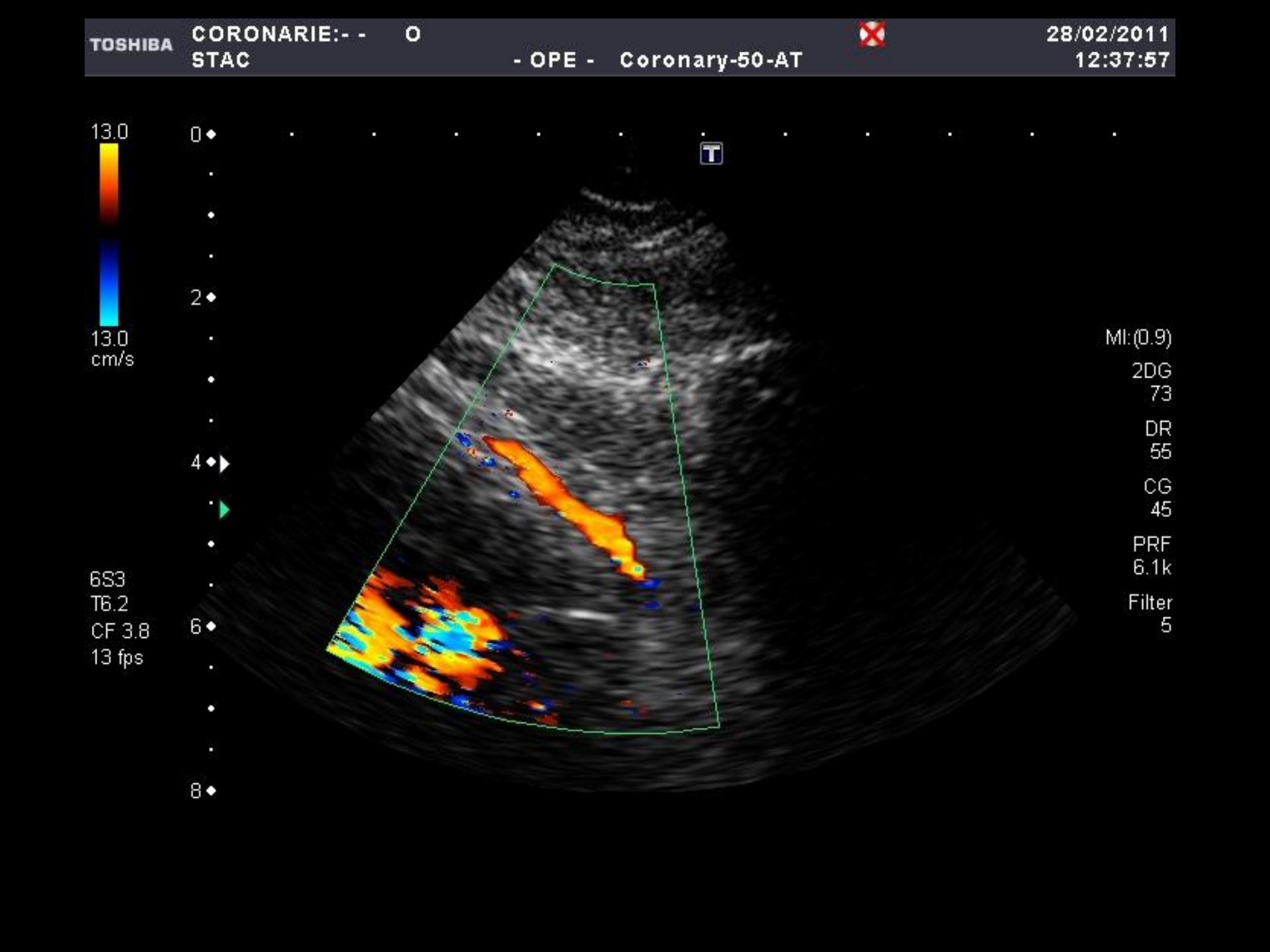
CFR

Quando, Come e Perché

Paolo Voci – Crotone 2012


TOSHIBA
CORONARIE:- -
STAC
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Coronary-50-AT
28/02/2011
12:37:57
13.0
13.0
cm/s
0
2
4
6
8
6S3
T6.2
CF 3.8
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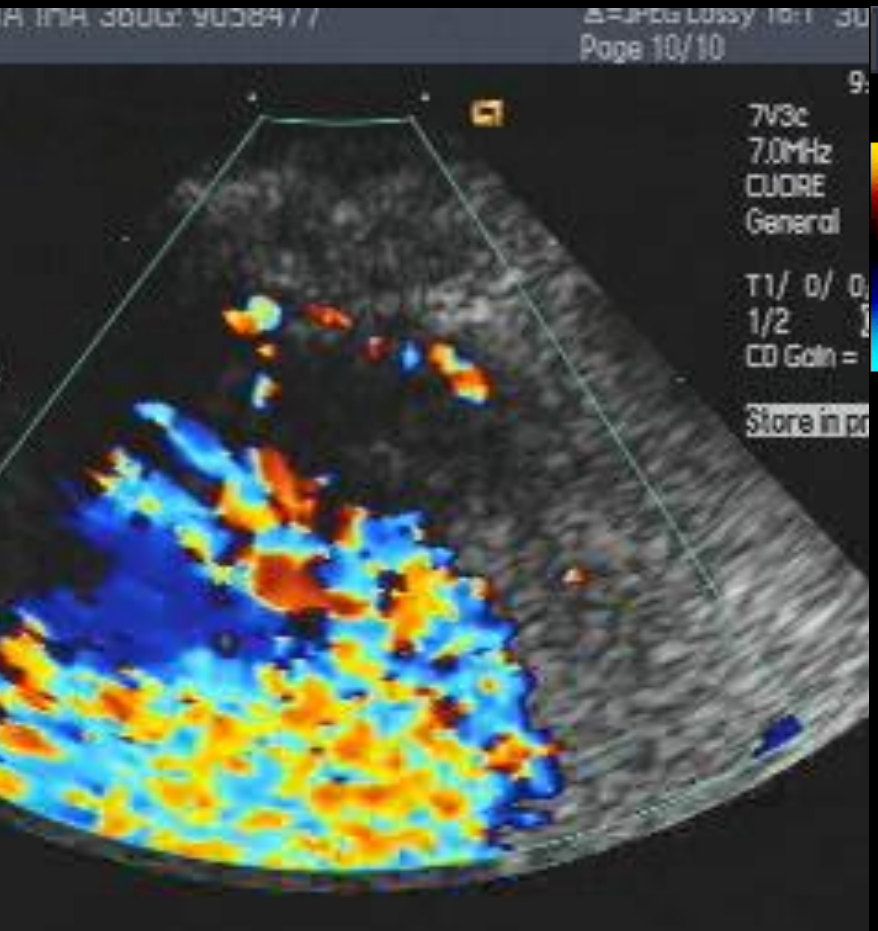
2DG
73
DR
55
CG
45
PRF
6.1k
Filter
5

LAD and PD


Page 10/10
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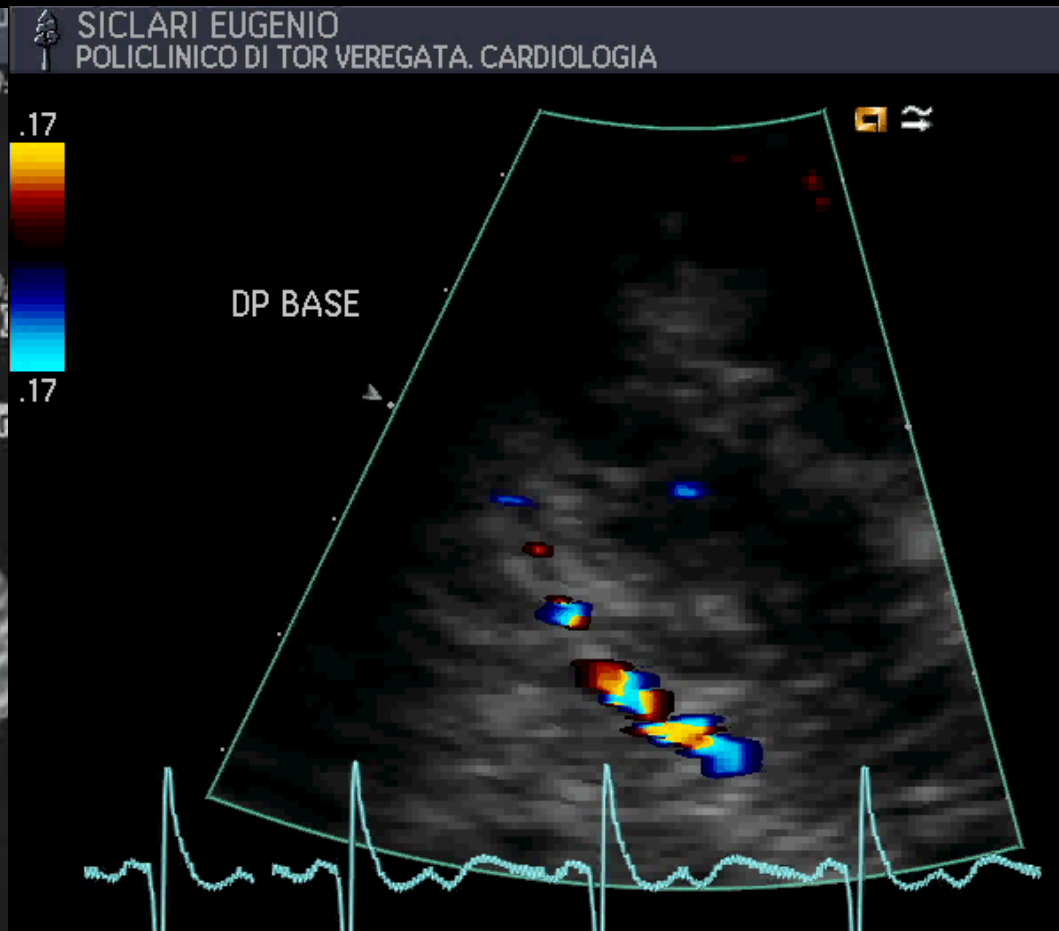
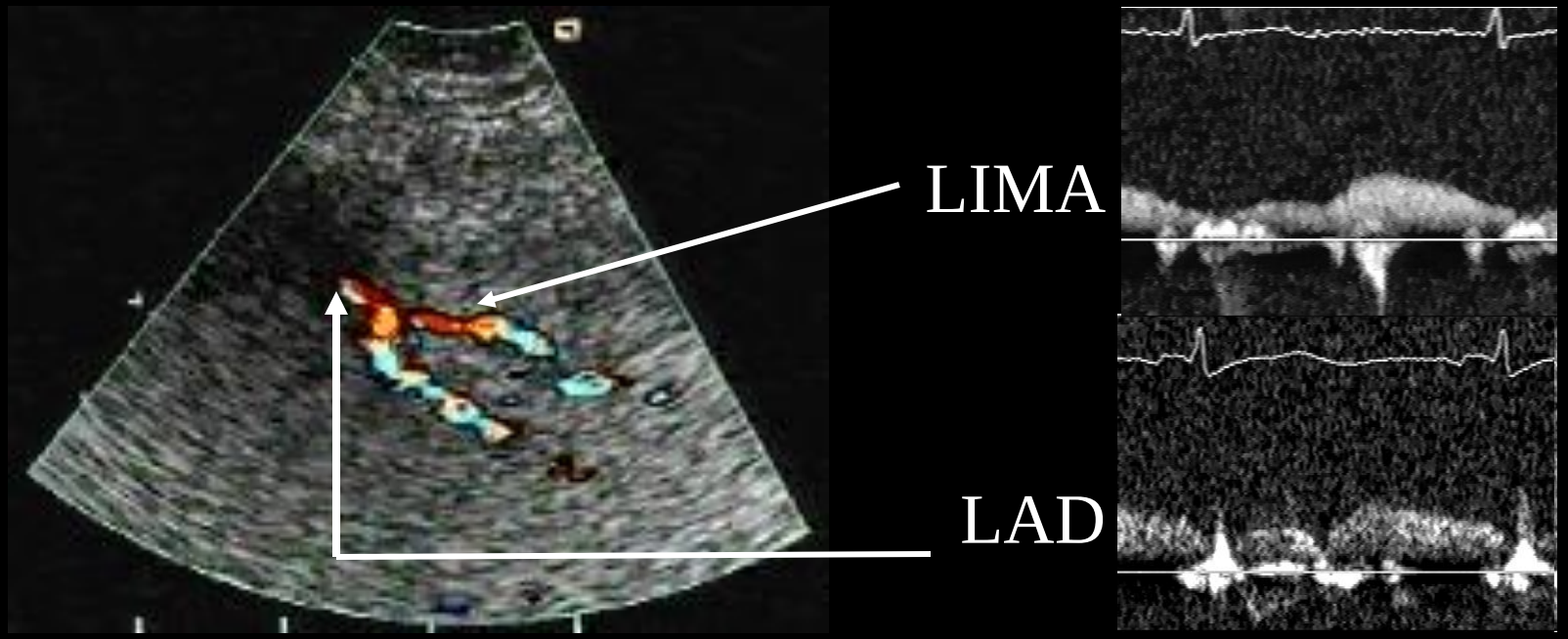

SICLARI EUGENIO
POLICLINICO DI TOR VEREGATA. CARDIOLOGIA
.17
.17
DP BASE

LIMA Graft



Pizzuto F, Voci P, et al. *JACC* (in press)

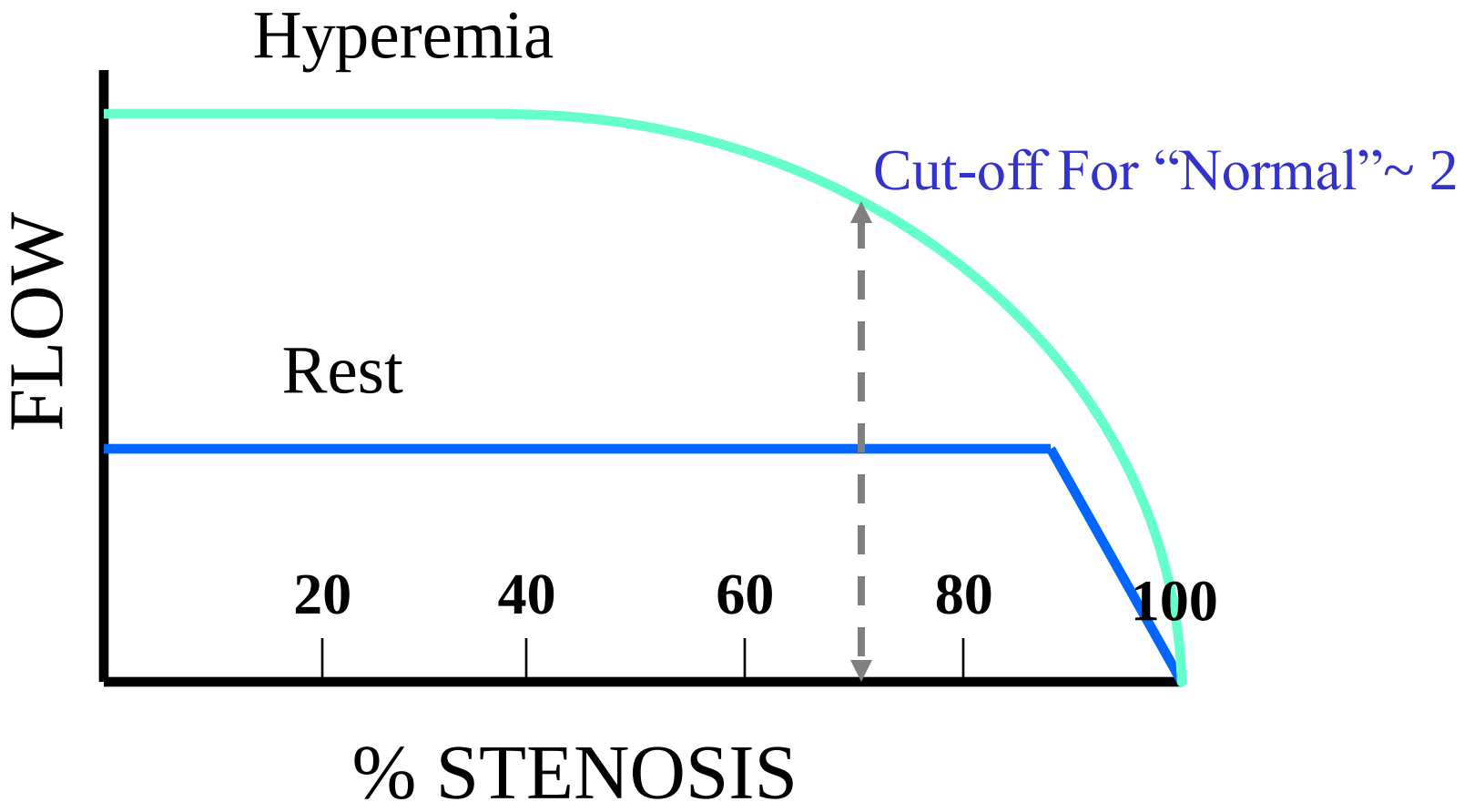
“Myocardial Infarction is Rarely if Ever Limited to the Lateral Wall…
Thus, Whenever the Lateral Wall is the Site of Myocardial Iinfarction, Either the Anterior or the Posterior Wall is Nearly Always Involved as Well”

(Gardin and Roberts Am J Cardiol 1978;42:868-872)

Coronary Flow Reserve

(Hyperemic/Basal Flow)

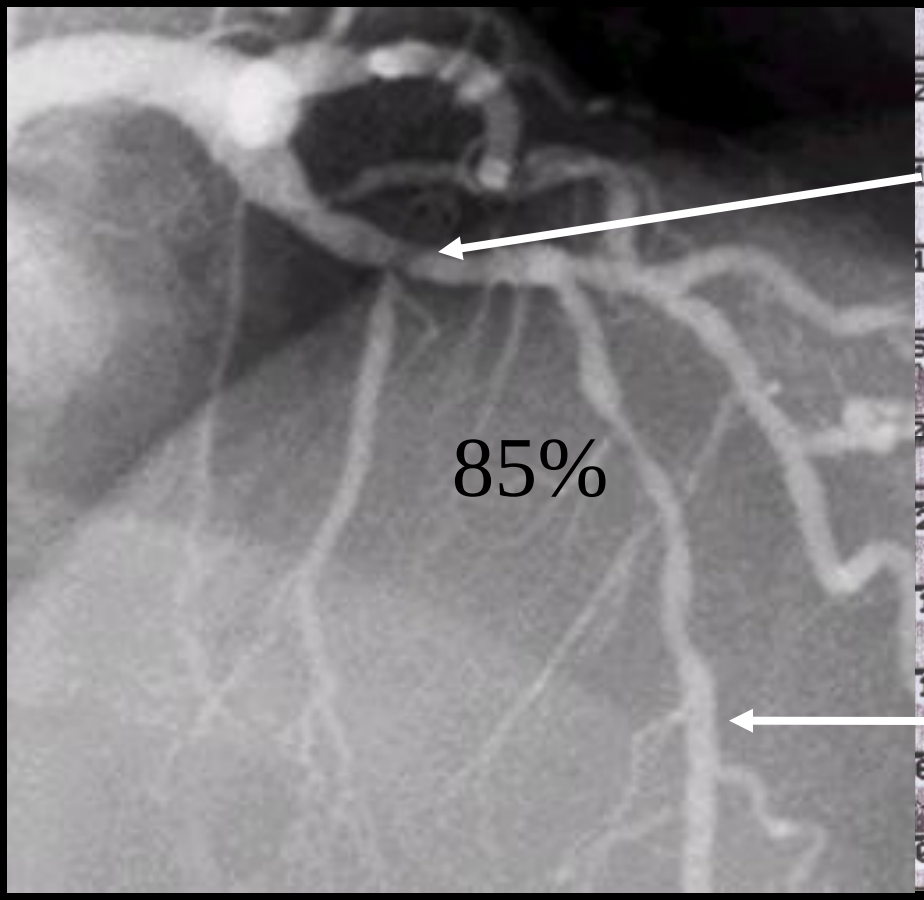
Gould: Am J Cardiol 1974

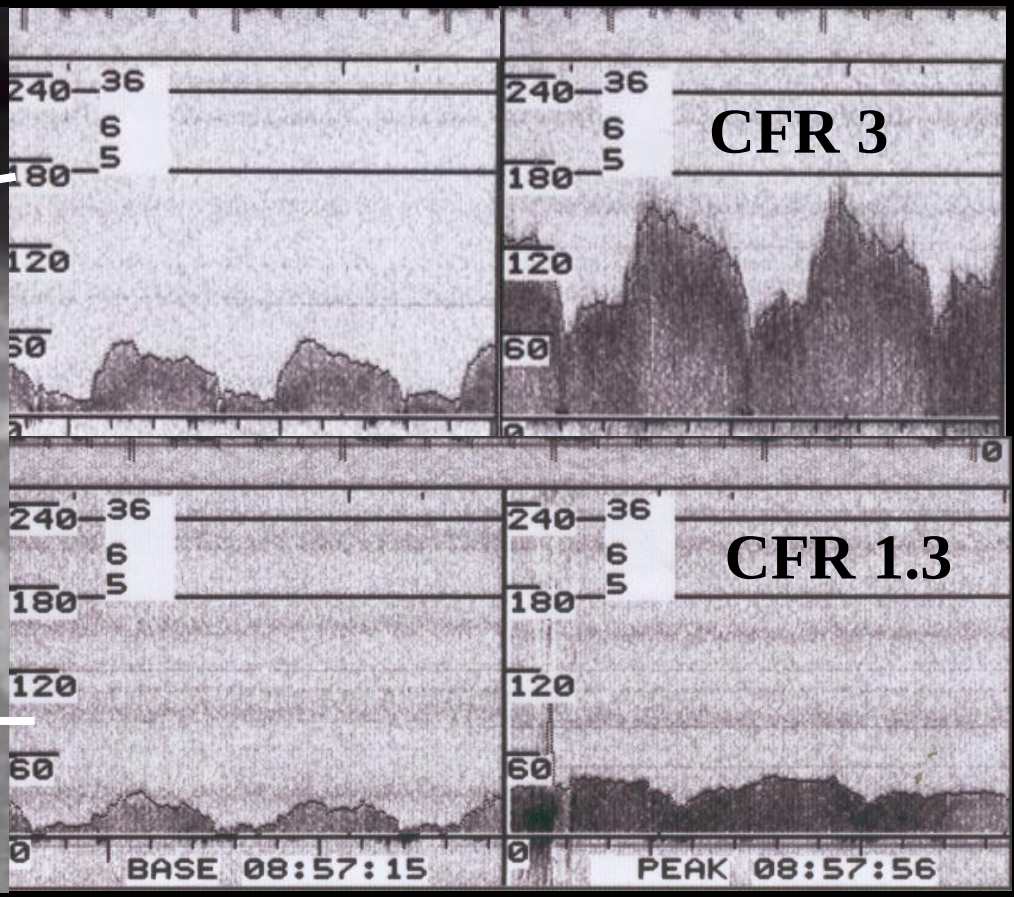


CFR Reflects Coronary Stenosis

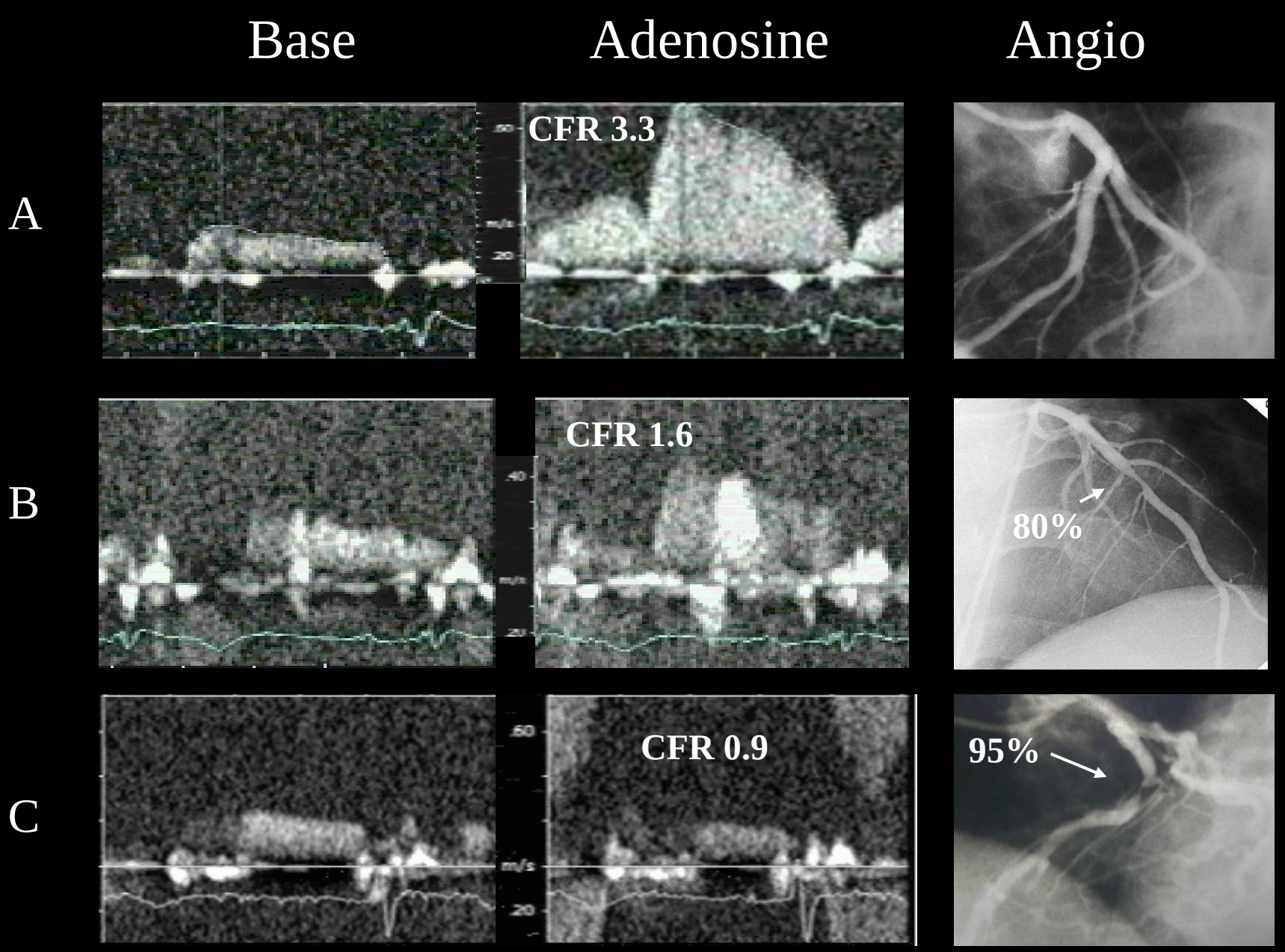
Angio

Intracoronary Doppler

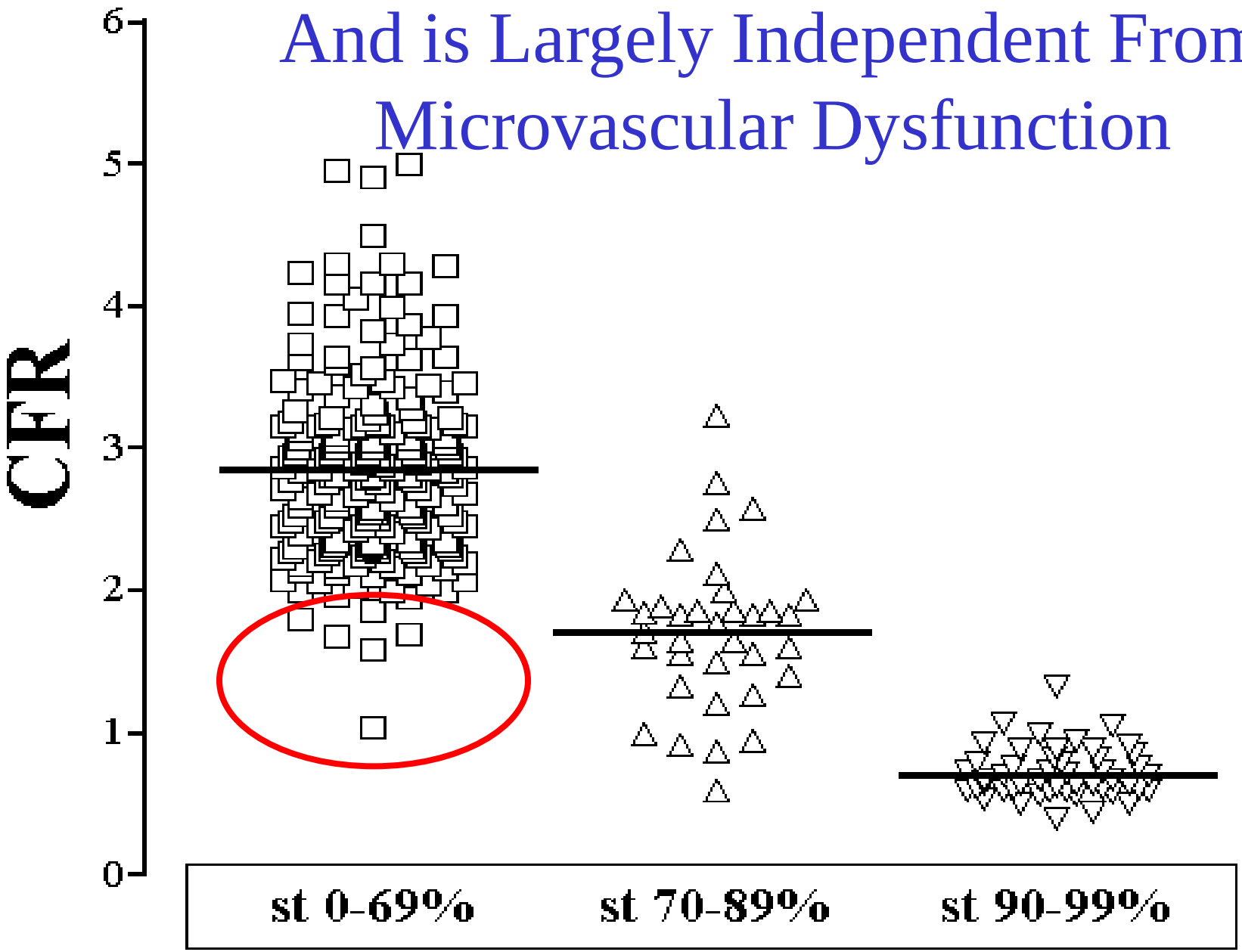




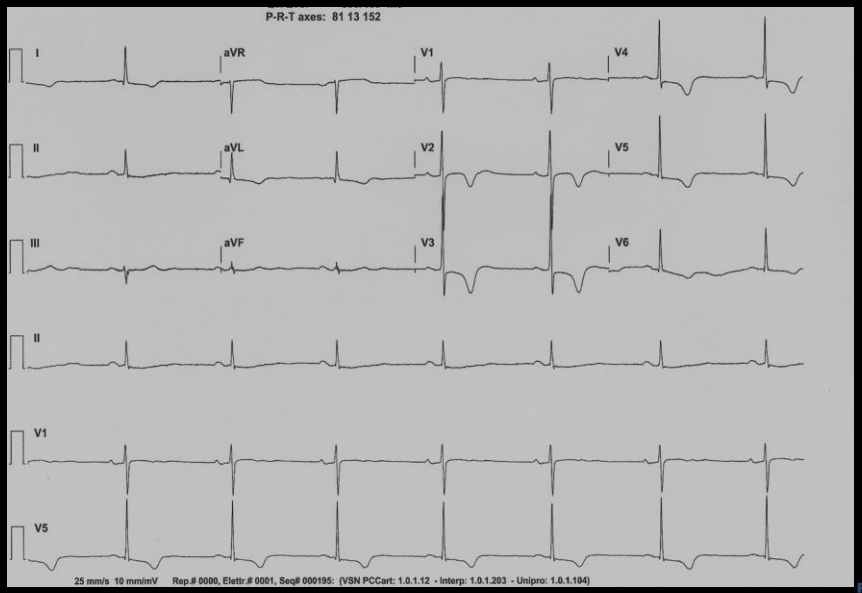
CFR is Affected by Coronary Stenosis

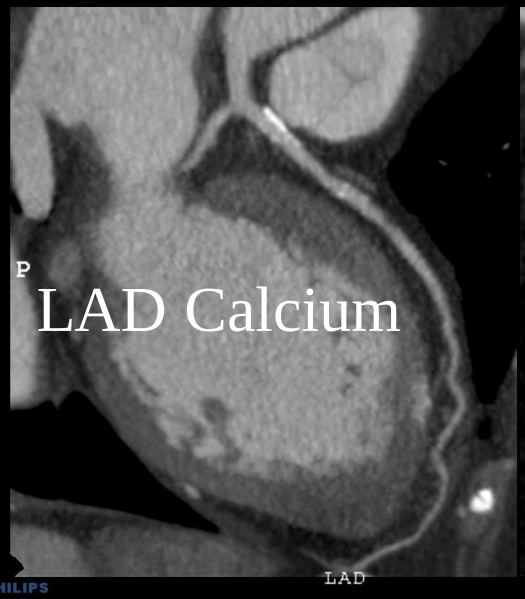


CFR Corelates With Coronary Stenosis And is Largely Independent From Microvascular Dysfunction

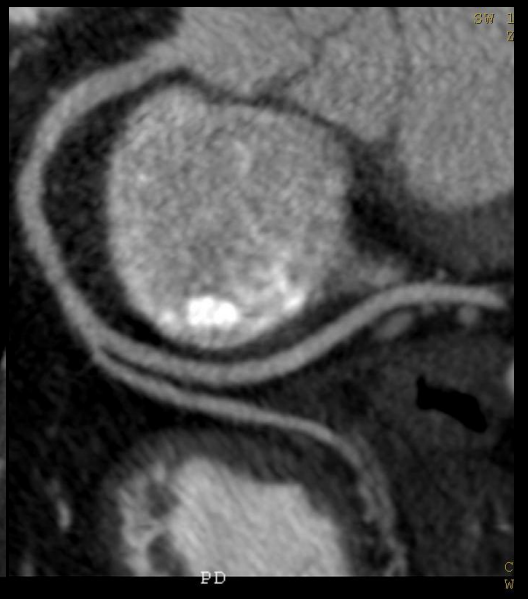


LVH

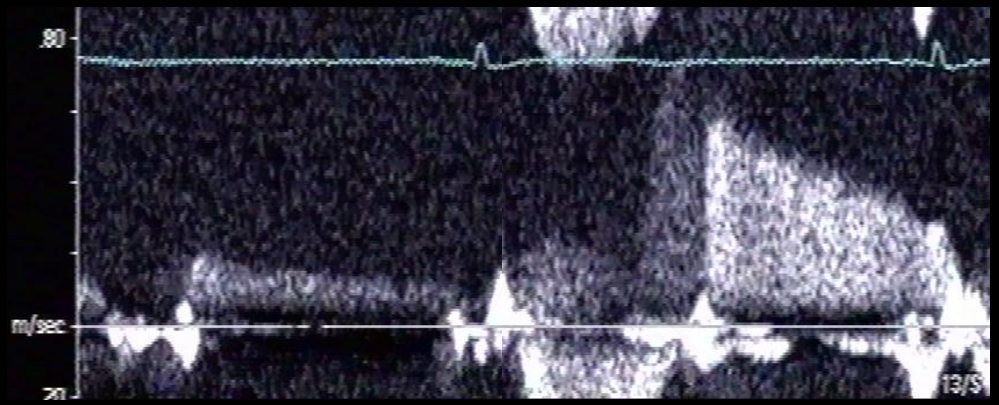




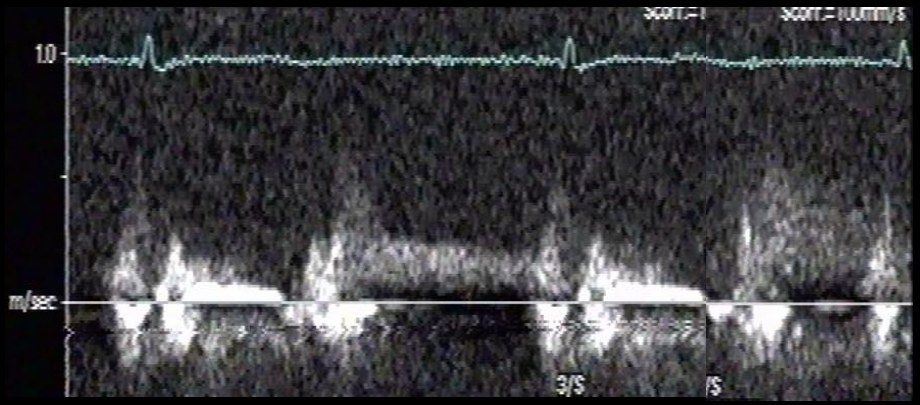
LAD Calcium



LAD CFR 4

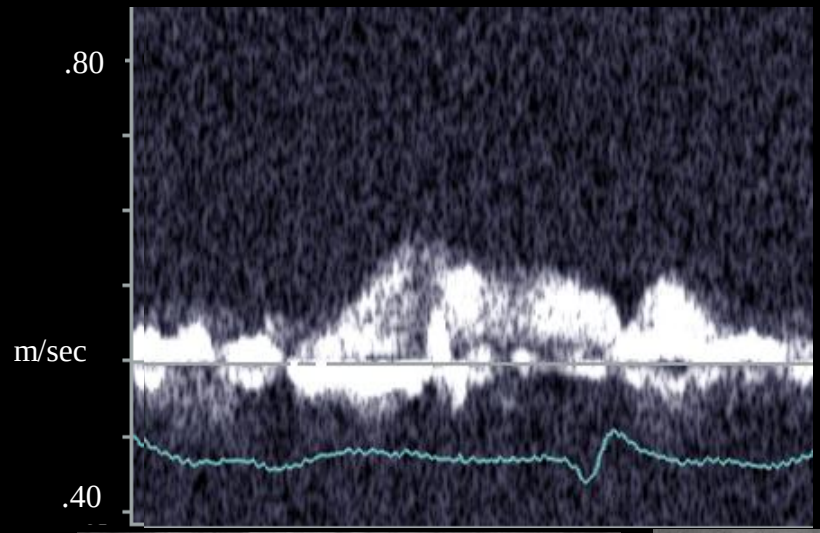


PD CFR 2.4

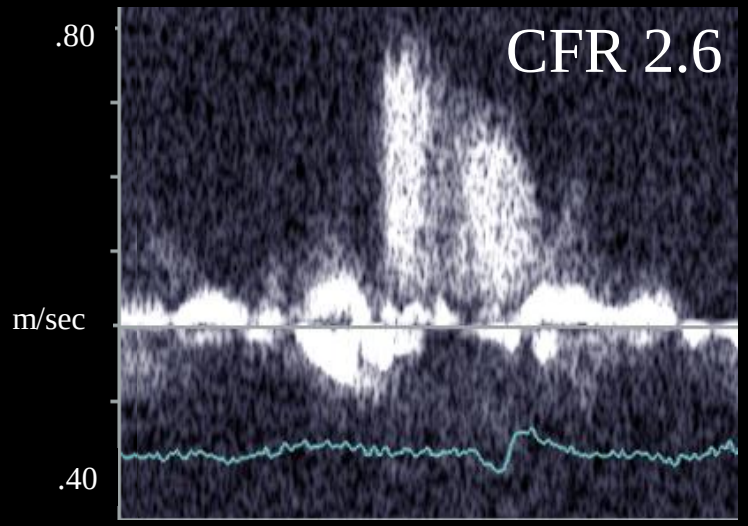


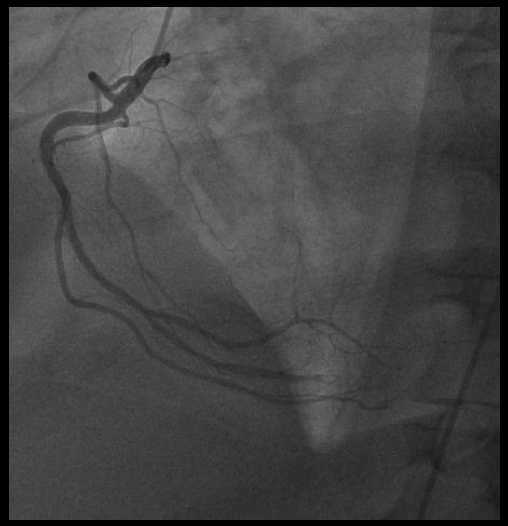
Apical HCM

Base

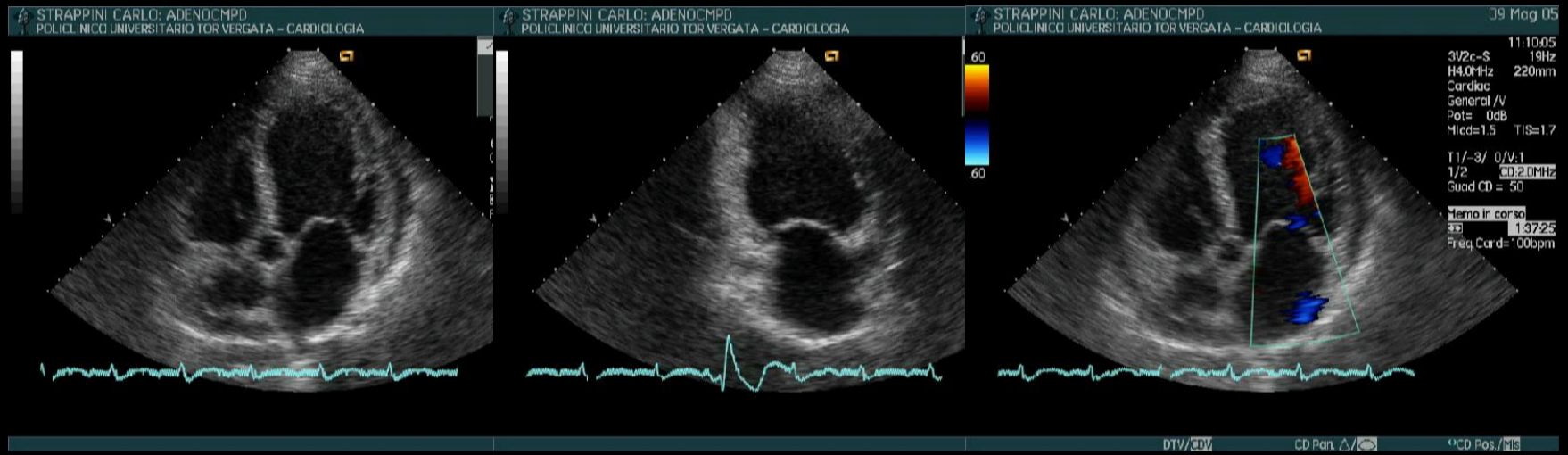


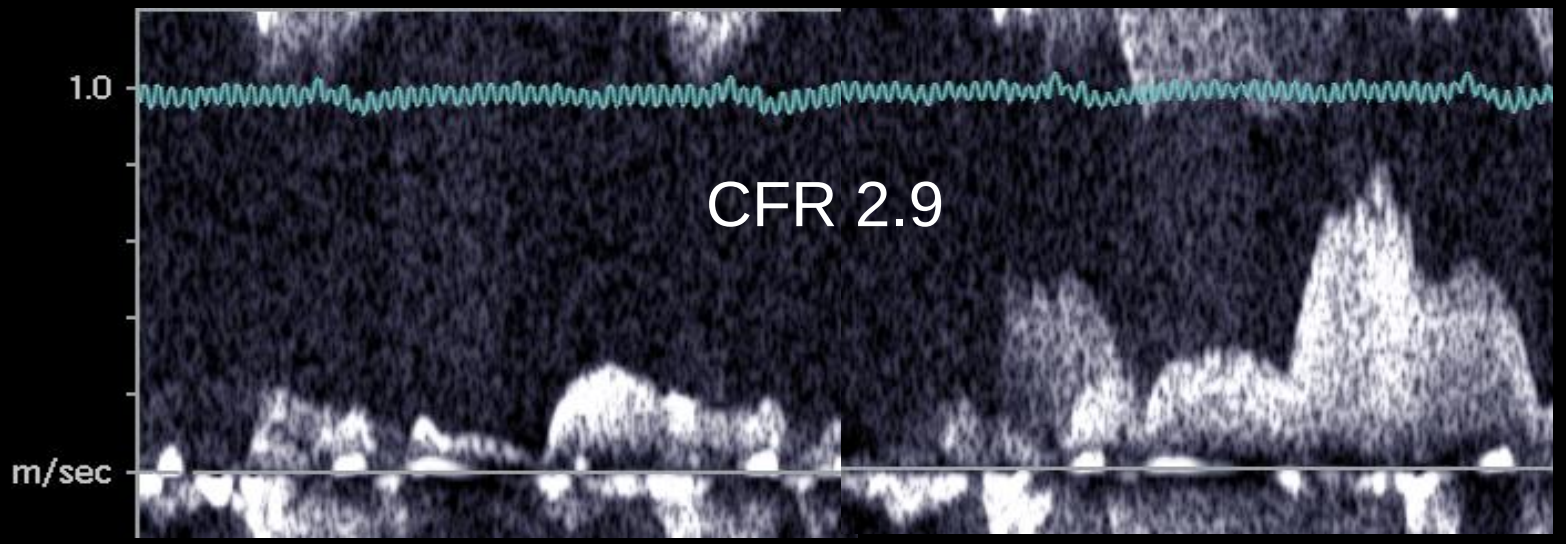
Adenosine



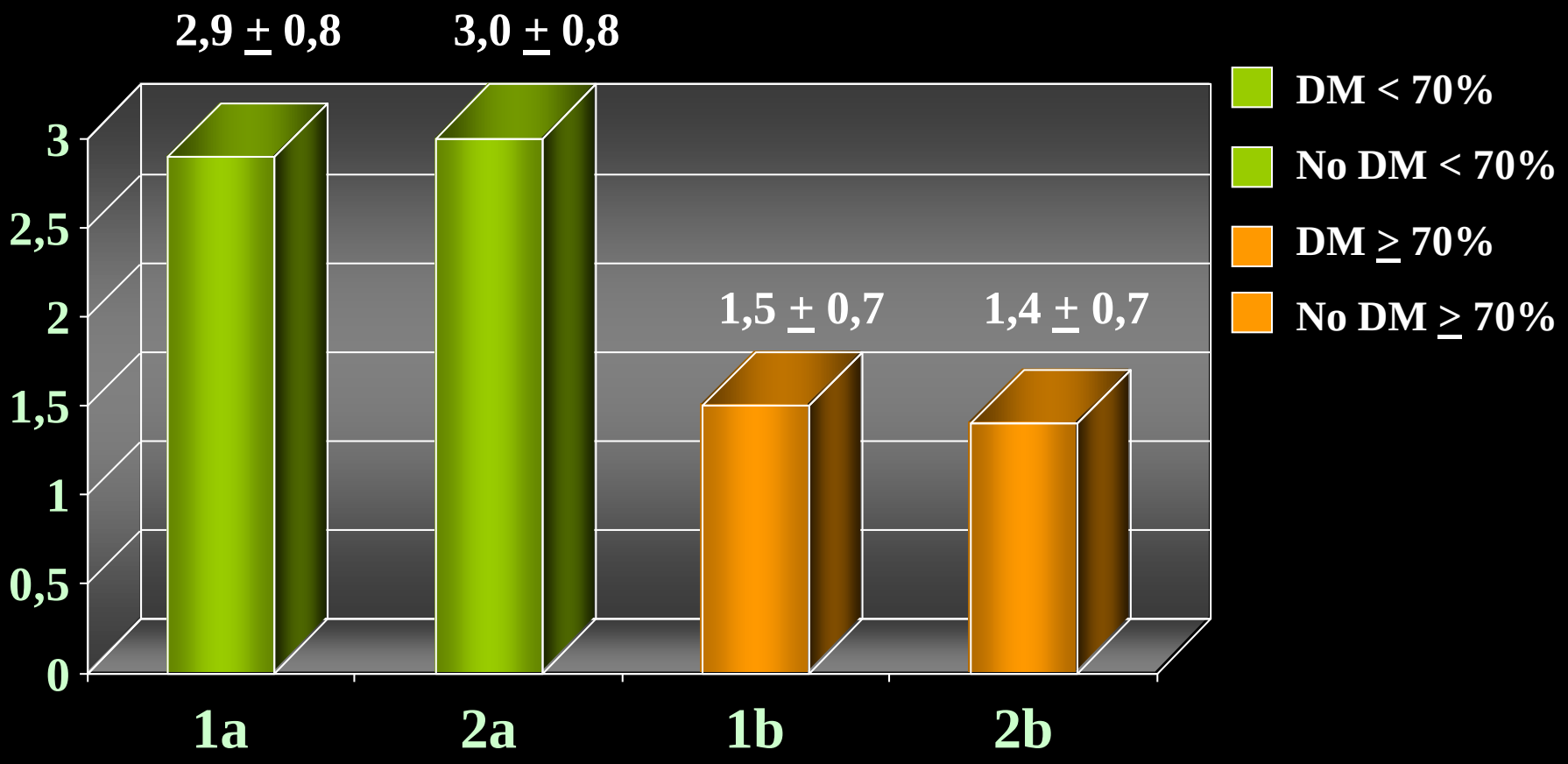


Idiopathic Dilated Cardiomyopathy





CFR in NIDDM


2,9 ± 0,8
3,0 ± 0,8
1,5 ± 0,7
1,4 ± 0,7
3
2,5
2
1,5
1
0,5
0
1a
2a
1b
2b
DM < 70%
No DM < 70%
DM ≥ 70%
No DM ≥ 70%

Adenosine/ATP

- Pure microvascular dilator
- Short infusion (5 mg bolus/20s)
- Safe and Tolerable
- Repeatable
- Unexpensive (2-3 € for ATP)

ATP vs Dobutamine

- Short infusion (5 mg bolus/20s)
- Repeatable
- Safer and Much Better Tolerable
- No Ischemia Induced
- Less Expensive (Time, Material, Personnel- no Monitoring)

Eco Stress
Complicanze Severe

Totale 83

		Fatali
• Dobutamina	= 60 (1/553)	= 5
• Dipiridamolo	= 19 (1/1294)	= 1
• Sforzo	= 4 (1/6303)	= 0

Lattanzi et al. *Drug Safety* 2000

CFR vs Scintigraphy

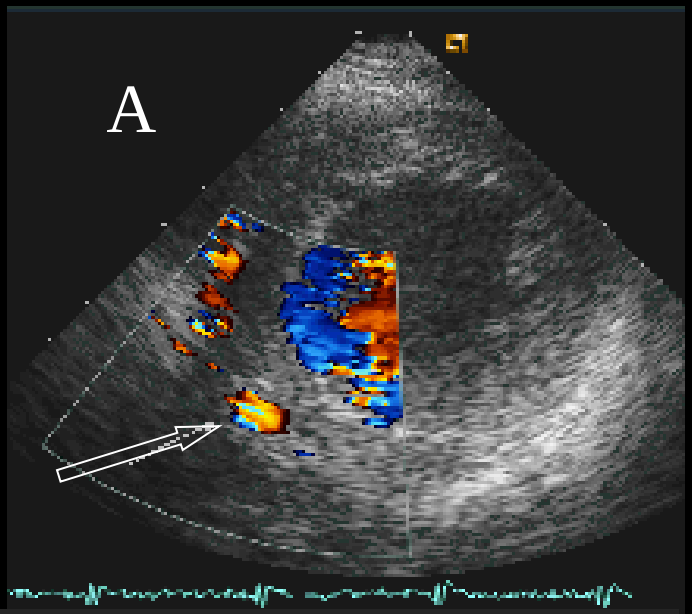
- No Radiation
- Much Faster- non Need to Send the Patient to Another Department
- Safer and Better Tolerable-No Ischemia is Induced
- Repeatable
- Uncomparably Less Expensive
- Least Affected by Microcirculation or Metabolic Alterations

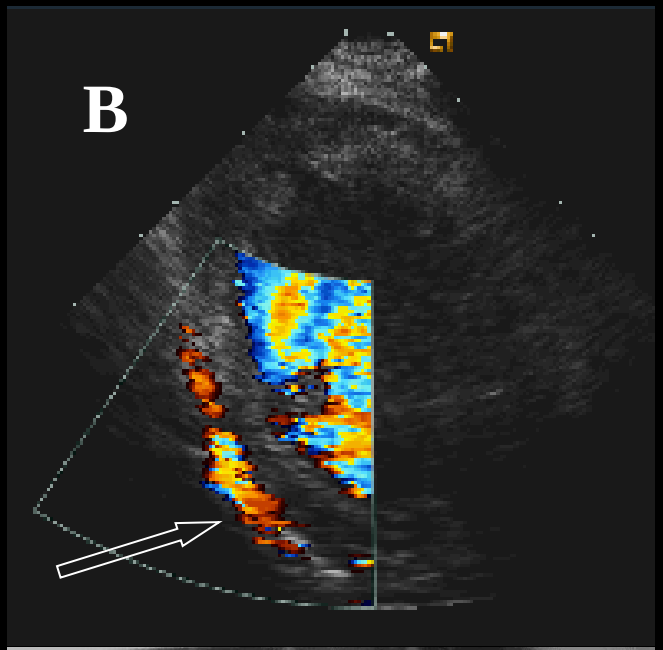
CFR - Advantages

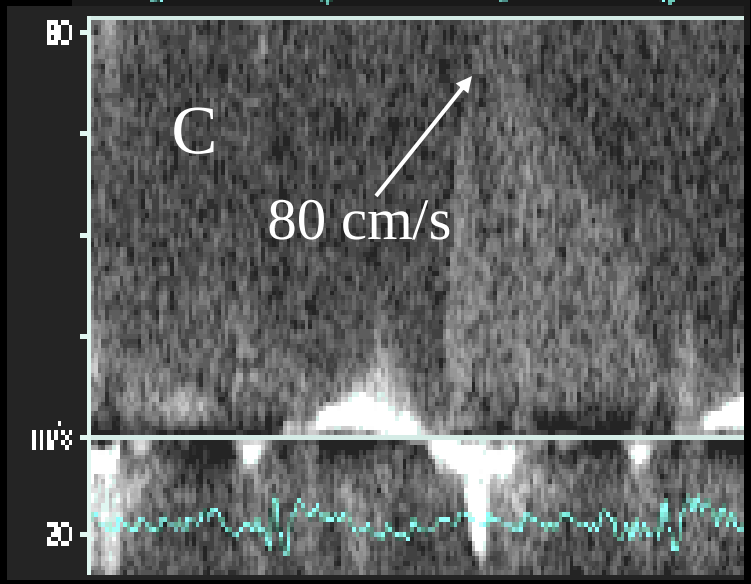
- Accurate in Single Vessel Disease
- May Quantitate Stenosis Site (Future)
- Can Be Performed in Acute Patients
- Info on Patency/Occlusion/Subocclusion
- May Decetct Coronary Vasomotion
- May Measure Collateral Flow

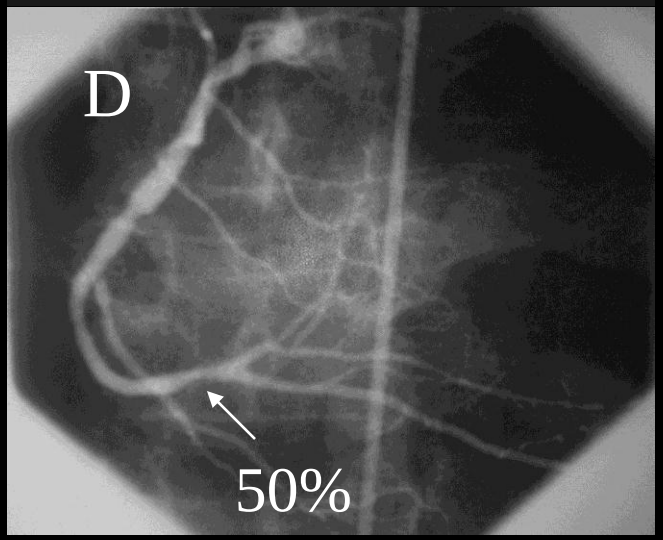
Velocity Gradient (The Future)

Voci P, Pizzuto F JACC 2001;38:1885-7



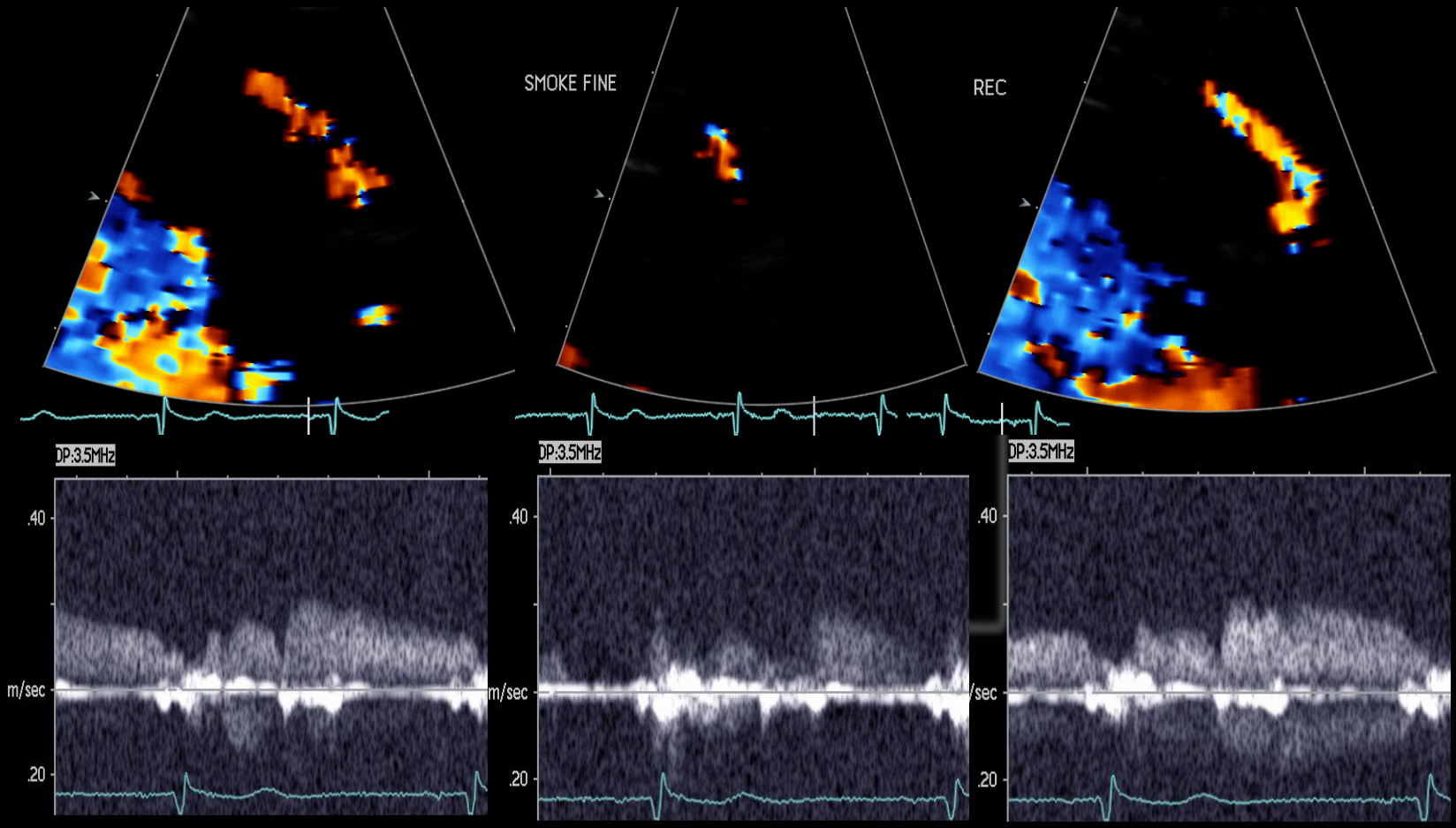






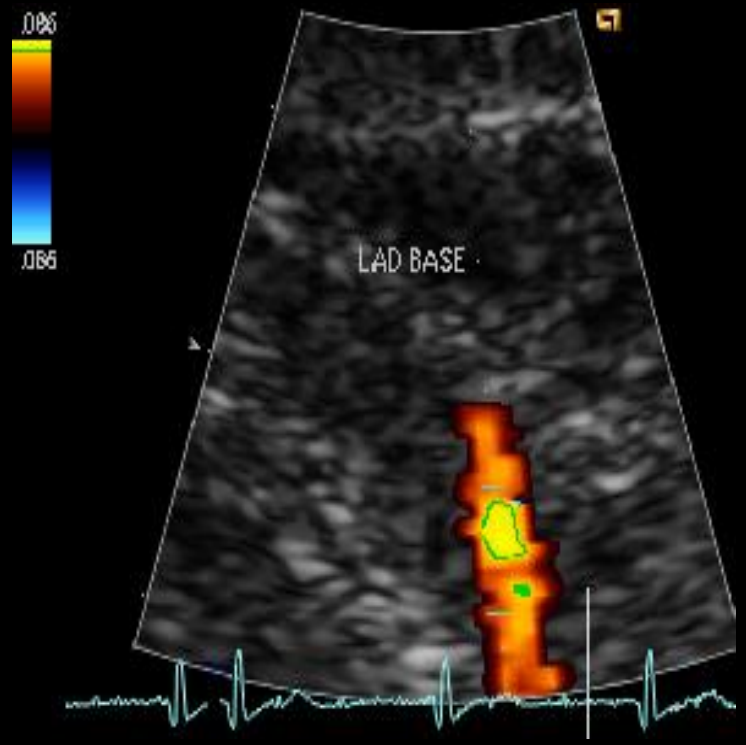
Coronary Vasomotion

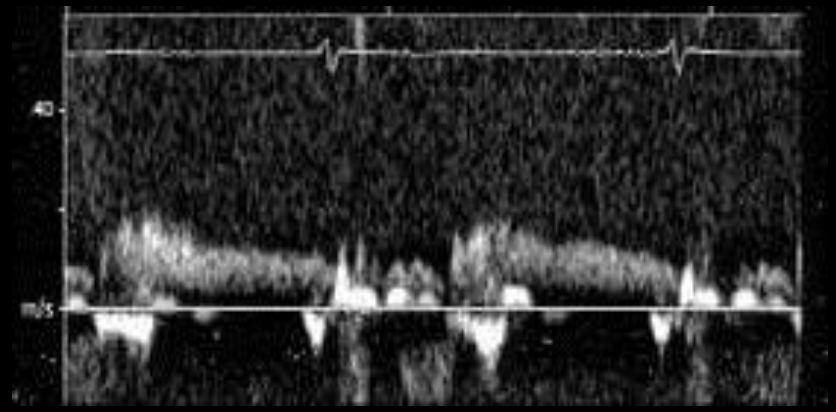
Base Smoke Rec



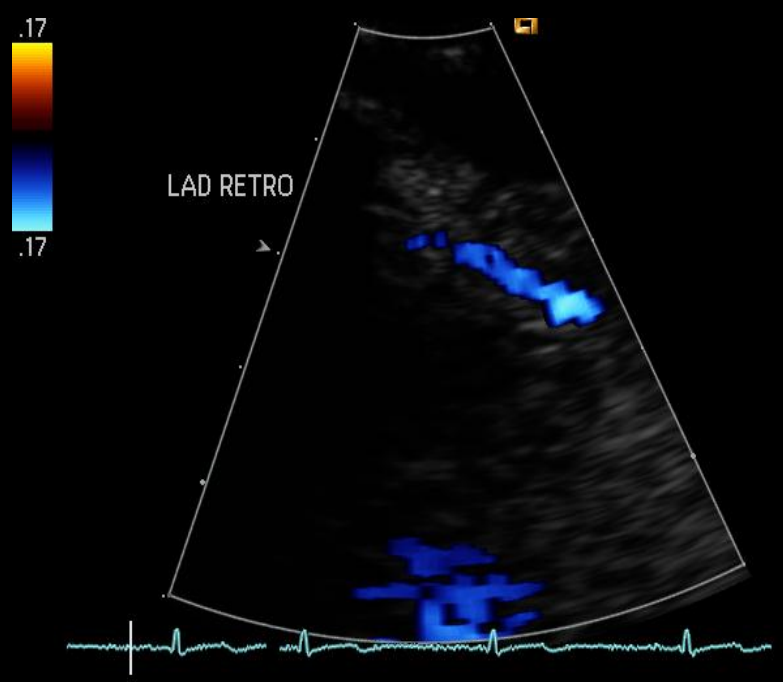
ACS

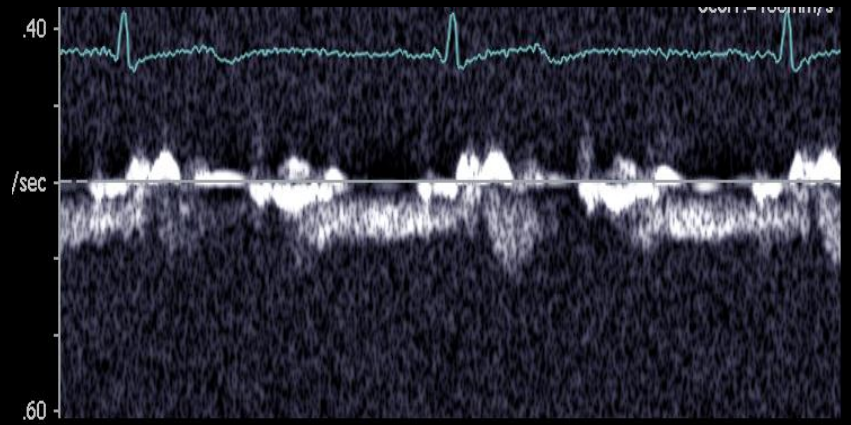
Patent LAD





Occluded LAD

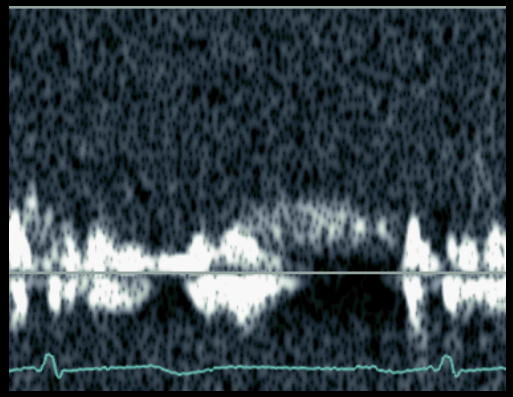




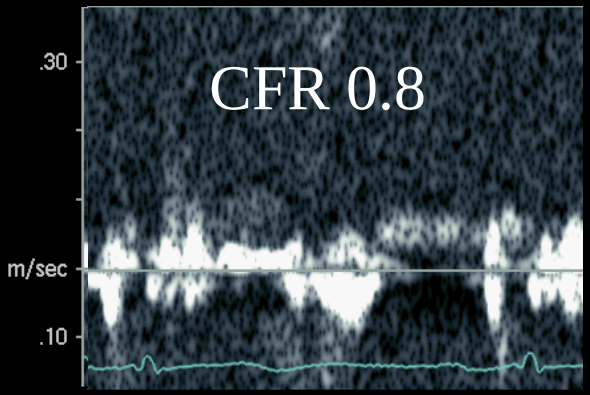
LAD Subocclusion

Noninvasive-Invasive CFR Correlation

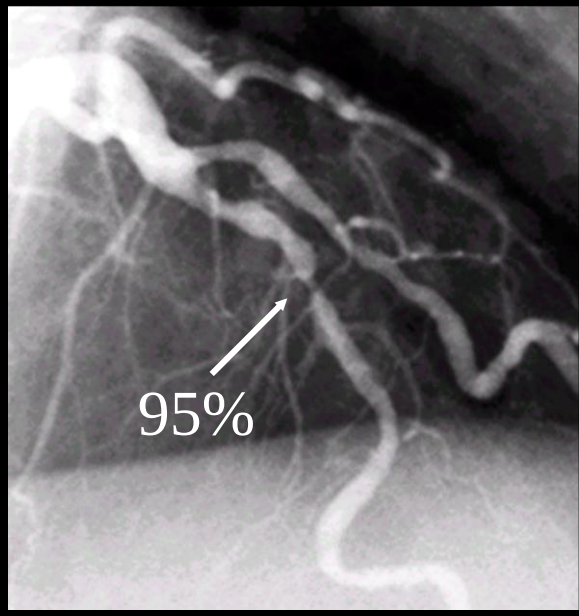
Base

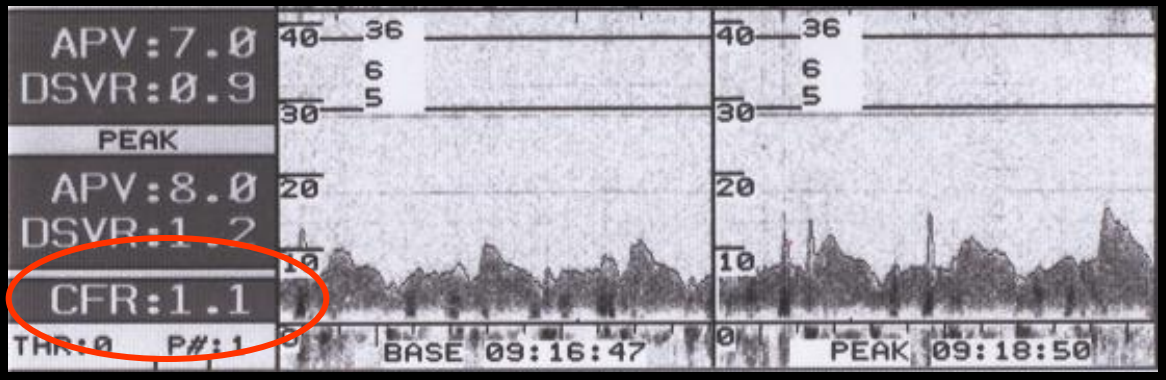


Adenosine



← TTE Doppler





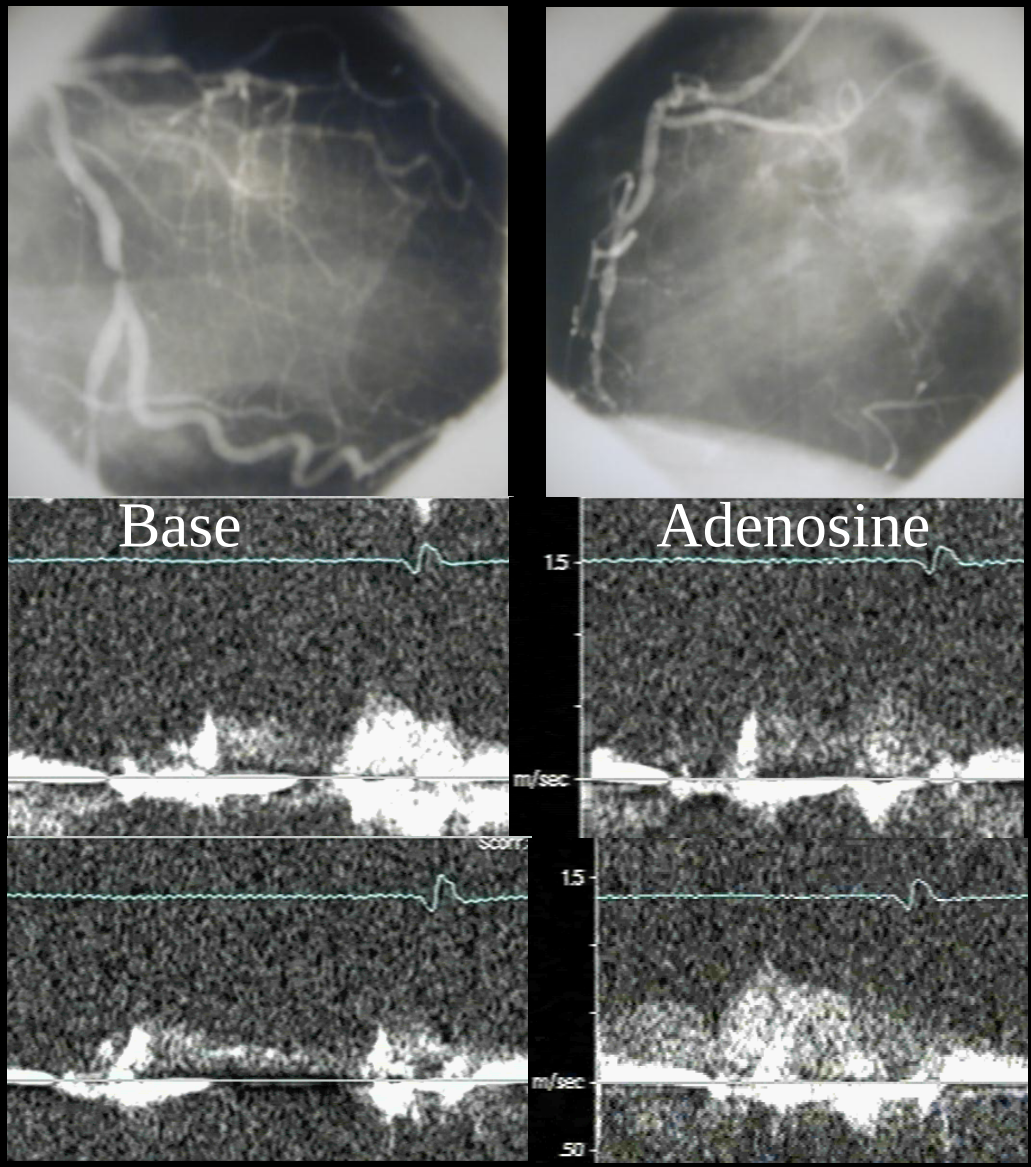
← IC Doppler

Occluded RCA: Detection of Collateral Flow Reserve in the Posterior Descending Artery

Angio

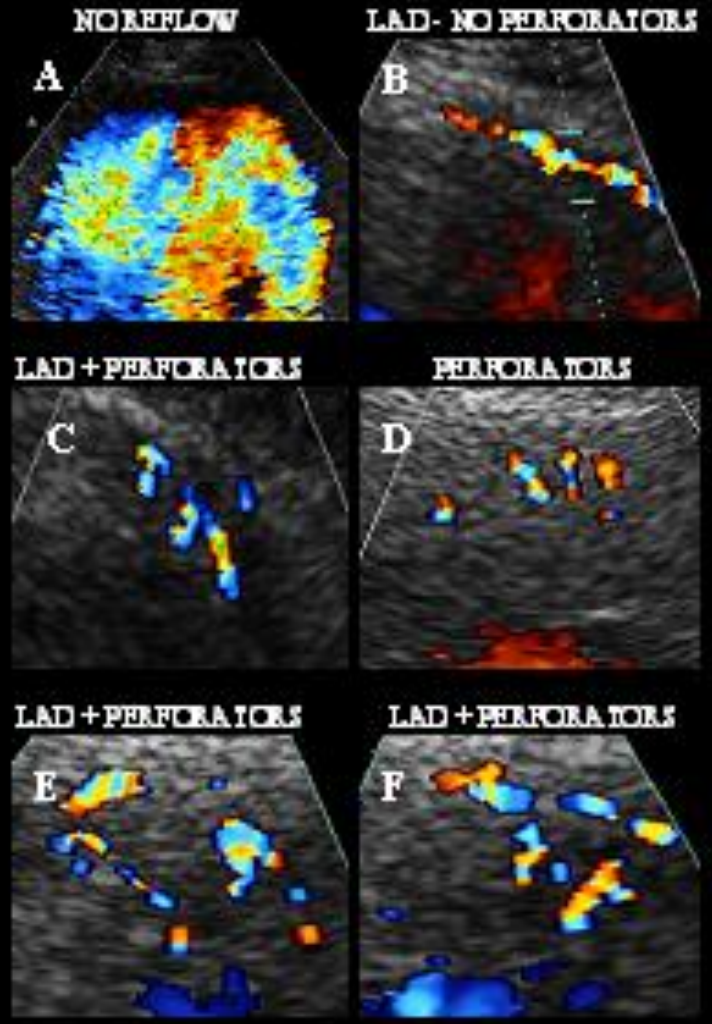
Non Contrast

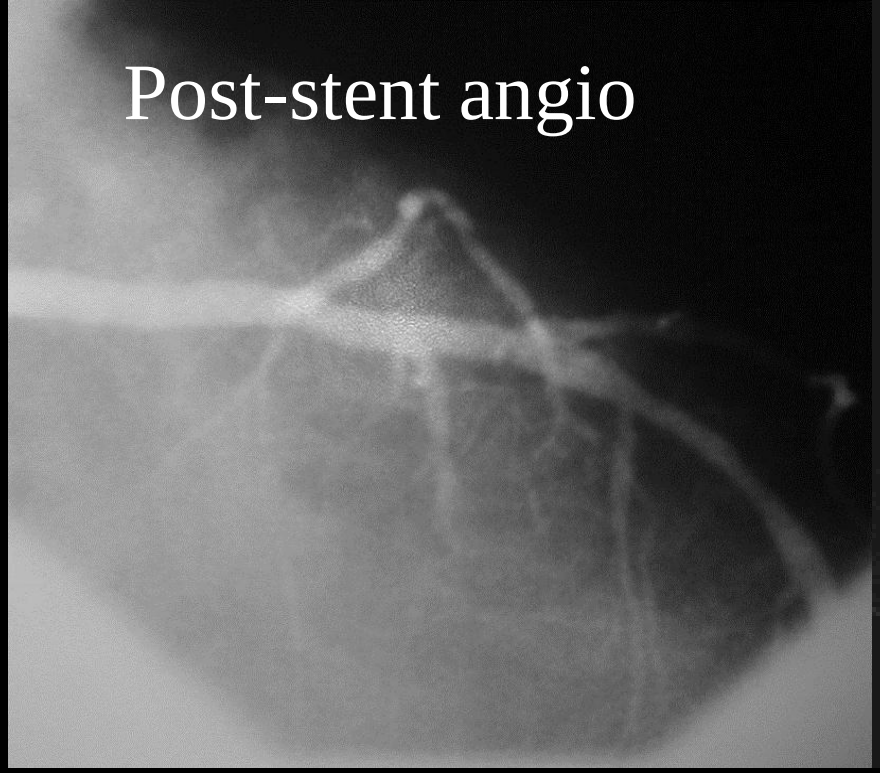
Contrast

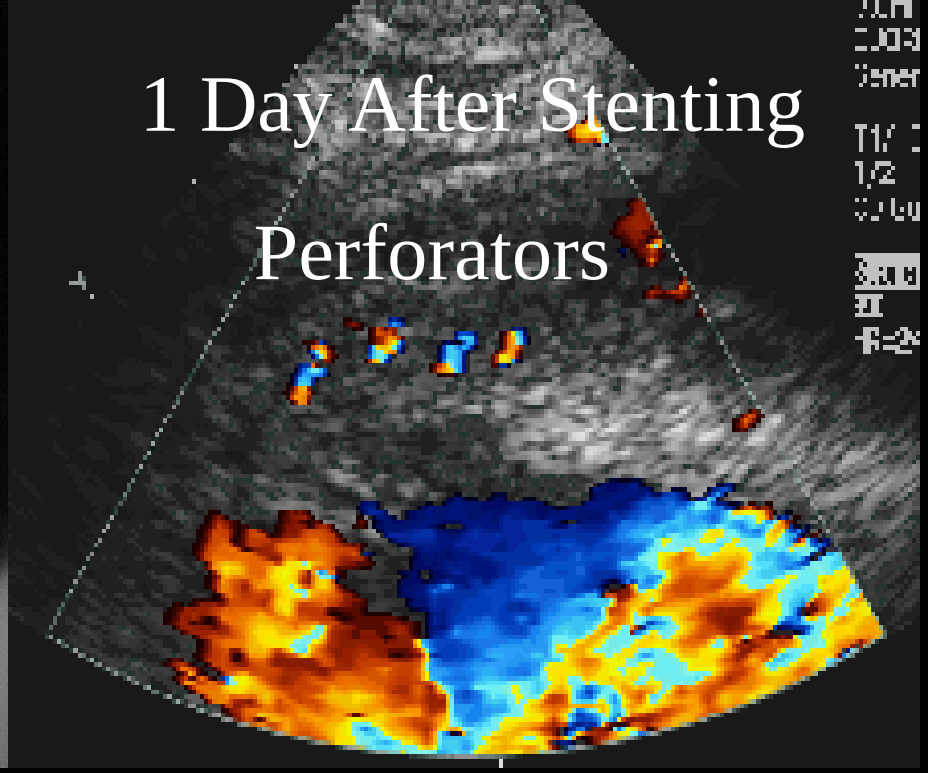


The Open Perforator Hypothesis

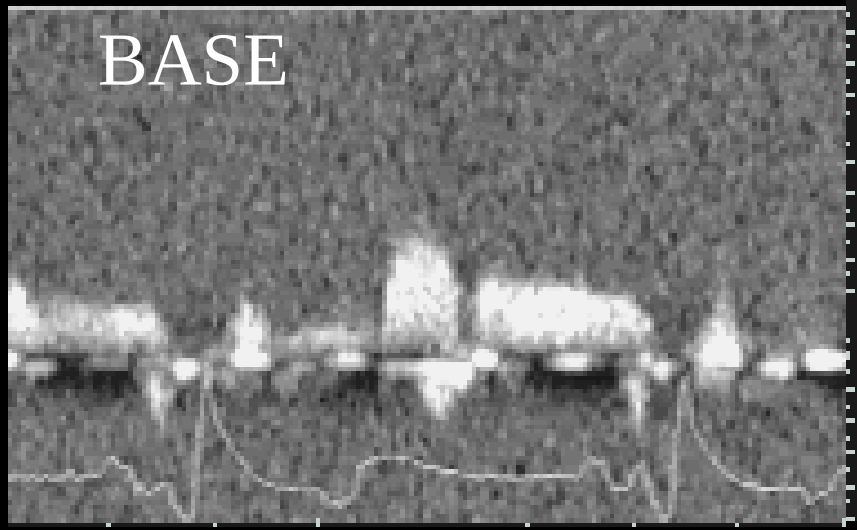
Voci et al JACC 2002

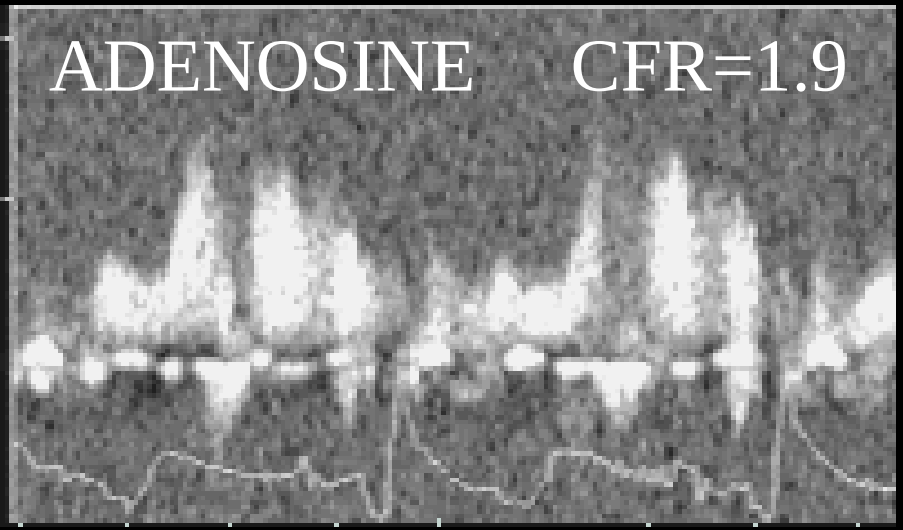






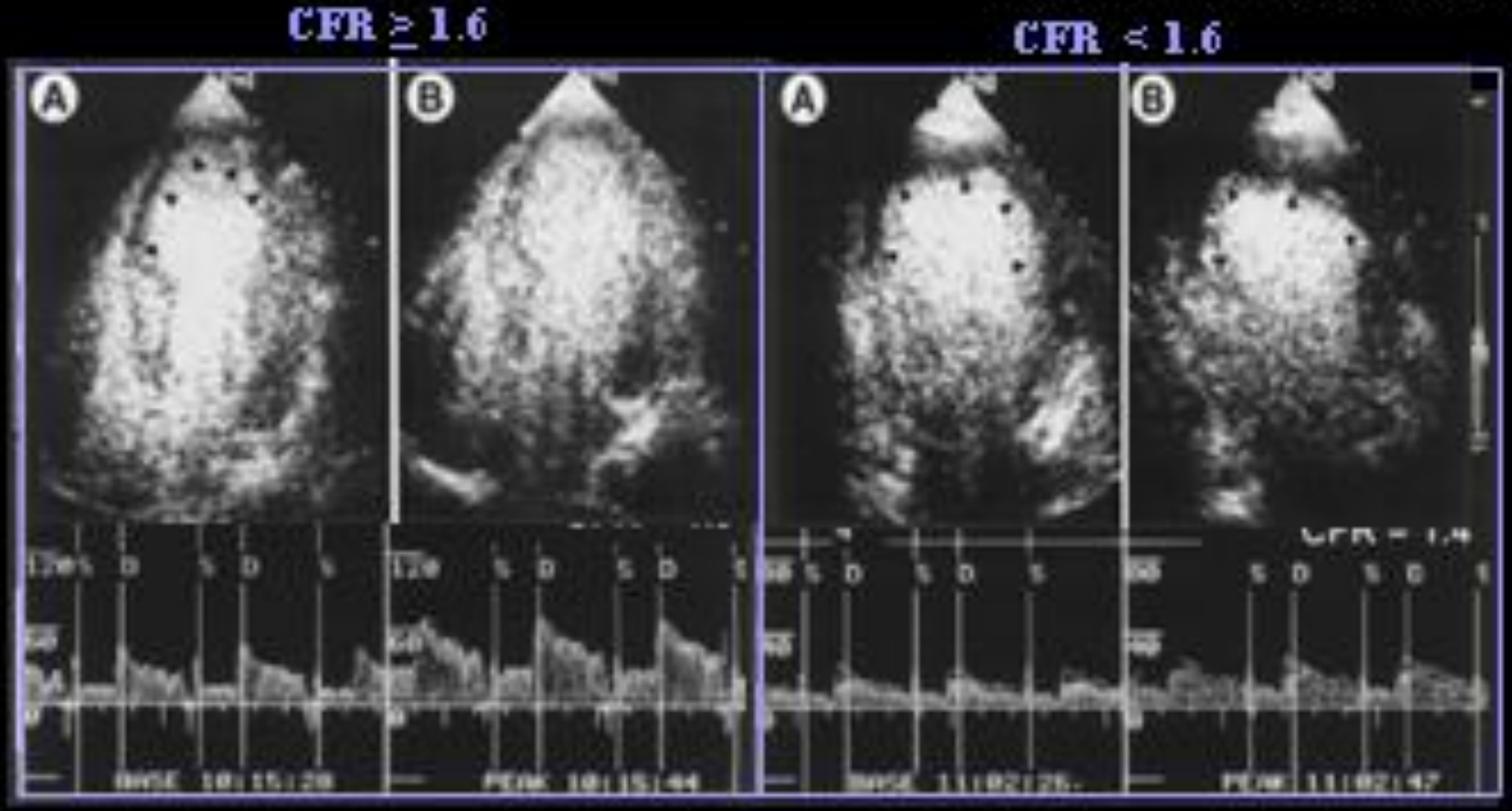
Coronary Flow Reserve 1 Day After Stenting





Flow Reserve and No-Reflow

Lepper et al. *Circulation 2000*



REFLOW
(MCE ratio 34±49%)

NO-REFLOW
(MCE ratio 81±46%)

Perché la CFR non si è Diffusa?

- Industria: punta su modelli più remunerativi (TAC, RMN, MCE)
- Società e Riviste scientifiche: troppa attenzione a RMN e TAC
- Scarsa dimestichezza dei medici con la fisiologia coronarica
- Difficoltà a reperire la Discendente Posteriore
- Troppi dubbi “indotti” sul microcircolo

E’ in Grado l’Ecocardiografia di Vincere la Sfida con i Giganti dell’Imaging?

Do not Delegate Decisions on Coronary Flow to Others

Keep your eyes open