

Absolute Coronary Flow Estimation: Comment Quand Pourquoi

CardioRun, 29 Septembre 2021

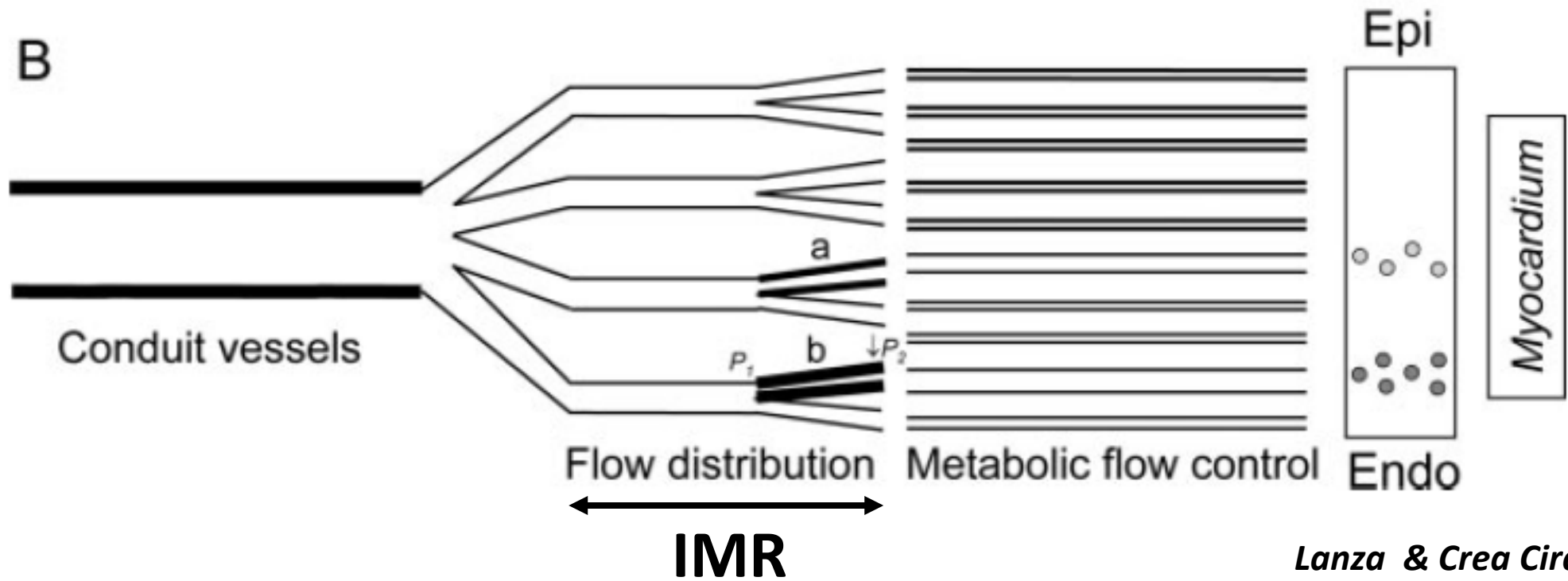
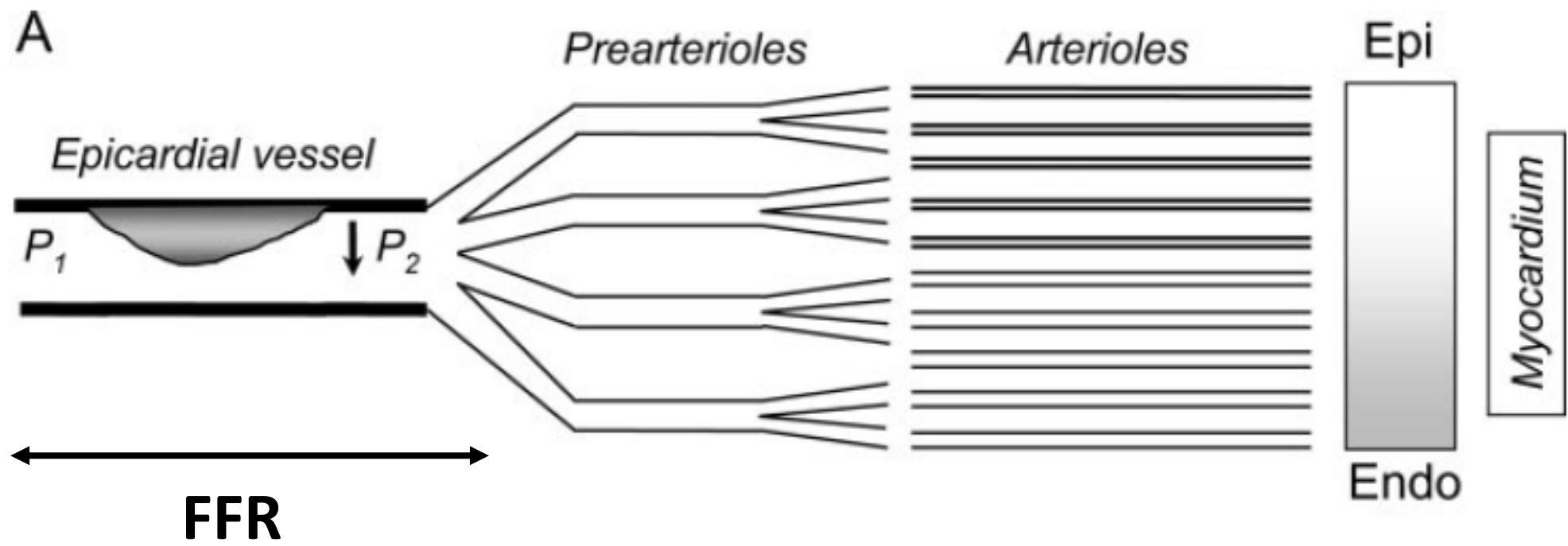
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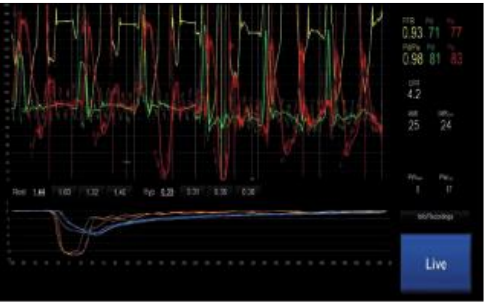


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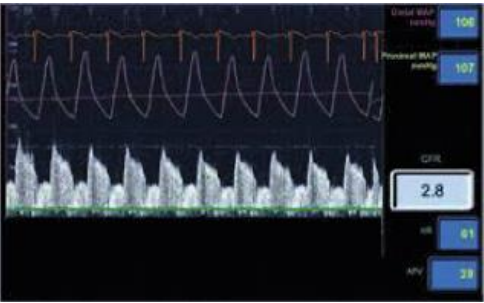


Thermodilution (IMR)	
Pros	Cons
User friendly	Transit time as surrogate of flow
Feasible in every coronary anatomy	Adenosine-dependent
Based on pressure wire only (one device)	↑ Interobserver and Intraobserver variability
Validated against clinical outcomes	

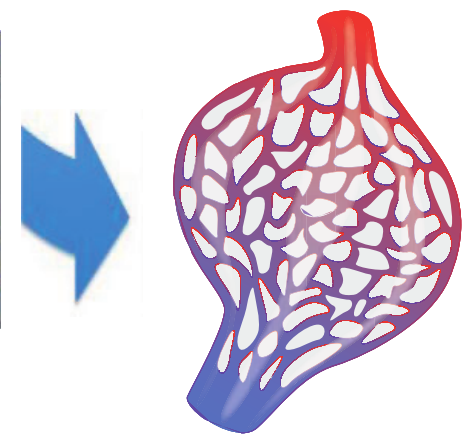
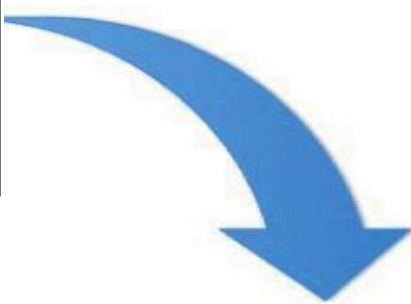


$$IMR = P_d \times tT_{mean}$$

Doppler wire (hMR)	
Pros	Cons
Reasonable reproducibility	Average peak velocity as surrogate of flow
Based on doppler wire only (one device)	Adenosine-dependent
Validated against clinical outcomes	Technical complexity
	Not feasible in all coronary anatomy

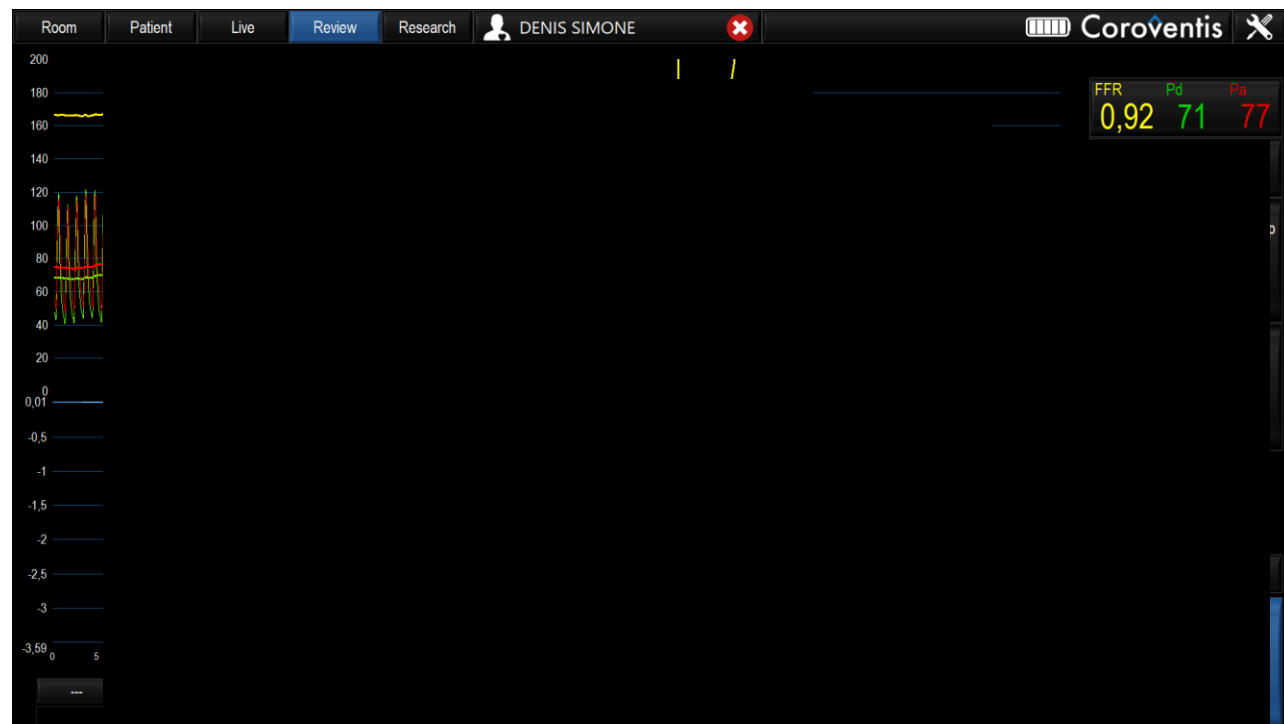
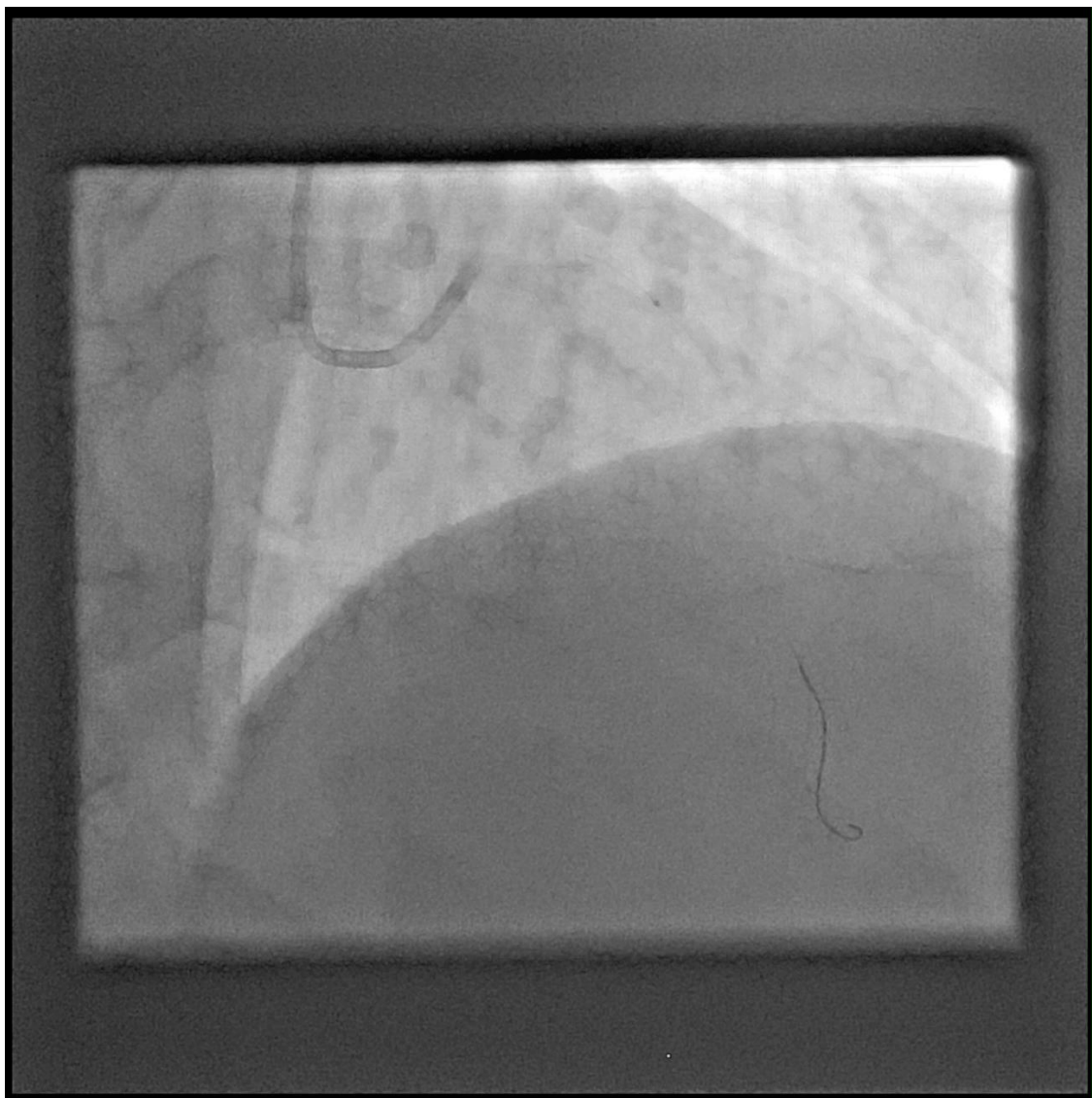


$$hMR = P_d / APV$$



Coronary thermodilution





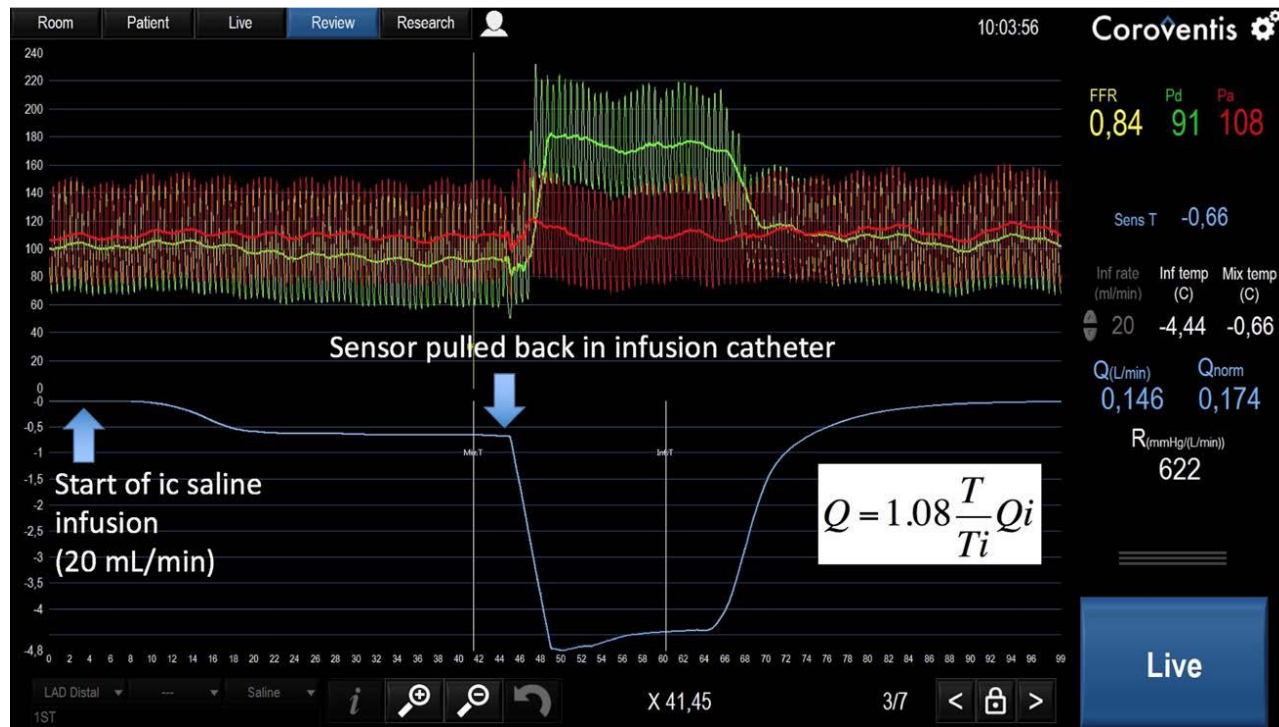
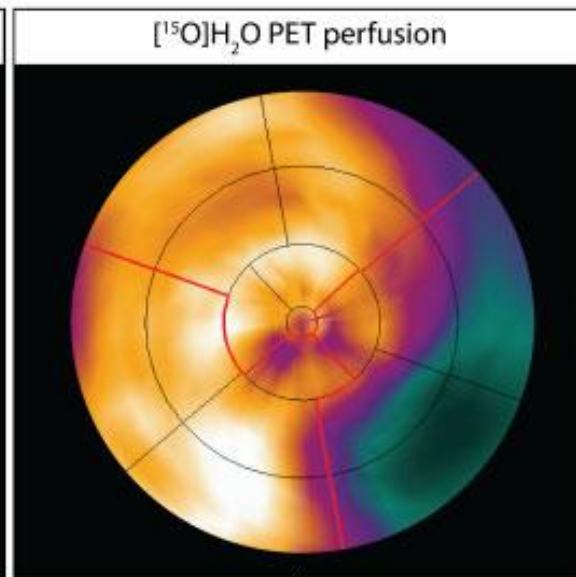
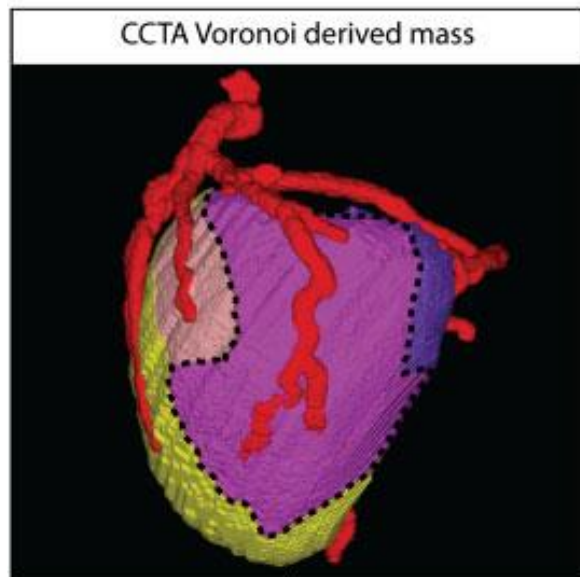


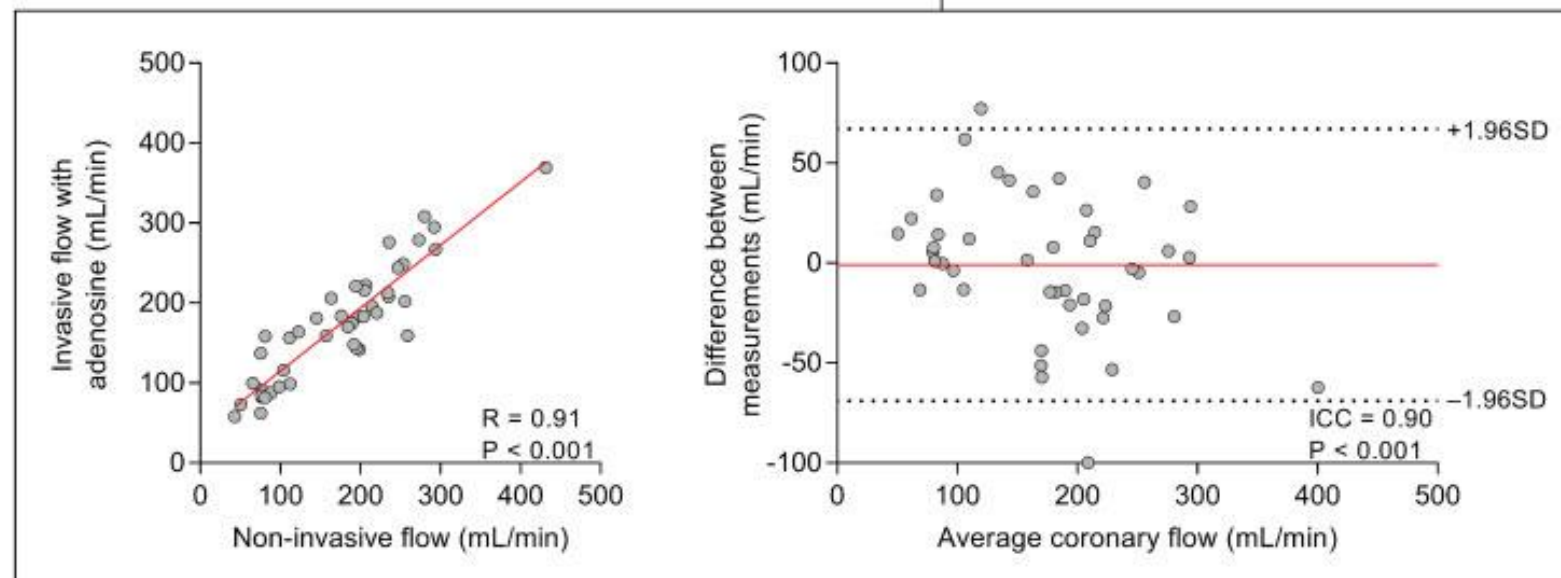
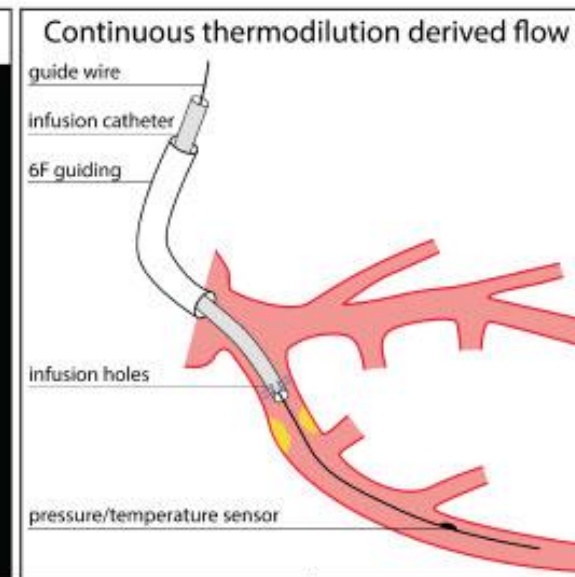
Table 3. Distribution of Measured Temperature, Absolute Coronary Blood Flow, and Microvascular Resistance per Vessel

	Left Anterior Descending Artery (n=64)	Left Circumflex Artery (n=30)	Right Coronary Artery (n=32)	P Value
T, °C	-0.48 (-0.59, -0.39)	-0.51 (-0.71, -0.37)	-0.43 (-0.51, -0.35)	0.09
Ti, °C	-4.2 (-4.4, -3.5)	-4.0 (-4.7, -3.6)	-3.5 (-4.3, -3.1)	0.07
Q, mL/min	189 (151, 232)	148 (120, 196)	166 (118, 210)	0.10
R, mm Hg/L/min	390 (347, 466)	519 (424, 584)	476 (391, 655)	<0.0001
Pd/Pa during infusion	0.80 (0.74, 0.85)	0.91 (0.85, 0.98)	0.91 (0.90, 0.95)	<0.0001

Non-invasive assessment

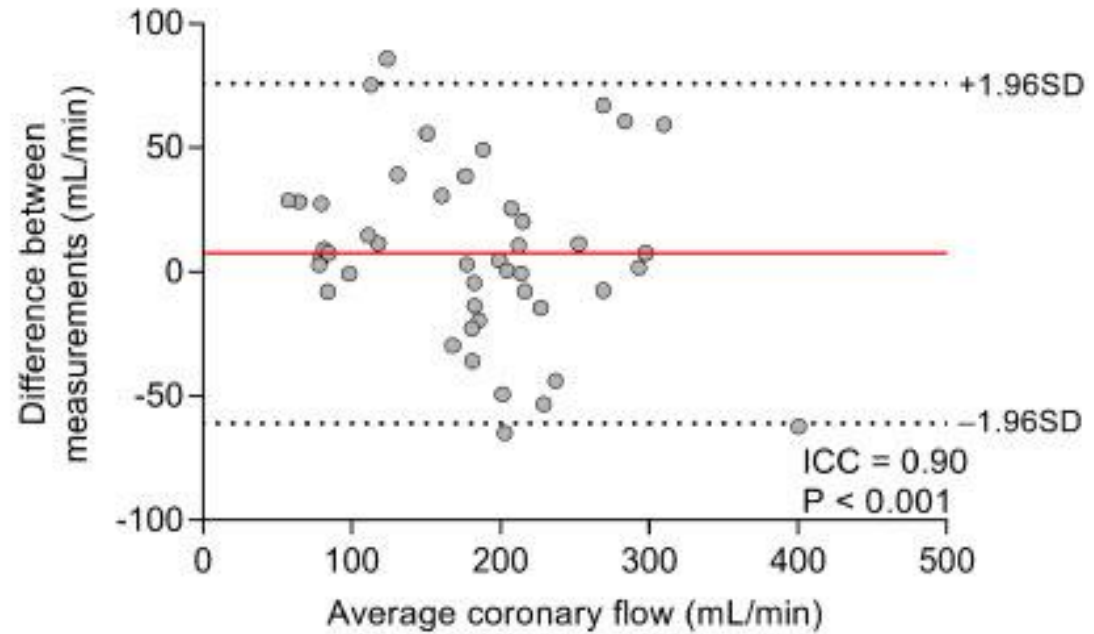
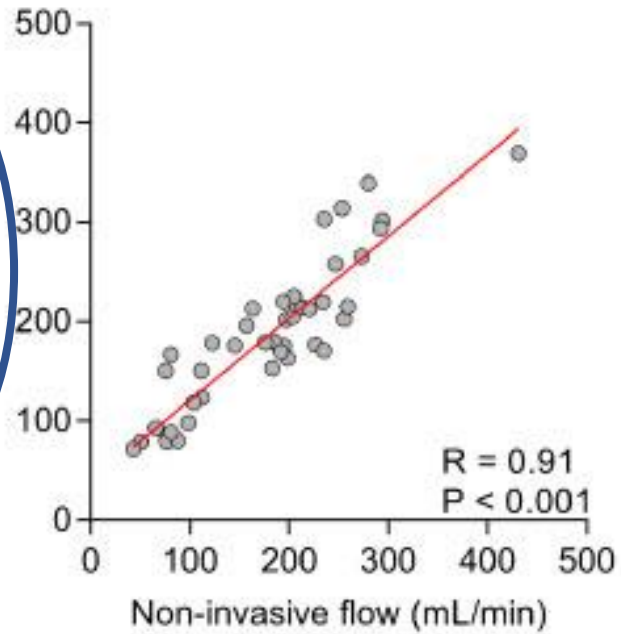


Invasive assessment

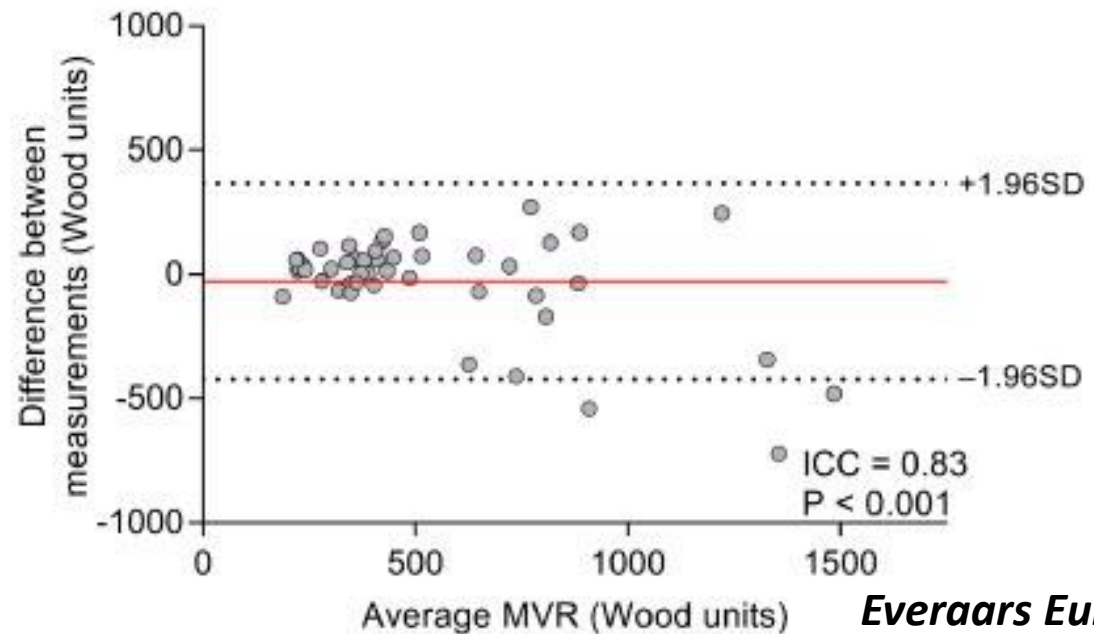
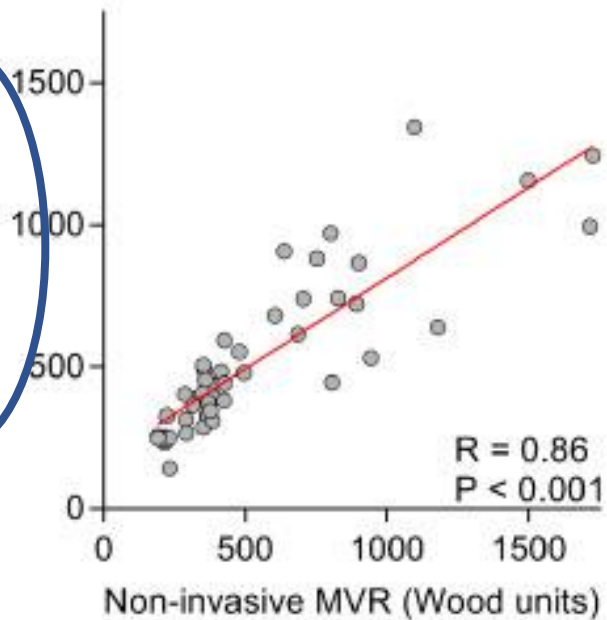


A

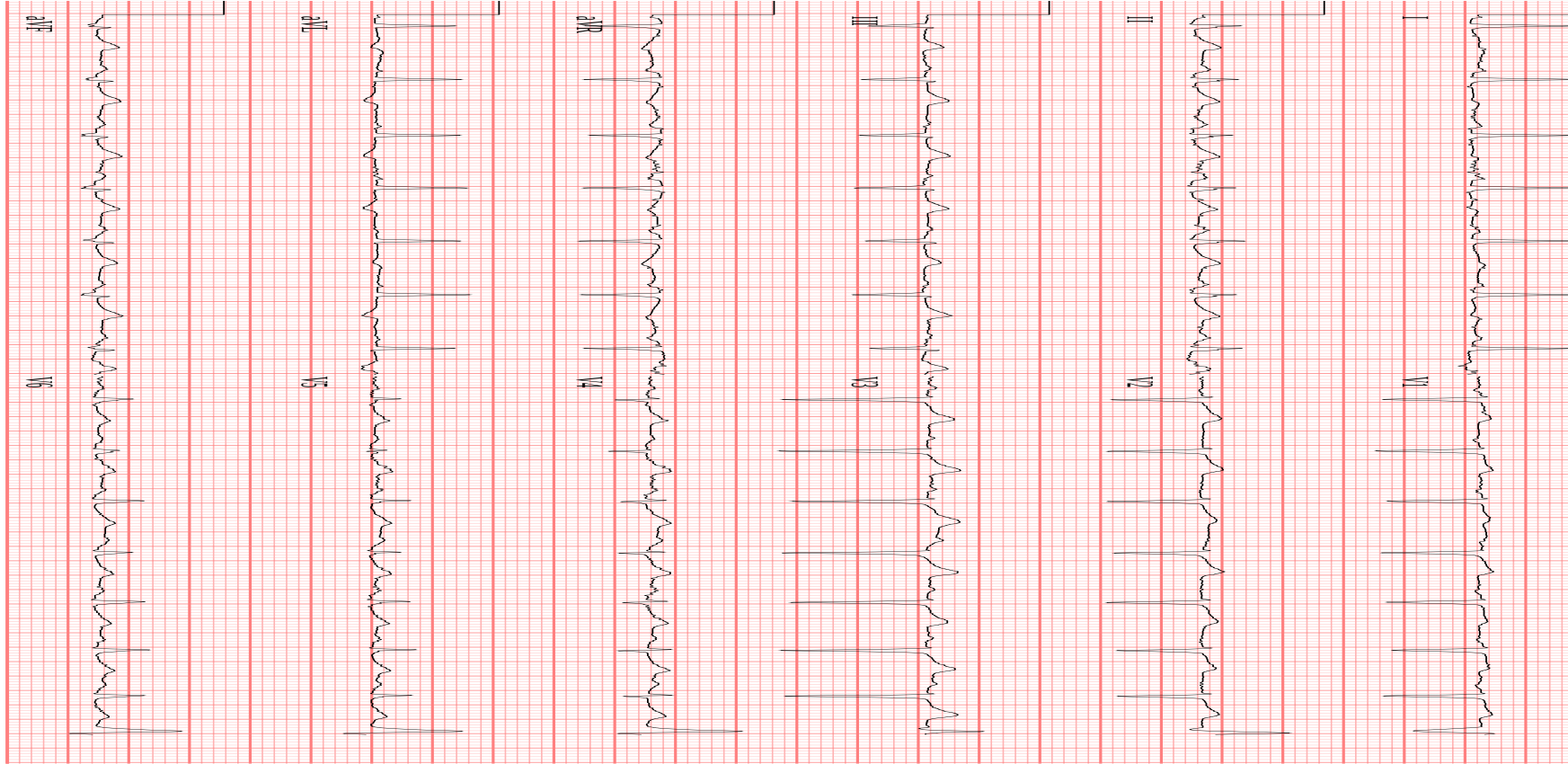
Invasive flow without
adenosine (mL/min)

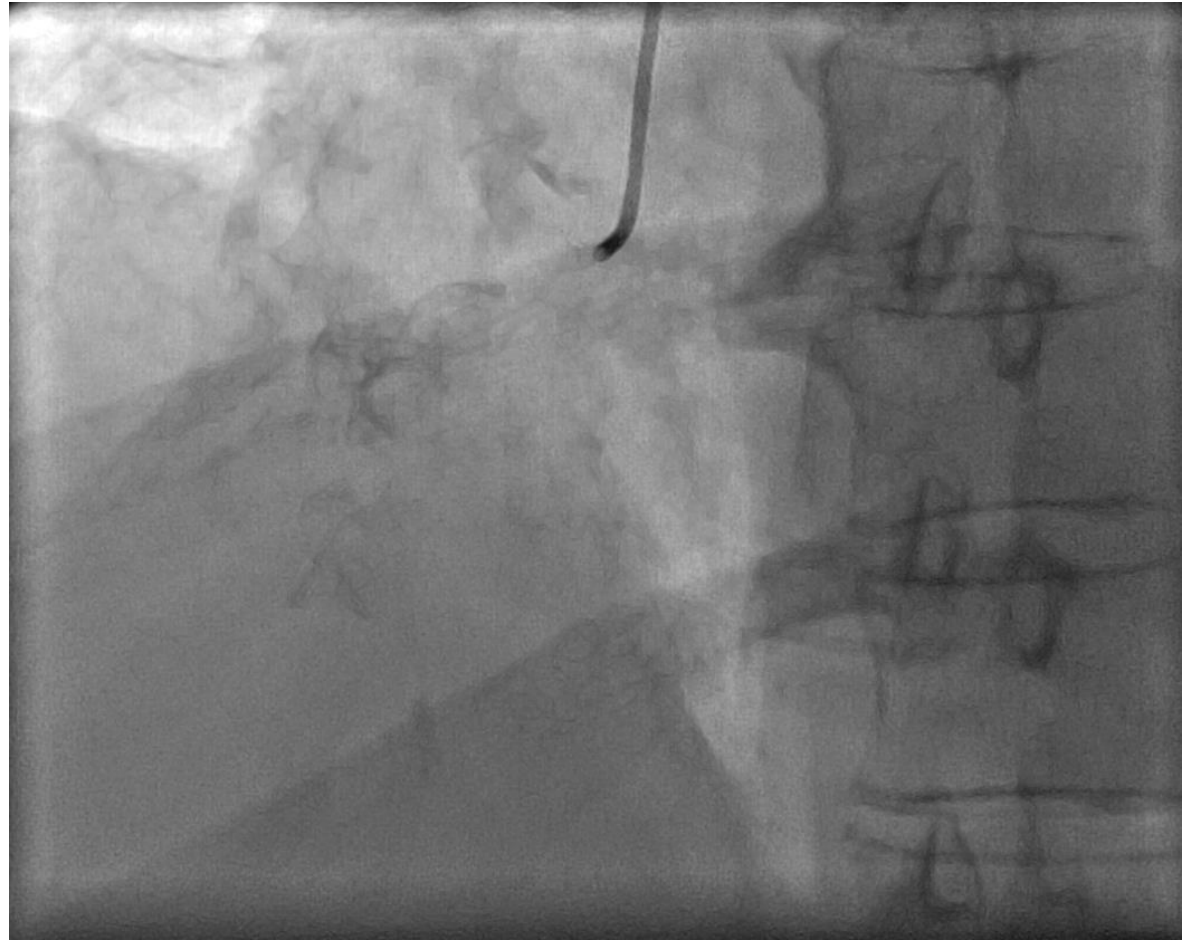
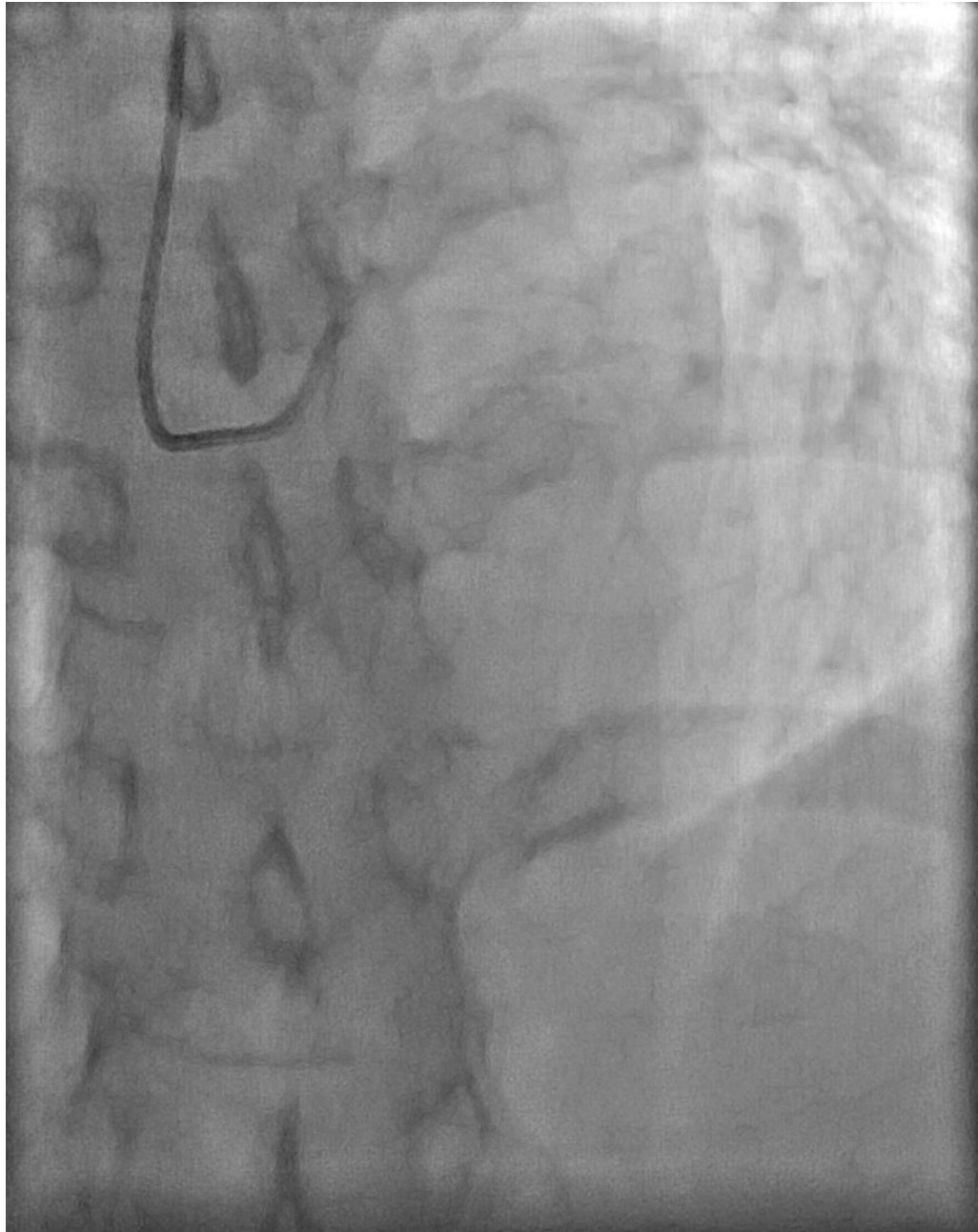
**B**

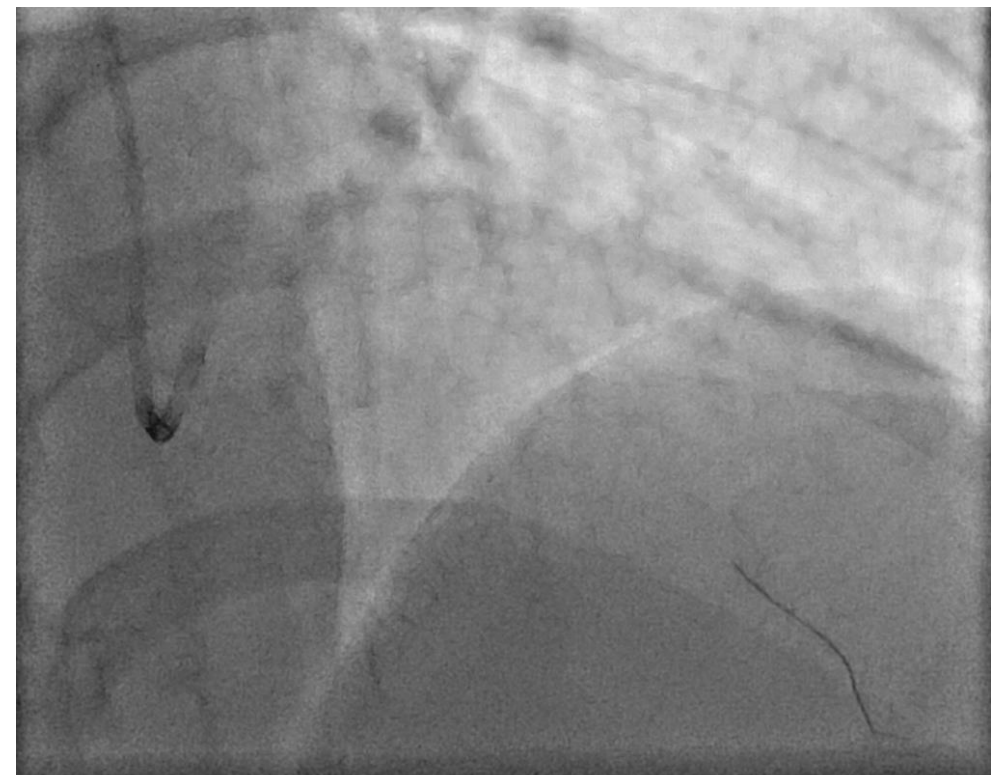
Invasive MVR without
adenosine (Wood units)



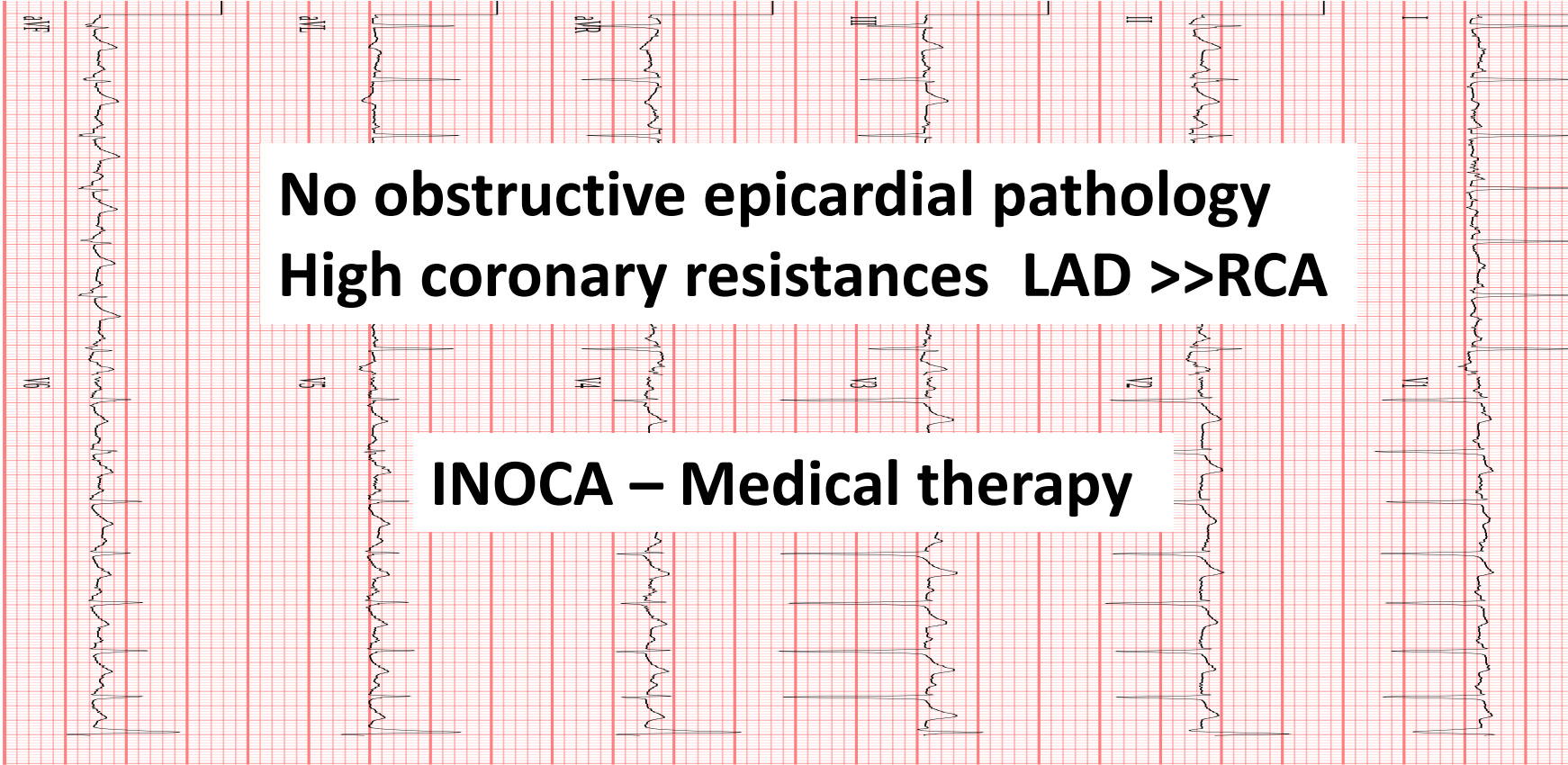
76 yo lady BMI 34 –type2 diabetes
stable angina CCS2 –normal TEE with EF 70%







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The background of the slide is a 12-lead ECG tracing on a standard red grid. The leads are arranged in a 6x2 grid. The top row shows leads I, II, III, aVR, aVL, and aVF. The bottom row shows leads V1, V2, V3, V4, V5, and V6. The ECG shows a regular sinus rhythm with a heart rate of approximately 70 bpm. The QRS complex is narrow and the T waves are upright in most leads, consistent with a normal ECG.

No obstructive epicardial pathology
High coronary resistances LAD >>RCA

INOCA – Medical therapy

Conclusions

Microvascular disease is probably under-estimated in routine

Microvascular resistances measurements should be integrated in the cathlab set-up

Thermodilution and absolute coronary flow estimation are

Simple to get

Operator independant

Adenosin independant

Fairly reproducible

