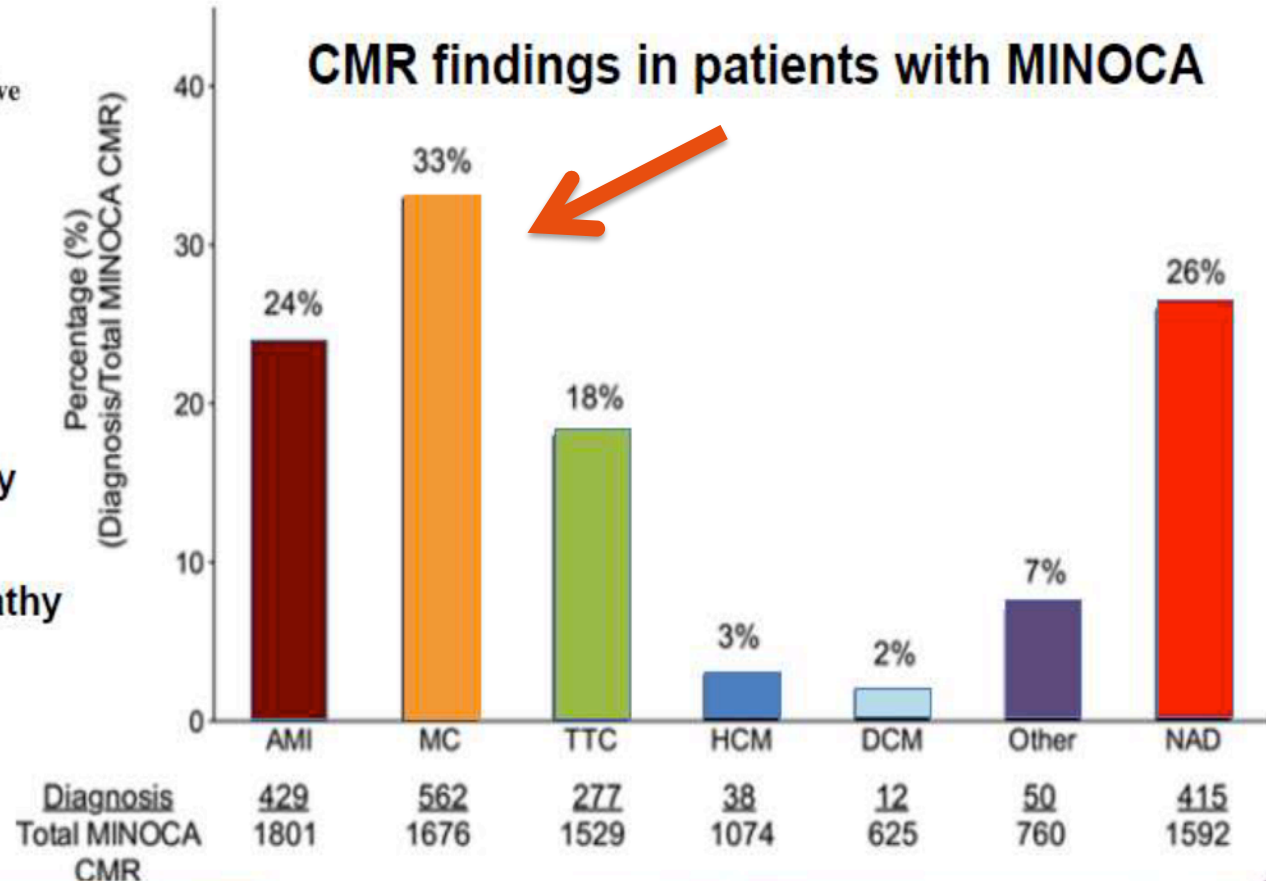
	Non-invasive	Invasive
Myocarditis	<b>TTE Echo</b> (Pericardial effusion) <b>CMR</b> (Myocarditis, pericarditis)	<b>Endomyocardial biopsy</b> (myocarditis)
Coronary (epicardial/ microvascular)	<b>TTE Echo</b> (Regional wall motion abnormalities, embolic source) <b>CMR</b> (small infarction) <b>TOE/Bubble Contrast Echo</b> (Patent foramen ovale, atrial septal defect)	<b>IVUS/OCT</b> (Plaque disruption/dissection) <b>Ergonovine/Ach test</b> (Spasm) <b>Pressure/Doppler wire</b> (Microvascular dysfunction)

# MINOCA: a very heterogeneous group of patients

## Systematic Review of Patients Presenting With Suspected Myocardial Infarction and Nonobstructive Coronary Arteries

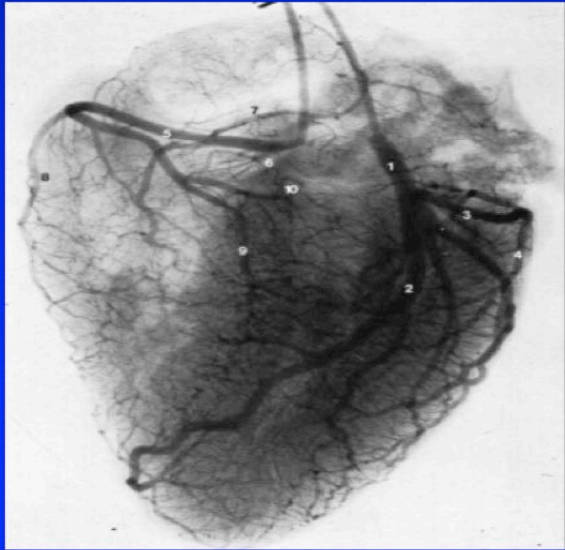
Sivabaskari Pasupathy, BSc(Hons); Tracy Air, BA (Hons), M.Biostatistics;  
Rachel P. Dreyer, BSc(Hons), PhD; Rosanna Tavella, BSc(Hons), PhD;  
John F. Beltrame, BSc, BMBS, PhD

- AMI
- Myocarditis
- Takotsubo cardiomyopathy
- Dilated cardiomyopathy
- Hypertrophic cardiomyopathy
- Others
- Diagnosis not available



Circulation. 2015;131:861-870

# Microcirculation



X 10.5

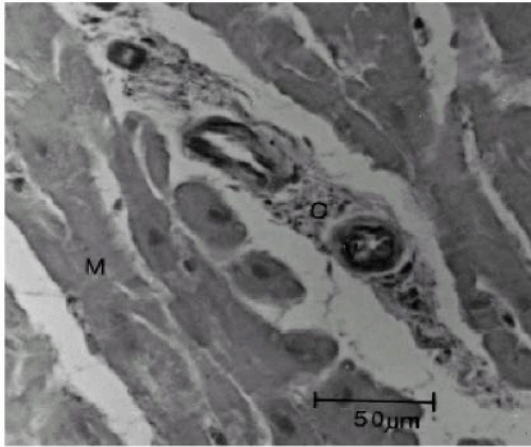




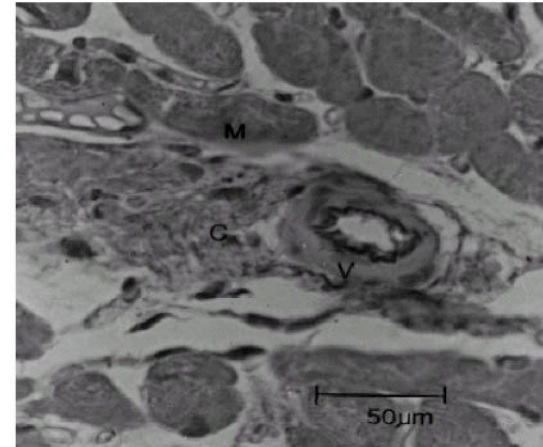
# Arteriolar remodelling in arterial hypertension

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Normal subject

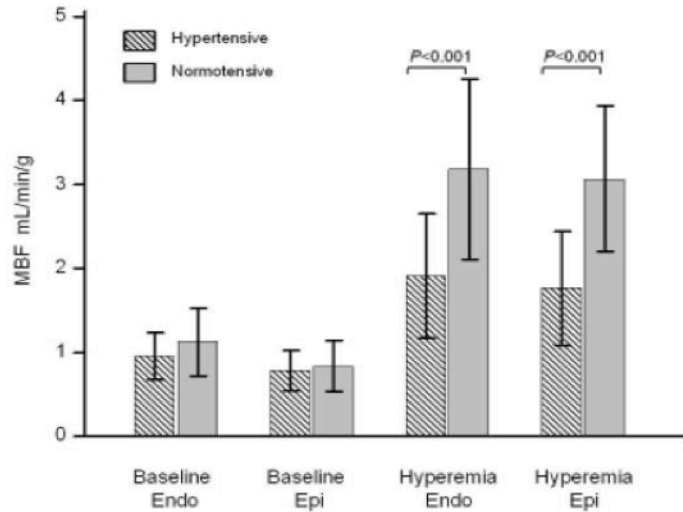


Hypertensive

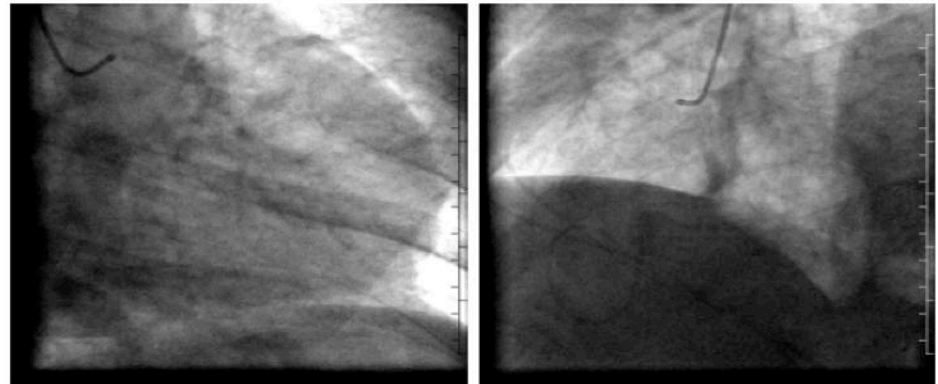


- Myocytes hypertrophy
- Perimyocytic fibrosis
- Thickening of the wall of intramyocardial arterioles: increased wall/lumen ratio

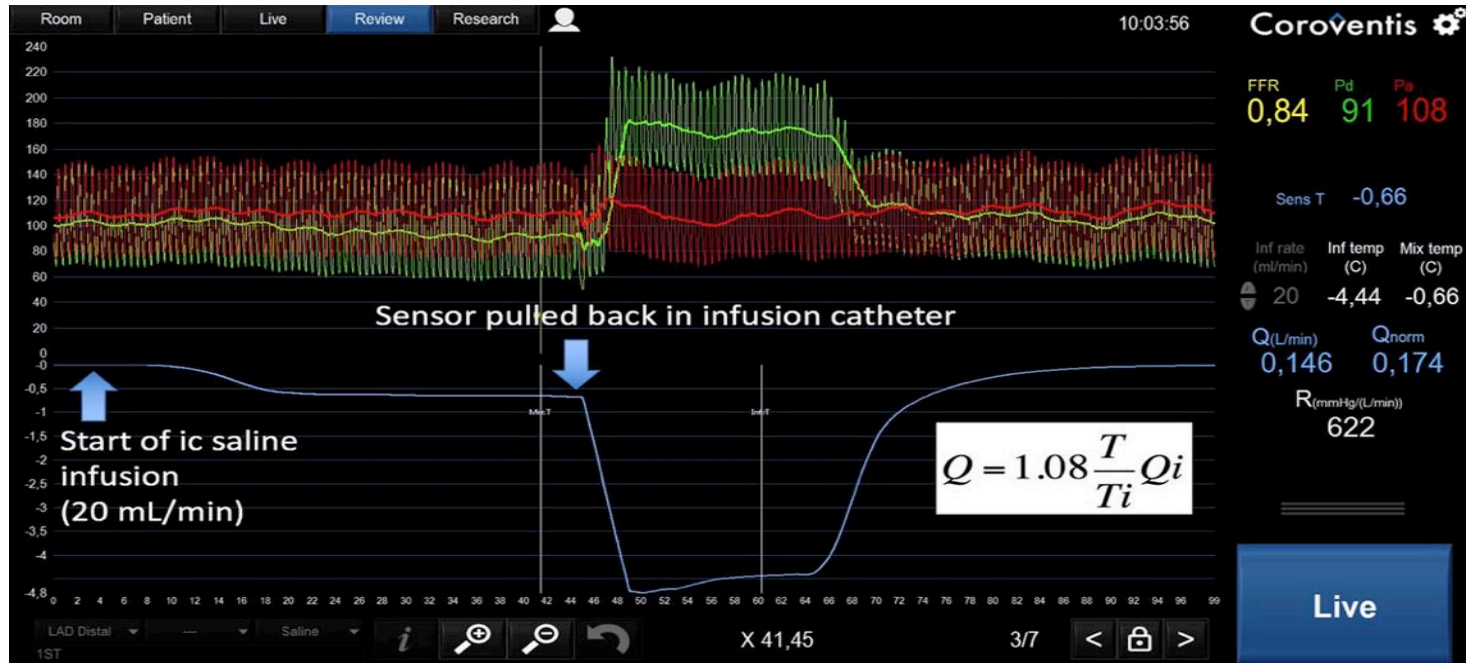
# Microvascular Angina in Hypertension



- Angina and/or ischemic signs on ECG are common in patients with primary or secondary LVH
- Maximum myocardial blood flow and CFR are reduced despite angiographically normal coronary arteries



# Absolute coronary blood flow and microvascular resistance



# Conclusions

- Less obstruction, more diagnostics
- More smaller vessels
- One Stop Shop
  
- Les is More

