LA FFR, COUTEAU SUISSE DE L'INTERVENTIONNEL

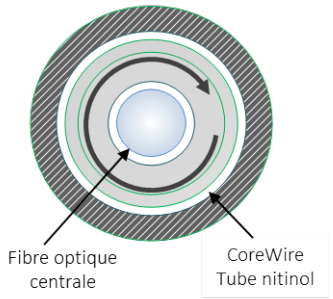
P Dupouy, Antony/ Melun

E Van Belle, Lille

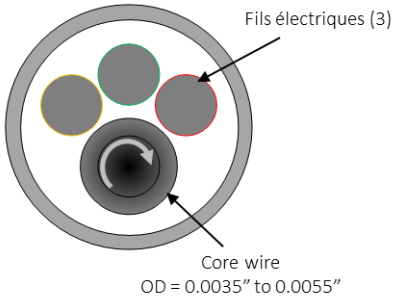
Conflit d’intérêt

- Consultant Hexacah

Guide Pression Opsens : Optowire



OptoWire
(Concentrique)



Fil-guide électrique
(Non-concentrique)

Des Alternatives à l'adénosine ?

- Gradient de repos
- FFR contraste
- iFR
- FFR Adénosine
- FFR Adénosine + contraste

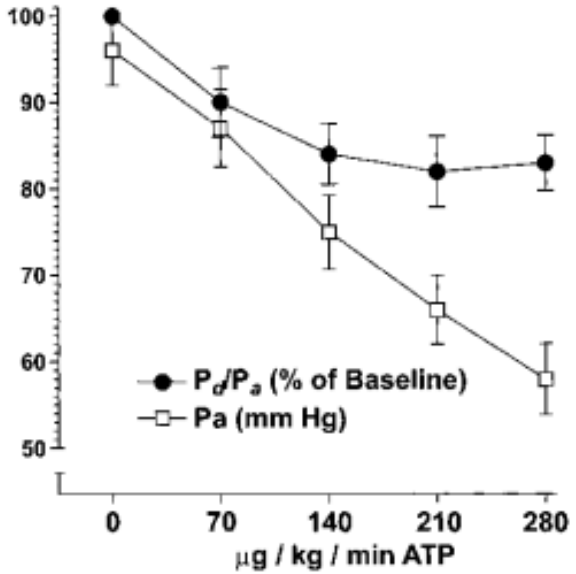
- Quel intérêt ?

- Gain de temps
- Moins d'injection
- Moins de toxicité ?

TABLE 2. Mean P_d/P_a Ratio, Time to Peak Action, Duration of the Plateau Phase, and Electrocardiographic Changes Induced by the Different Vasodilatory Stimuli in Group 1 Patients

	P_d / P_a	Time to Peak Action, s	Duration of the Plateau Phase, s	Pain Score, 0–10
Papa IC 20 mg	0.61±0.20	23±5	22±7	0
Ado IC 20 mg	0.62±0.20	15±2	7±3	0
Ado IC 40 mg	0.62±0.19	15±2	5±1	0
ATP IC 20 mg	0.62±0.20	14±3	4±1	0
ATP IC 40 mg	0.60±0.19	14±3	5±1	0
CM IC 6 mL	0.69±0.21	10±3	2±1	0
Ado fem 140 $\mu g \cdot kg^{-1} \cdot min^{-1}$	0.61±0.19	80±3	NA	5.3±3.4
Ado fem 180 $\mu g \cdot kg^{-1} \cdot min^{-1}$	0.61±0.18	NA	NA	6.1±2.7
ATP fem 140 $\mu g \cdot kg^{-1} \cdot min^{-1}$	0.61±0.19	76±28	NA	4.6±3.5
ATP fem 180 $\mu g \cdot kg^{-1} \cdot min^{-1}$	0.61±0.17	NA	NA	4.9±3.0
Ado peri 140 $\mu g \cdot kg^{-1} \cdot min^{-1}$	0.61±0.19	112±48	NA	4.5±2.7
Ado peri 180 $\mu g \cdot kg^{-1} \cdot min^{-1}$	0.60±0.17	NA	NA	6.0±2.46
ATP peri 140 $\mu g \cdot kg^{-1} \cdot min^{-1}$	0.61±0.17	104±36	NA	4.3±3.4
ATP peri 180 $\mu g \cdot kg^{-1} \cdot min^{-1}$	0.62±0.20	NA	NA	3.9±2.7
Papa IC 20 mg	0.61±0.18	21±3	21±8	0

Values are mean±SD. Papa indicates papaverine; Ado, adenosine; CM, contrast media; IC, intracoronary; fem, femoral vein; and peri, peripheral vein.



4. Plots of the mean values (±SEM) of P_a and of I
unction of the dosage of intravenous infusion of ATI
2 patients (stenotic artery). Above a dosage of 140
min^{-1}, no further decline in P_d/P_a was observed de
ued decline in mean P_a.

Bernard De Bruyne, Circulation. 2003;107:1877-1883

Effets de l'adénosine

Table 2. Results: Effect of Different Doses of IC or IV Adenosine and IC Sodium Nitroprusside on Profile, Symptoms, Atrioventricular Block, and FFR

	n	HR (beats/min)	SBP (mm Hg)	DBP (mm Hg)	MBP (mm Hg)	Symptoms	AVB	FFR
Baseline	50	70 ± 8 71 (64–75)	144 ± 20 146 (130–160)	79 ± 9 80 (74–82)	101 ± 11 100 (93–107)	0 (0%)	0 (0)	0.98 ± 0.04 0.95 (0.92–0.98)
ADN60	50	68 ± 12 68 (63–75)	142 ± 22* 140 (130–159)	75 ± 10† 75 (70–80)	97 ± 12† 96 (90–103)	1 (2%)*	8 (16%)	0.88 ± 0.07† 0.88 (0.83–0.93)
ADN300	48	64 ± 12 68 (57–74)	144 ± 21* 142 (135–160)	74 ± 9† 75 (70–80)	97 ± 10† 97 (91–103)	4 (8.3%)†	13 (27%)	0.87 ± 0.07† 0.87 (0.83–0.93)
ADN600	43	62 ± 12 64 (50–73)	145 ± 25* 144 (130–156)	76 ± 9† 75 (70–80)	96 ± 19‡ 97 (91–102)	5 (9.3%)†	10 (23%)	0.87 ± 0.07† 0.87 (0.81–0.92)
NTP	48	74 ± 11 75 (69–82)	123 ± 19† 120 (110–138)	67 ± 8† 66 (60–72)	84 ± 16† 87 (80–93)	4 (8.4%)‡	0 (0%)	0.89 ± 0.07† 0.90 (0.82–0.98)
IVADN	50	75 ± 12 76 (66–80)	137 ± 23† 130 (120–159)	75 ± 12† 75 (70–80)	96 ± 14† 91 (87–107)	20 (40%)‡	1 (2%)	0.87 ± 0.07† 0.88 (0.82–0.91)

Elisabeth M. Baile , CHEST 1999; 116:1039–1045

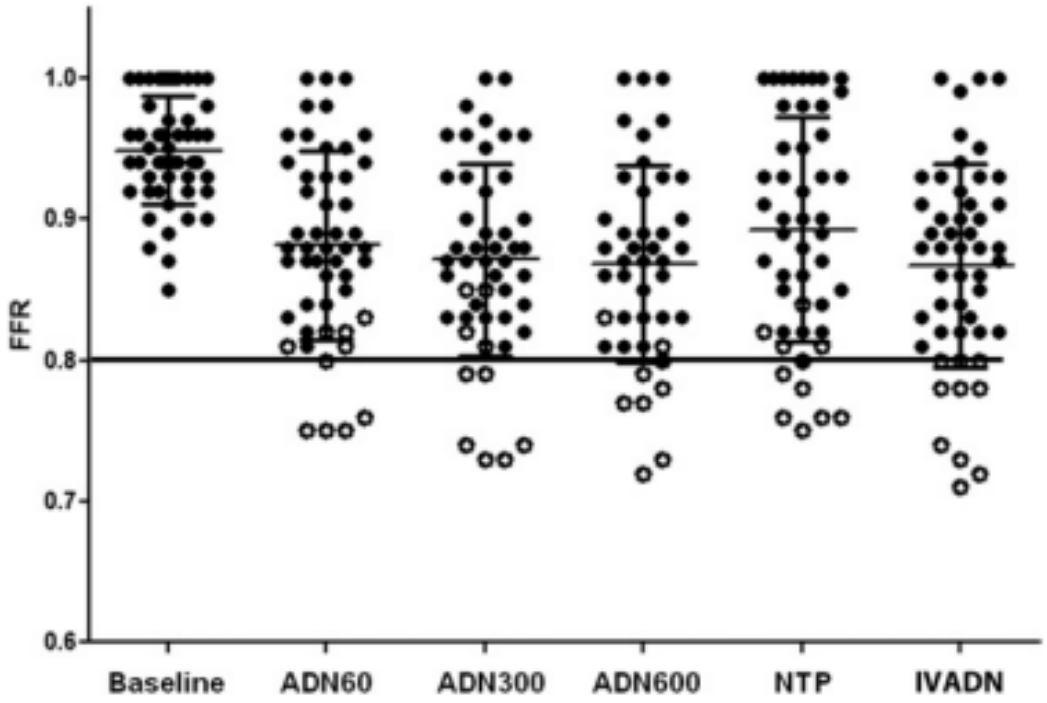
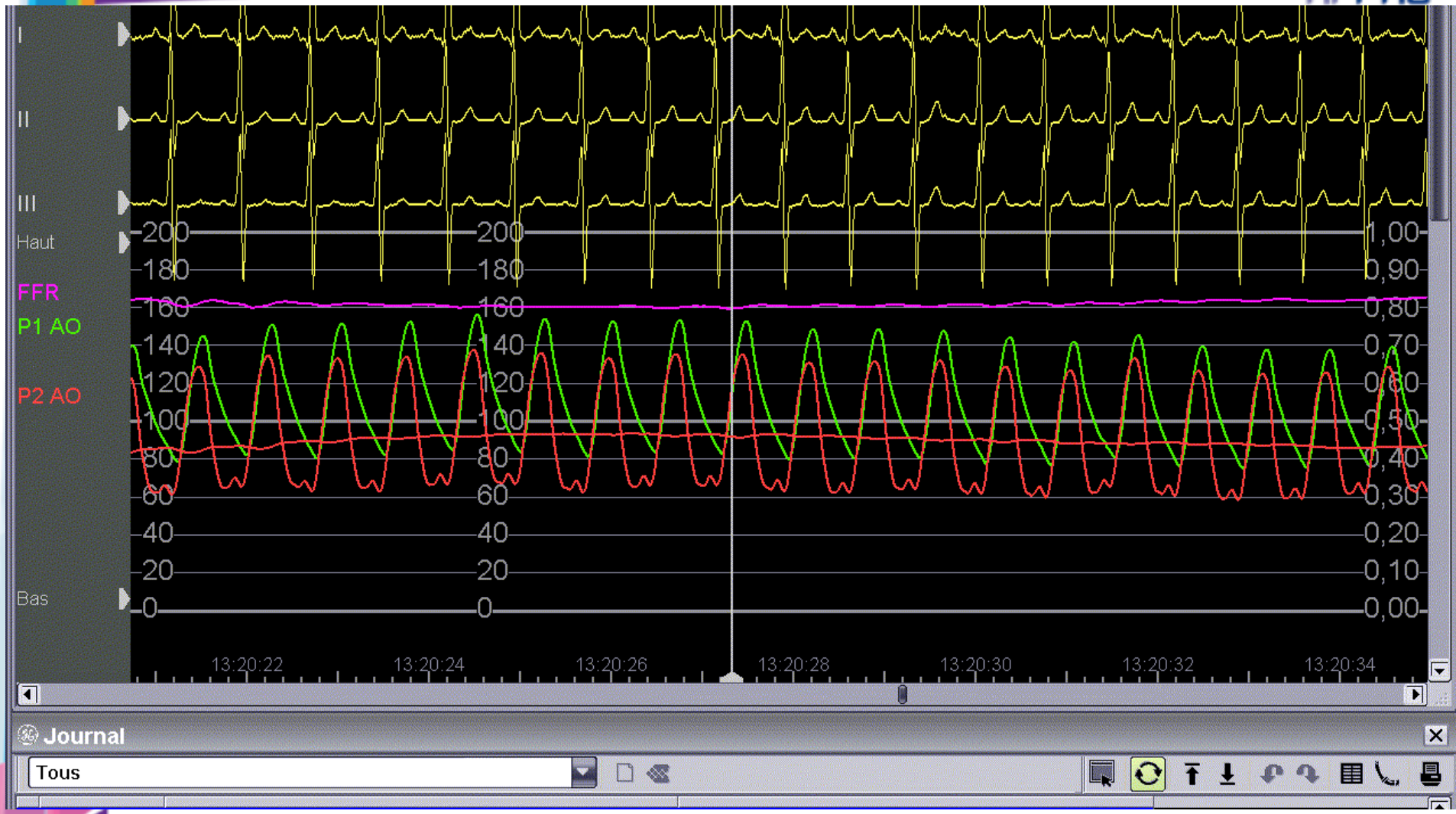


Figure 1. Efficacy in Inducing Maximal Hyperemia in FFR Assessment

Baseline and fractional flow reserve (FFR) values obtained with incremental boli of intracoronary adenosine (intracoronary bolus of 60 μg of adenosine [ADN60], of 300 μg [ADN300], of 600 μg [ADN600]), intracoronary bolus of 0.6 μg/kg sodium nitroprusside (NTP), or 140 μg/kg/min intravenous infusion of adenosine (IVADN).

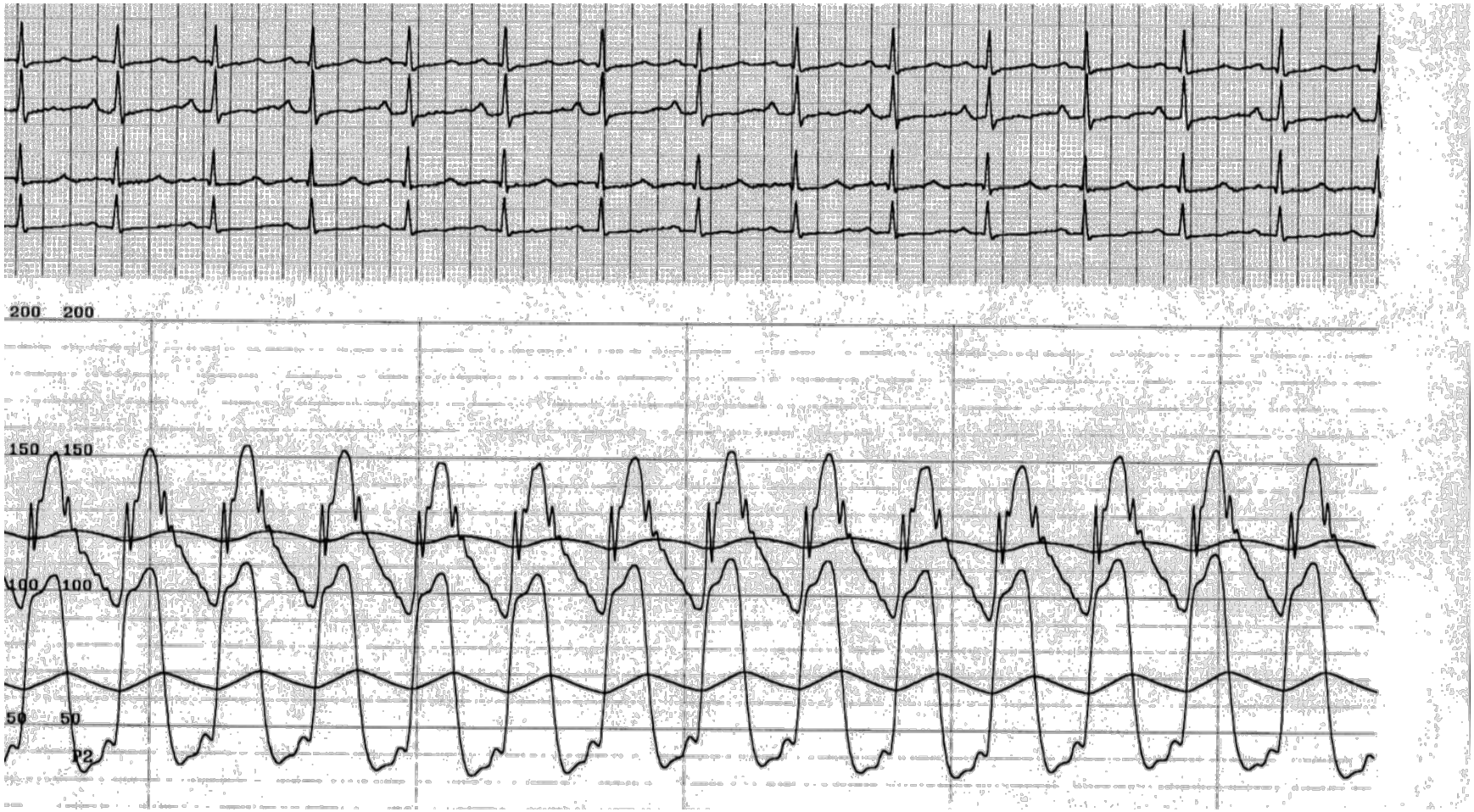
Antonio Maria Leone ; J Am Coll Cardiol Intv 2012;5:402– 8



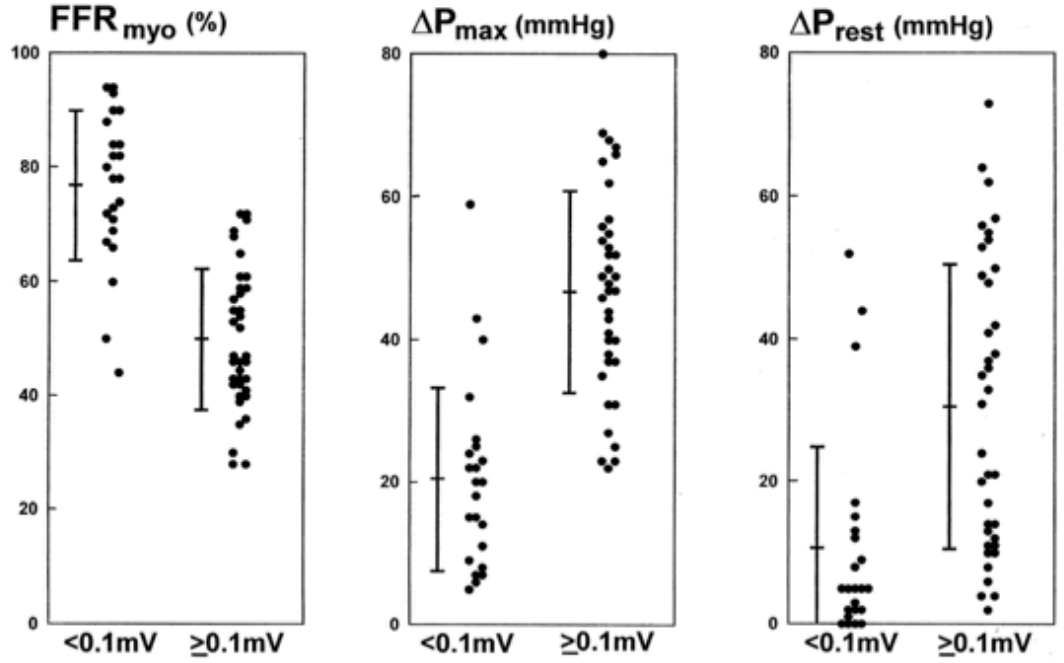
FFR = Pm Co / Pm Ao

EN HYPERHEMIE

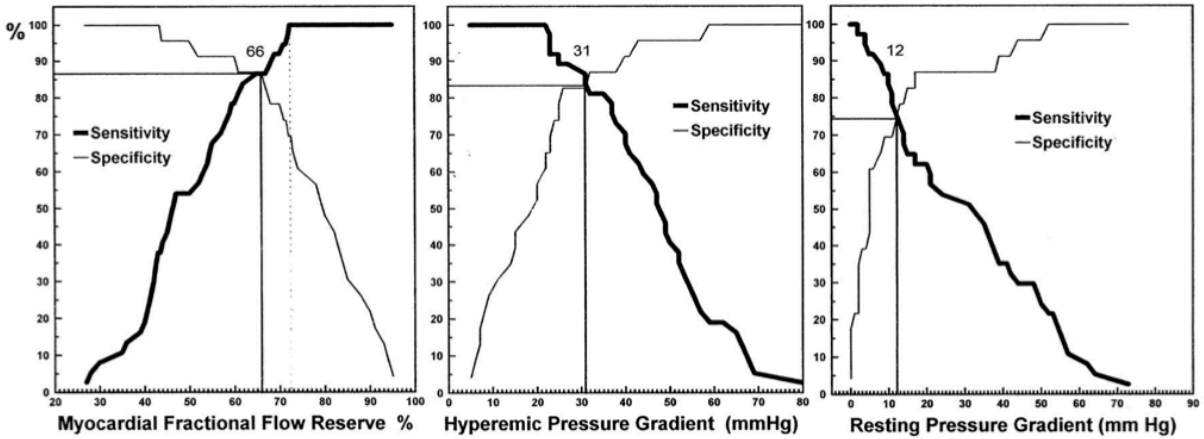
Gradient de Repos



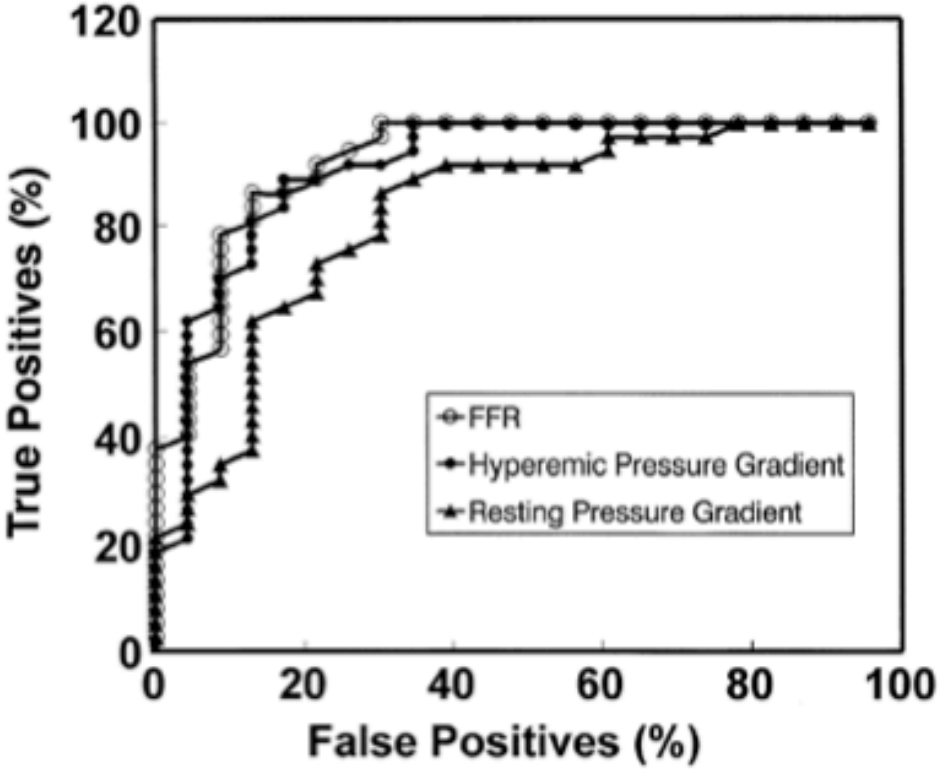
Scatterplots showing values of myocardial fractional flow reserve (FFRmyo), hyperemic translesional pressure gradient (ΔPmax), and resting translesional pressure gradient (ΔPrest) associated with normal (<0.1 mV ST-segment depression) and abnormal (≥0.1 mV ST-segment



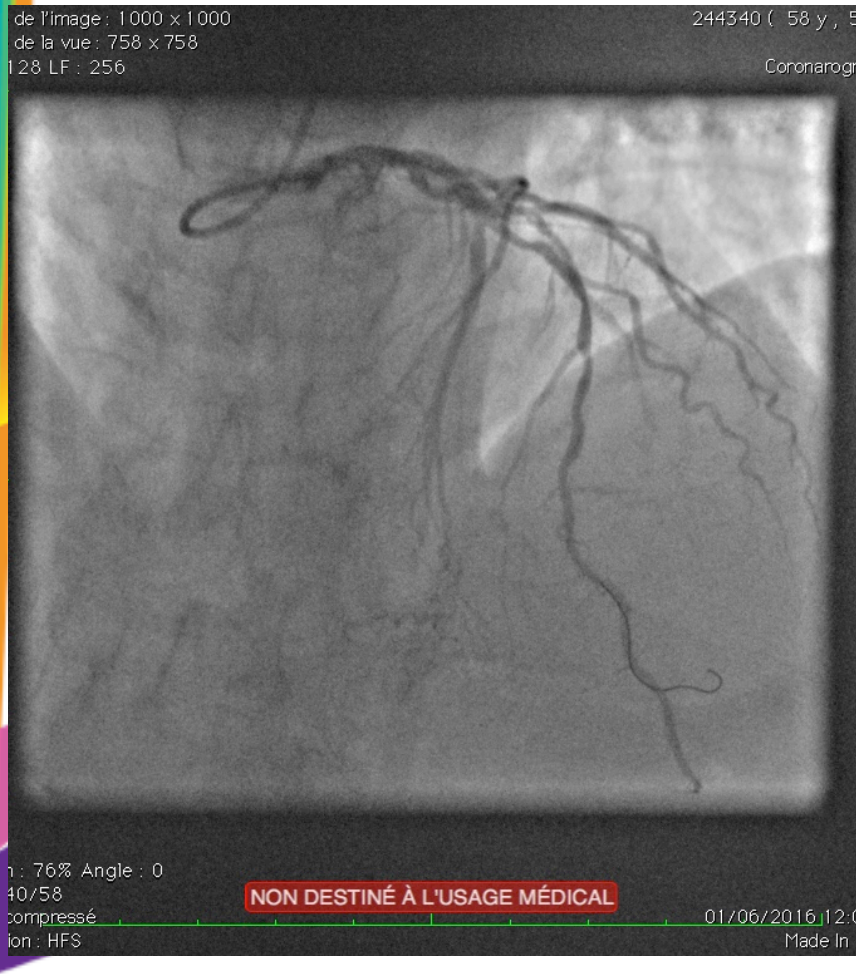
Bernard De Bruyne et al. Circulation. 1995;92:39-46

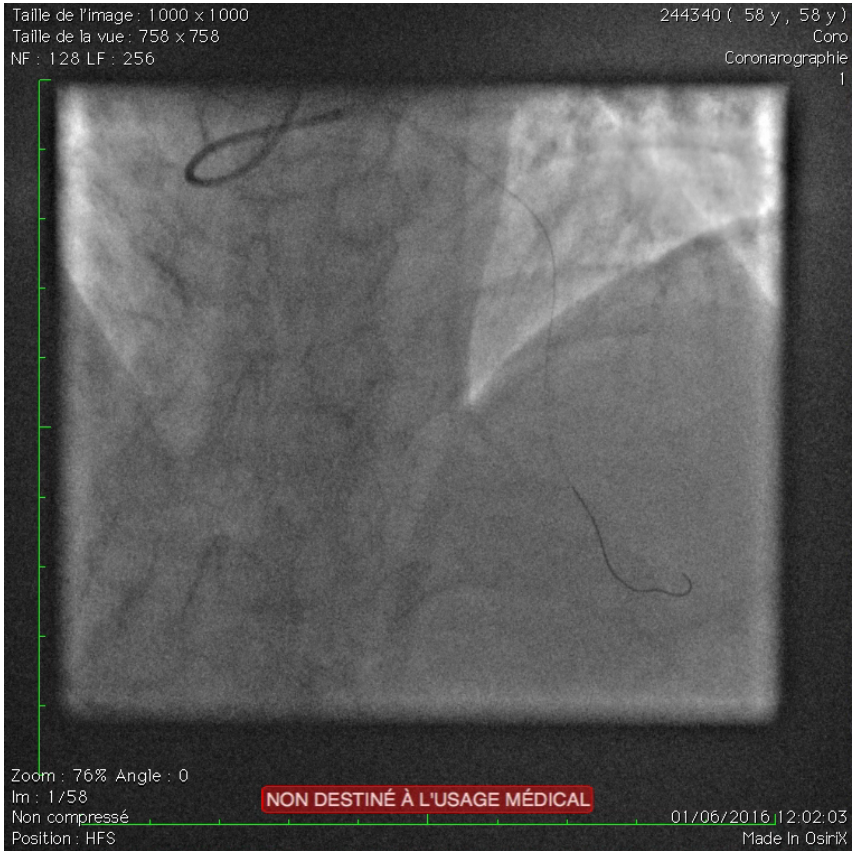


Receiver operating characteristic curves for comparison of the diagnostic accuracy of myocardial fractional flow reserve (FFR), hyperemic translesional pressure gradient, and resting translesional pressure gradient for predicting the results of the exercise ECG.

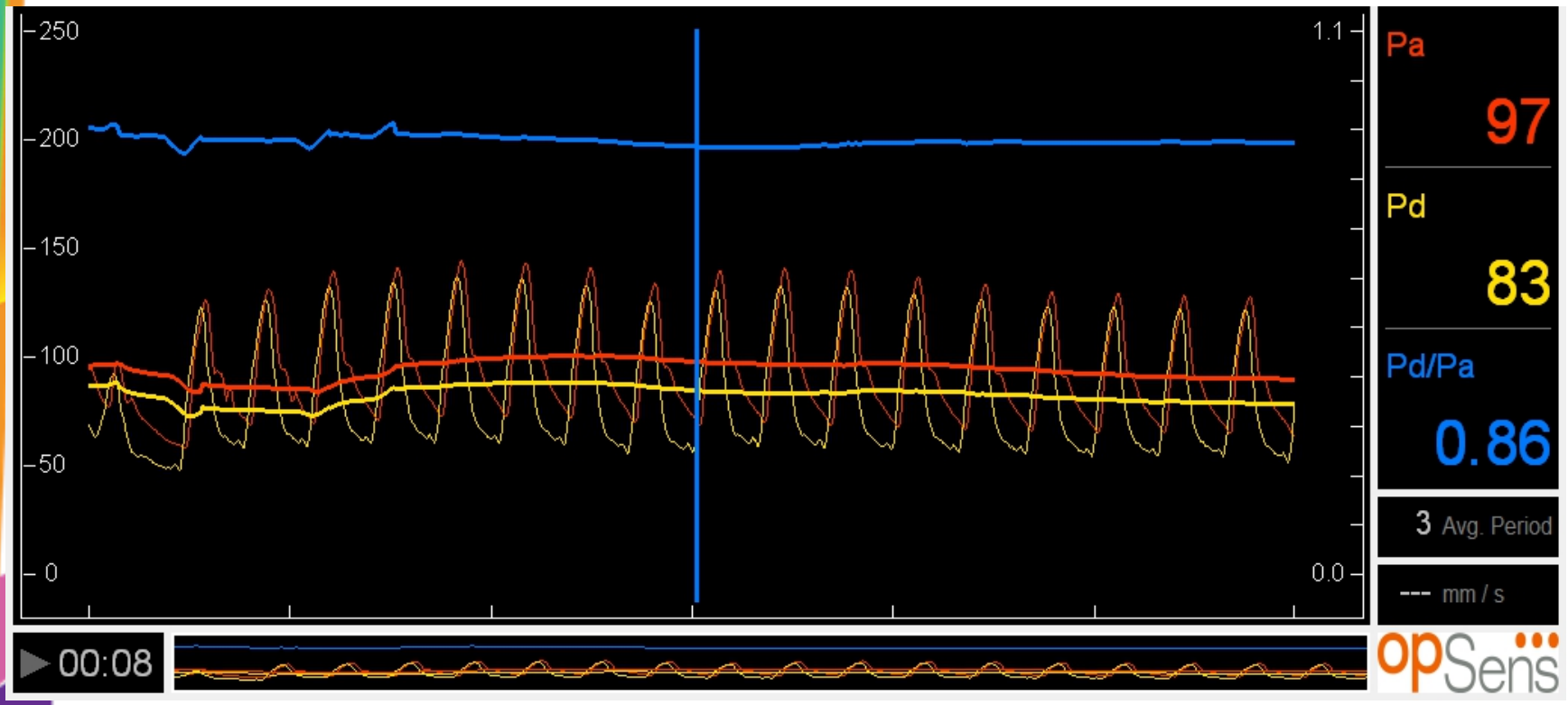


Bernard De Bruyne et al. Circulation. 1995;92:39-46

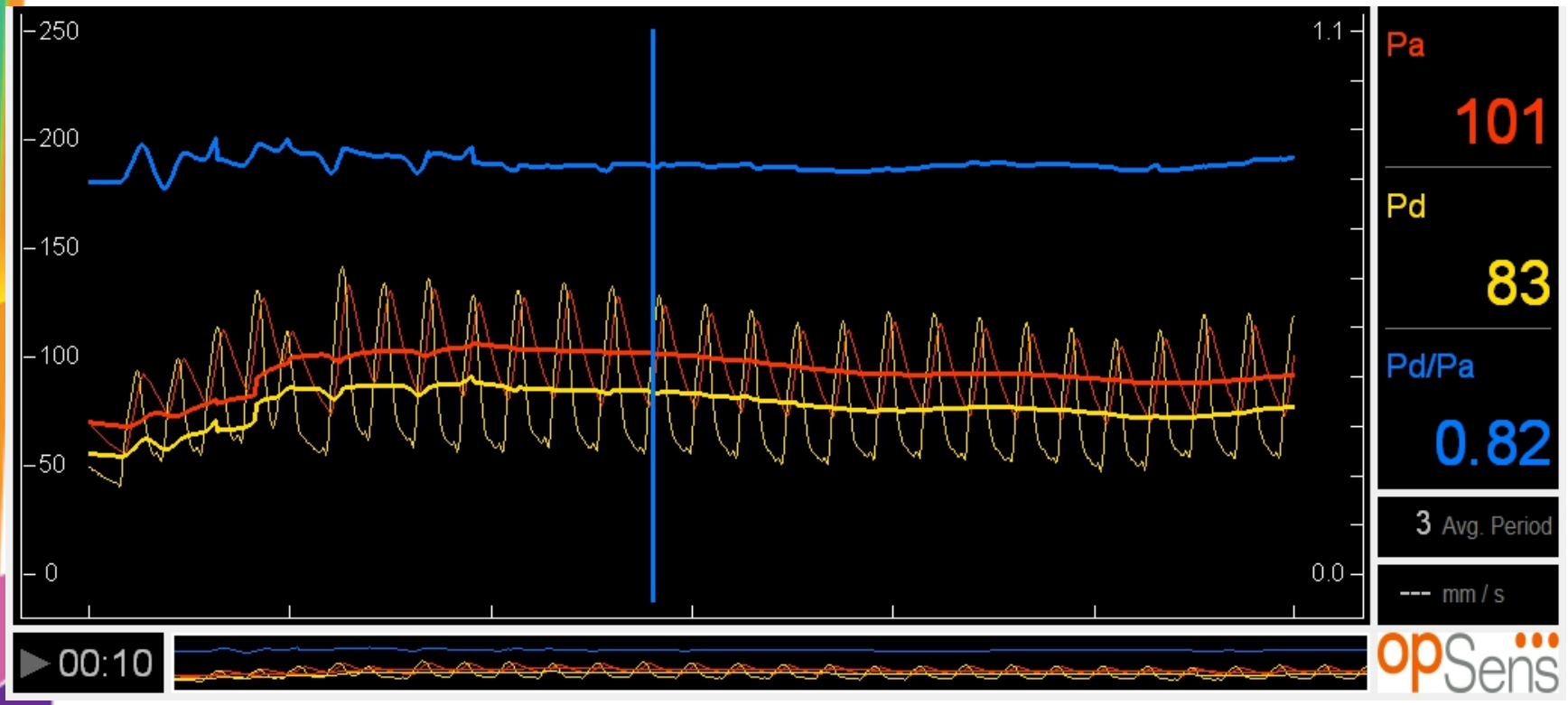

de l'image : 1000 x 1000
de la vue : 758 x 758
128 LF : 256
244340 (58 y ,
Coronarogr
: 76% Angle : 0
40/58
compressé
ion : HFS
NON DESTINÉ À L'USAGE MÉDICAL
01/06/2016 12:
Made In


Taille de l'image : 1000 x 1000
Taille de la vue : 758 x 758
NF : 128 LF : 256
244340 (58 y , 58 y)
Coro
Coronarographie
1
Zoom : 76% Angle : 0
Im : 1/58
Non compressé
Position : HFS
NON DESTINÉ À L'USAGE MÉDICAL
01/06/2016 12:02:03
Made In OsiriX

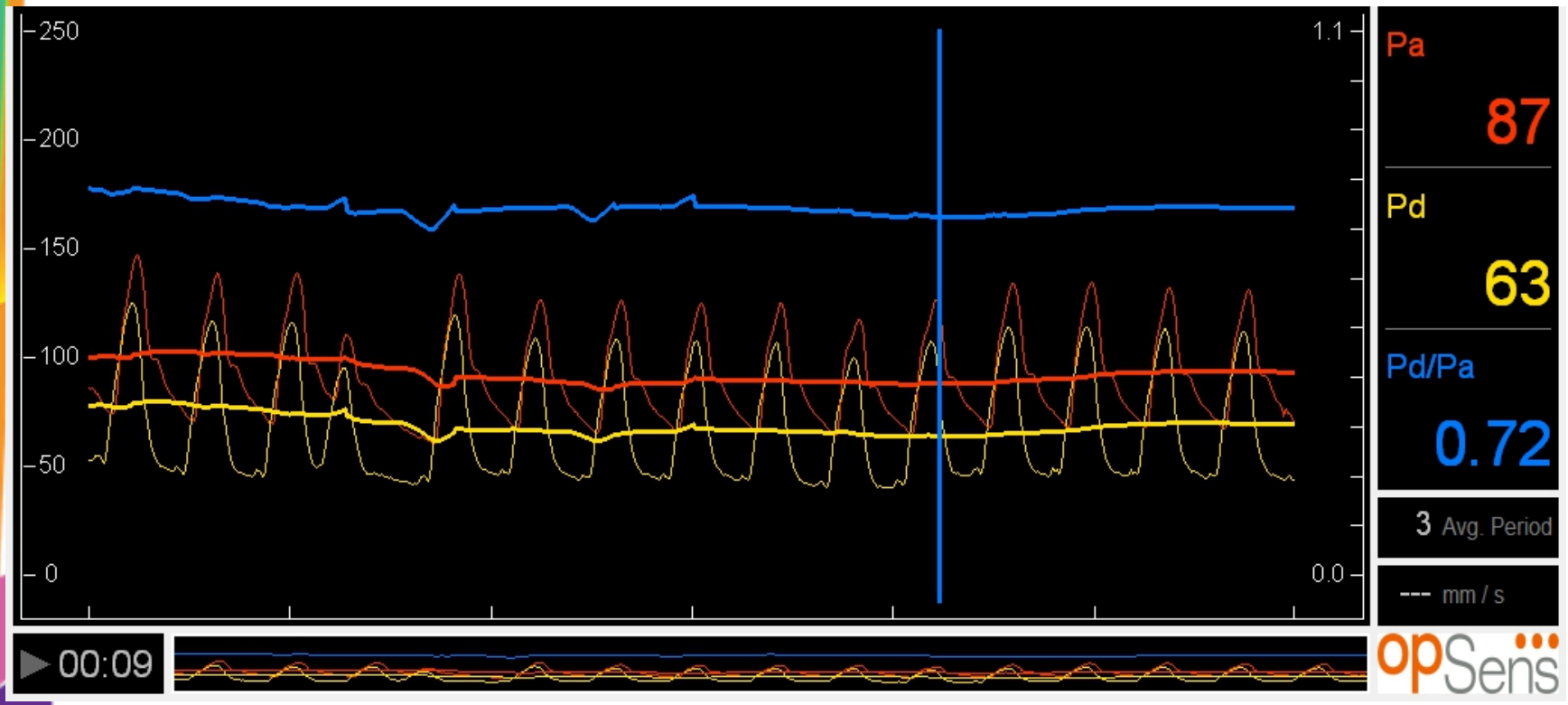
Gradient de base



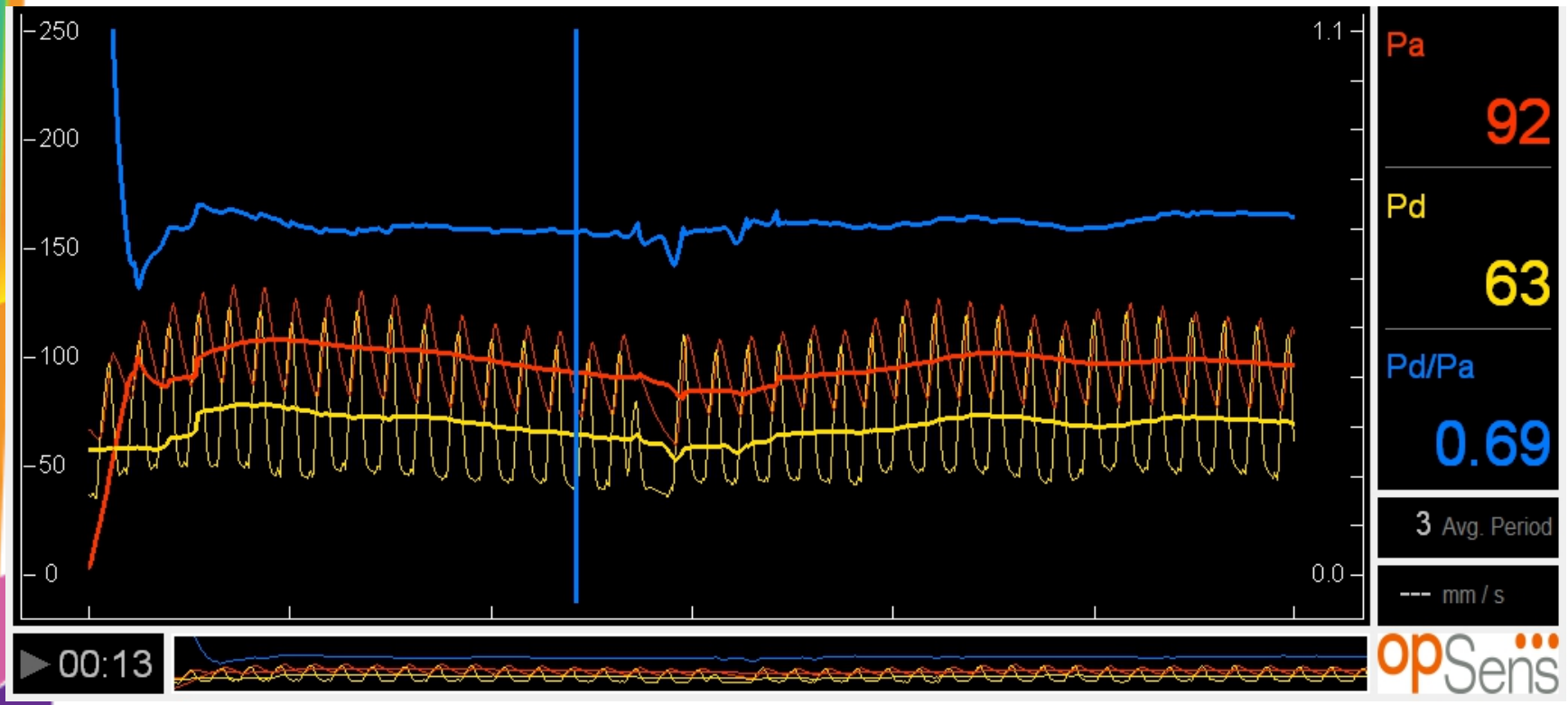
Gradient contraste



Gradient Adenosine 140ug bolus



Adenosine + contraste



Contraste et Résistances myocardiques

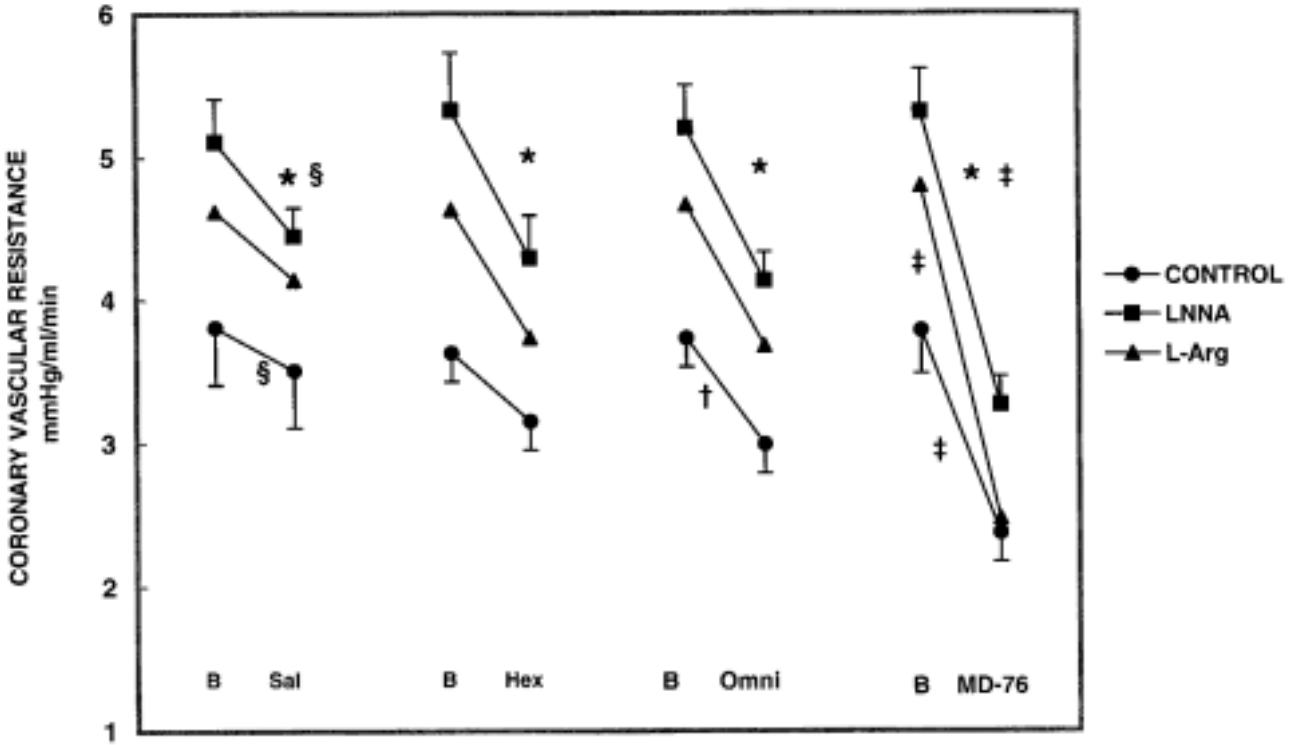
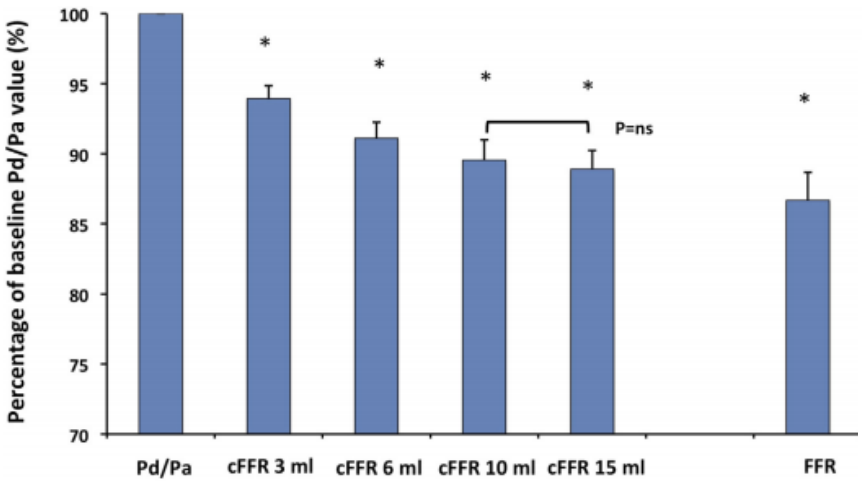
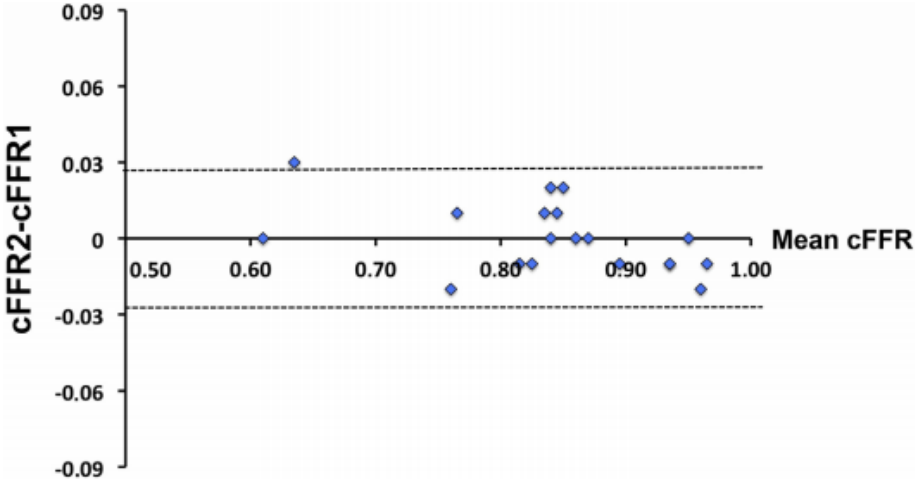


FIGURE 1. Coronary vascular resistance before (B, baseline) and after the injection of each of the four agents (Sal, saline solution; Hex, Hexabrix; Omni, Omnipaque 300; MD-76) for the following experimental conditions: Control (closed circles), LNNA (closed squares), and L-arginine (L-arg; triangles). *$p < 0.01$, LNNA greater than control; †$p < 0.01$, Hexabrix greater than Omnipaque 300; ‡$p < 0.01$, MD-76 greater than saline solution, Omnipaque 300, and Hexabrix; §$p < 0.01$ saline solution less than Omnipaque 300, Hexabrix, and MD-76. L-arginine statistics not noted.

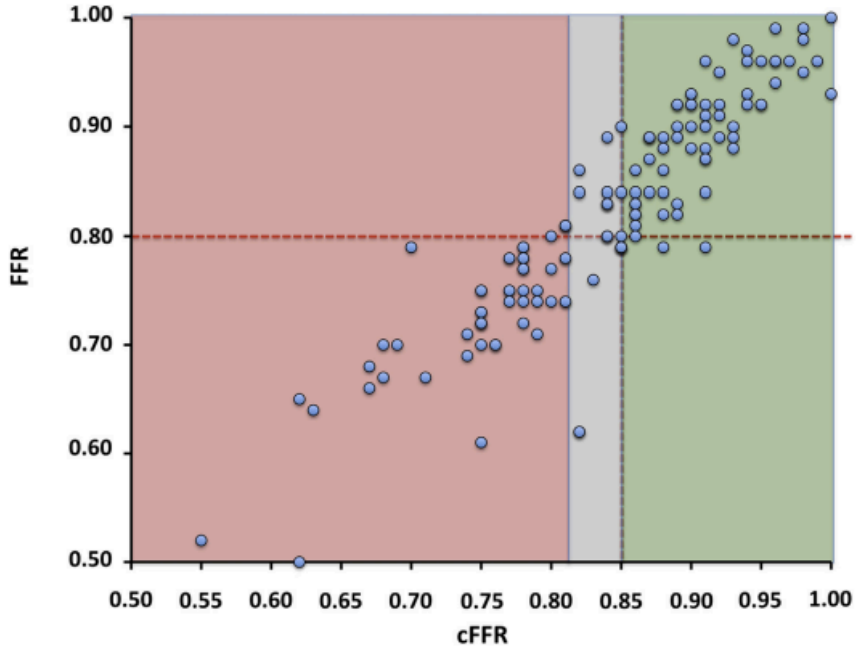
Elisabeth M. Baile , CHEST 1999; 116:1039–1045

cFFR n=138





Vincent Spagnoli , Canadian Journal of Cardiology 32 (2016) 739e746



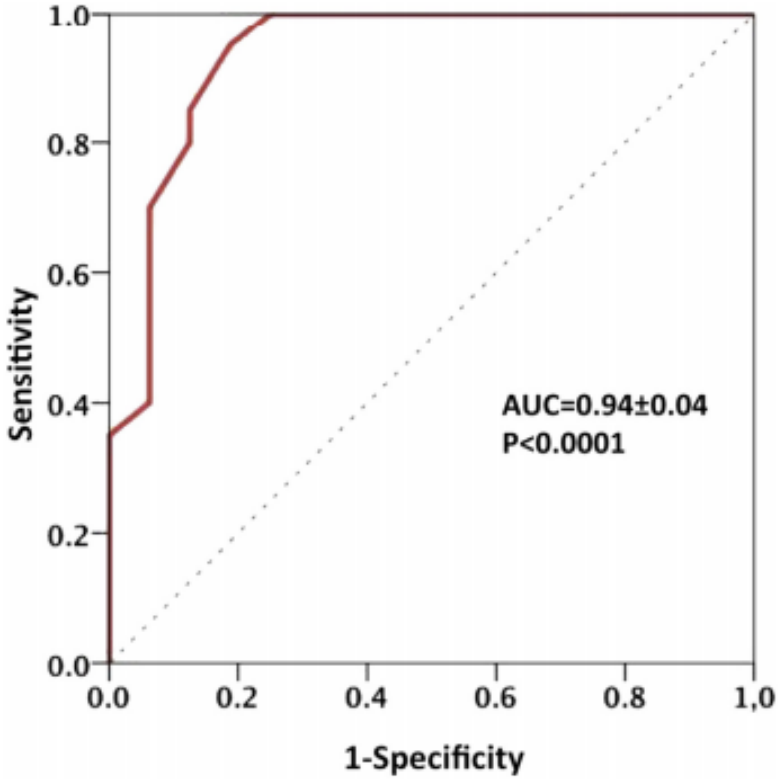


Figure 3. A receiver-operating characteristic curve was calculated using the threshold cutoff for contrast-enhanced fractional flow reserve (cFFR) of 0.85 in the exploration cohort. The receiver-operating characteristic was found to have an area under the curve (AUC) of 0.94 ± 0.04, which suggests the high accuracy rate of contrast-enhanced FFR in predicting FFR.

Vincent Spagnoli , Canadian Journal of Cardiology 32 (2016) 739e746

RINASCI Study n =104

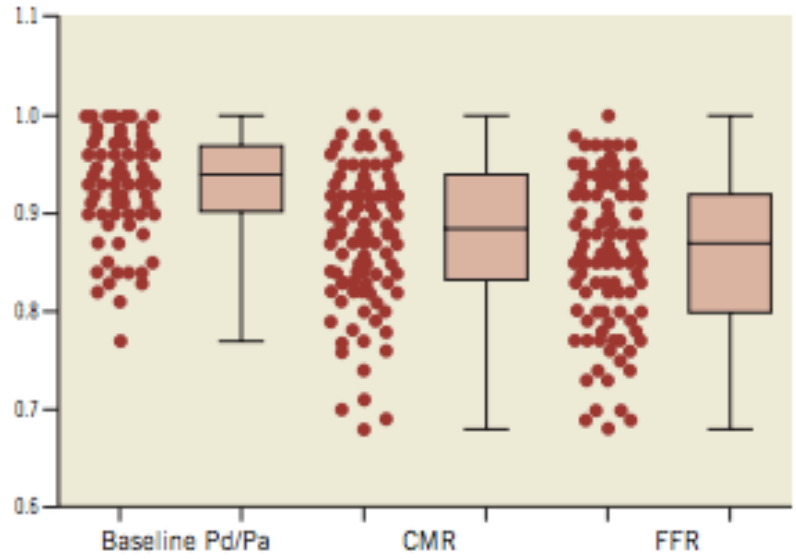


Figure 1. *Values of resting Pd/Pa, contrast medium induced Pd/Pa ratio (CMR) and fractional flow reserve (FFR).*

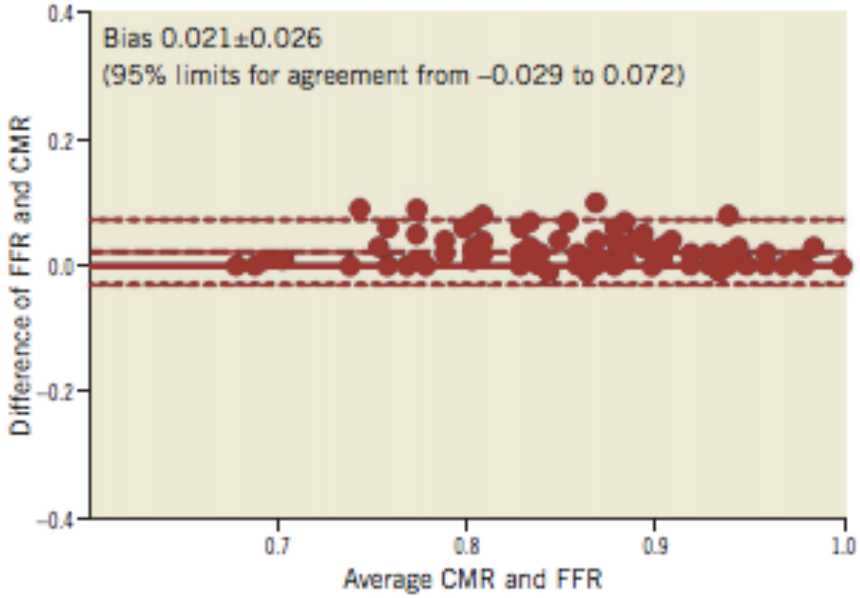
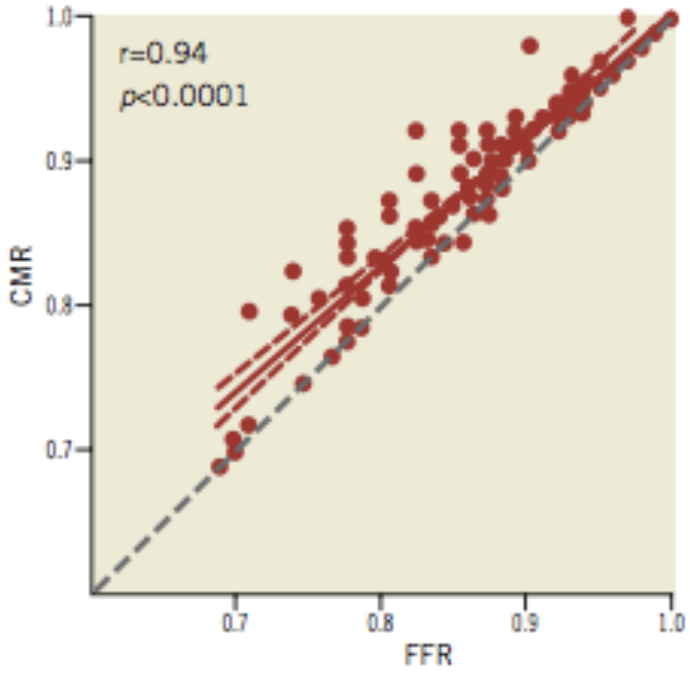


Figure 3. *The Bland-Altman plot demonstrated a good agreement between contrast medium induced Pd/Pa ratio (CMR) and fractional flow reserve (FFR) across the entire range of stenosis severity (0.02±0.02, 95% CI of disagreement: -0.03 to 0.07).*

Antonio Maria Leone, EuroIntervention 2015;11:421-427

RINASCI Study n =104



re 2. *Correlation between contrast medium induced Pd/Pa r*
IR) and fractional flow reserve (FFR) values.

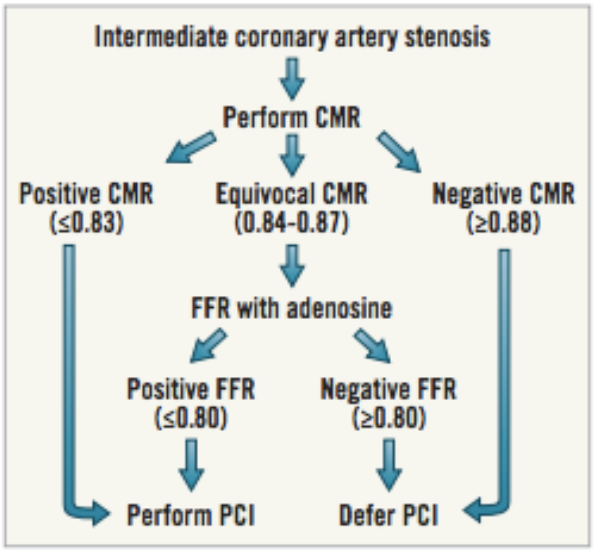


Figure 5. *We propose a hybrid CMR/FFR approach summarised in a simple algorithm that could allow limiting adenosine administration only to doubtful cases. We consider a CMR value ≤0.83 to be significant and consequently we suggest performing PCI, a CMR value ≥0.88 as not significant and consequently we suggest deferring PCI, and inducing maximal hyperaemia using adenosine for FFR assessment when CMR is between 0.84 and 0.87. In view of this, PCI would be performed when FFR is ≤0.80 and deferred when FFR is >0.80.*

Antonio Maria Leone, EuroIntervention 2015;11:421-427

iFR

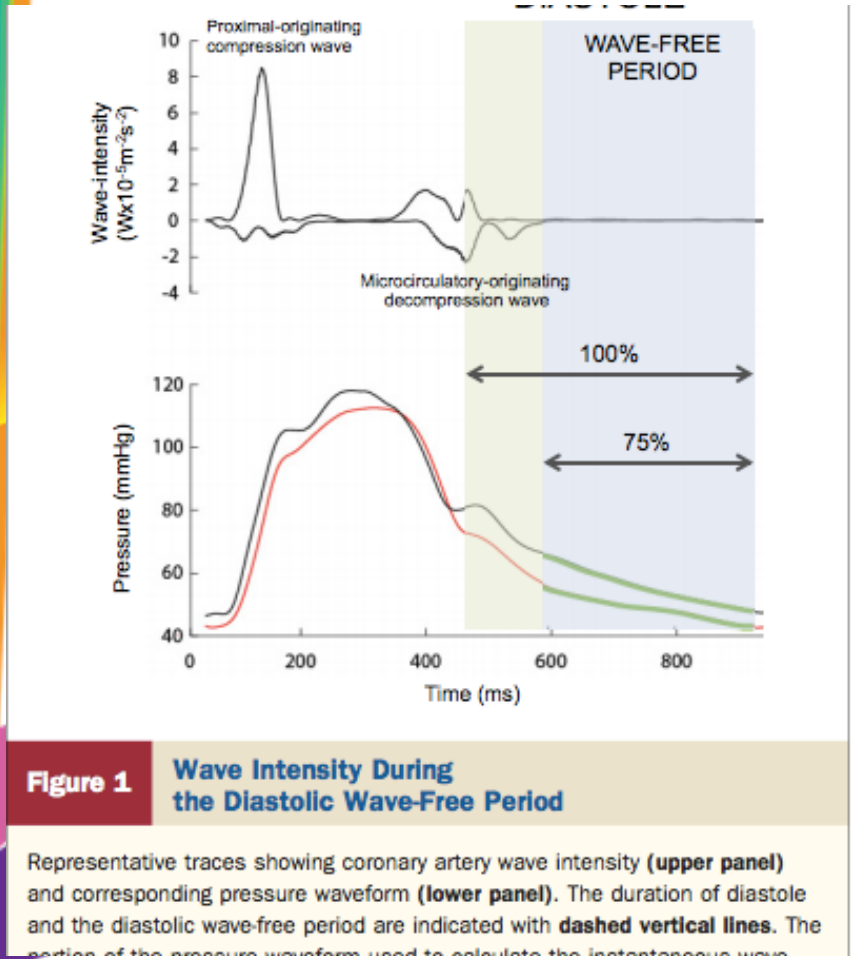
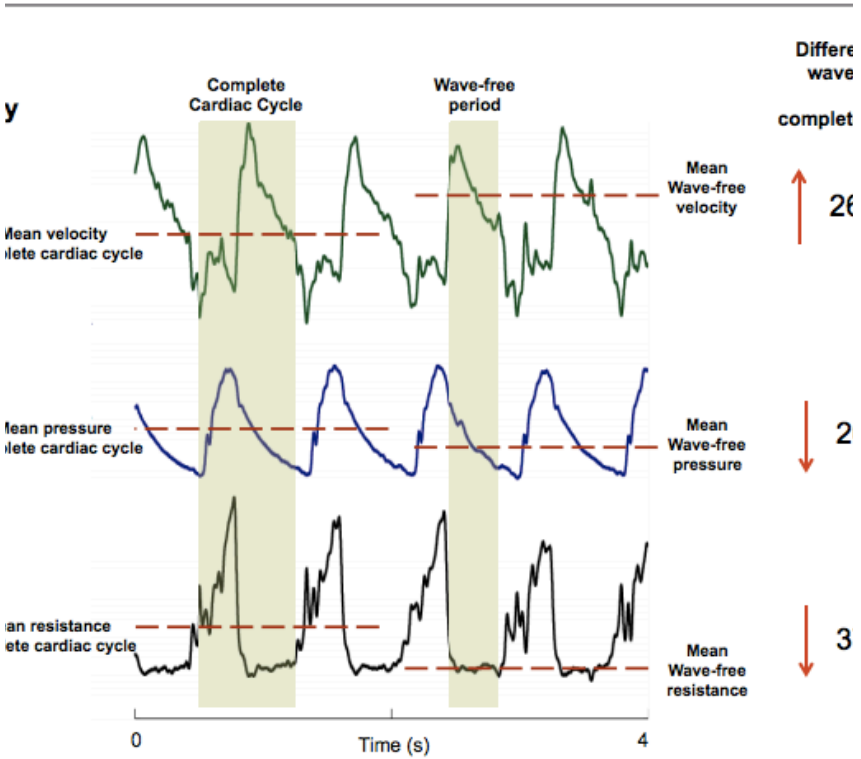


Figure 1 **Wave Intensity During the Diastolic Wave-Free Period**

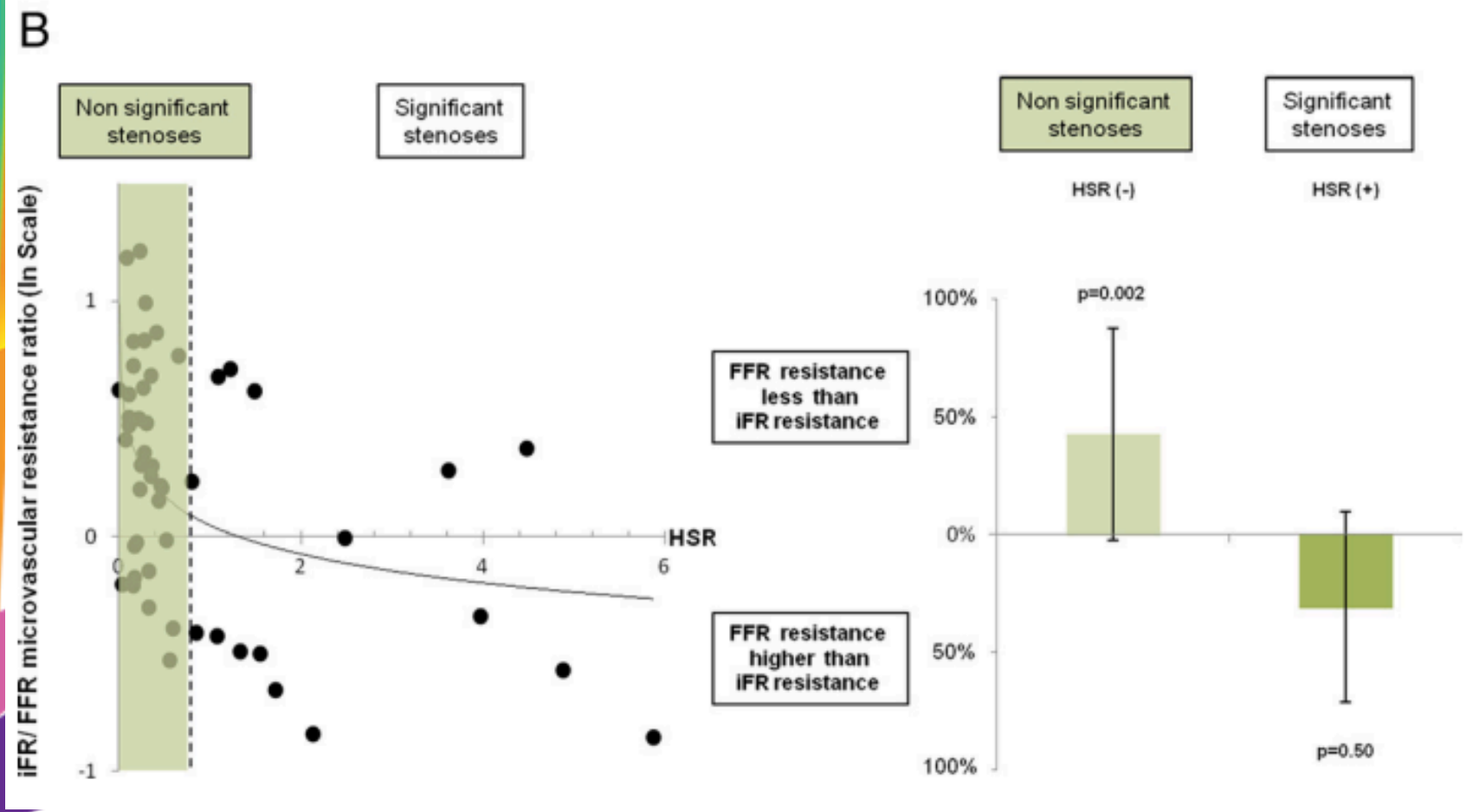
Representative traces showing coronary artery wave intensity **(upper panel)** and corresponding pressure waveform **(lower panel)**. The duration of diastole and the diastolic wave-free period are indicated with **dashed vertical lines**. The



emonstrating Improved Discriminatory Conditions of Wave-Free Period Compared to C

instantaneous microvascular resistance were calculated over the wave-free period and during that of the c
is lower over the wave-free period. This results in lower microvascular resistance during the wave-free perio
expressed as median ± interquartile range.

iFR

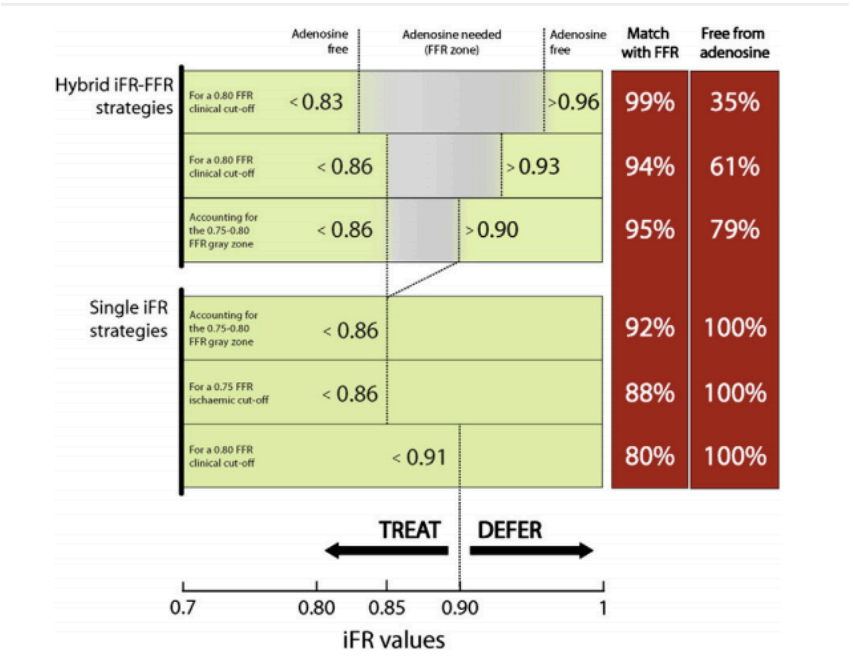

B
Non significant stenoses
Significant stenoses
iFR/ FFR microvascular resistance ratio (ln Scale)
1
0
-1
0
2
4
6
HSR
FFR resistance less than iFR resistance
FFR resistance higher than iFR resistance
Non significant stenoses
Significant stenoses
HSR (-)
HSR (+)
100%
50%
0%
50%
100%
p=0.002
p=0.50

Advise Study

Classification agreement between iFR and FFR

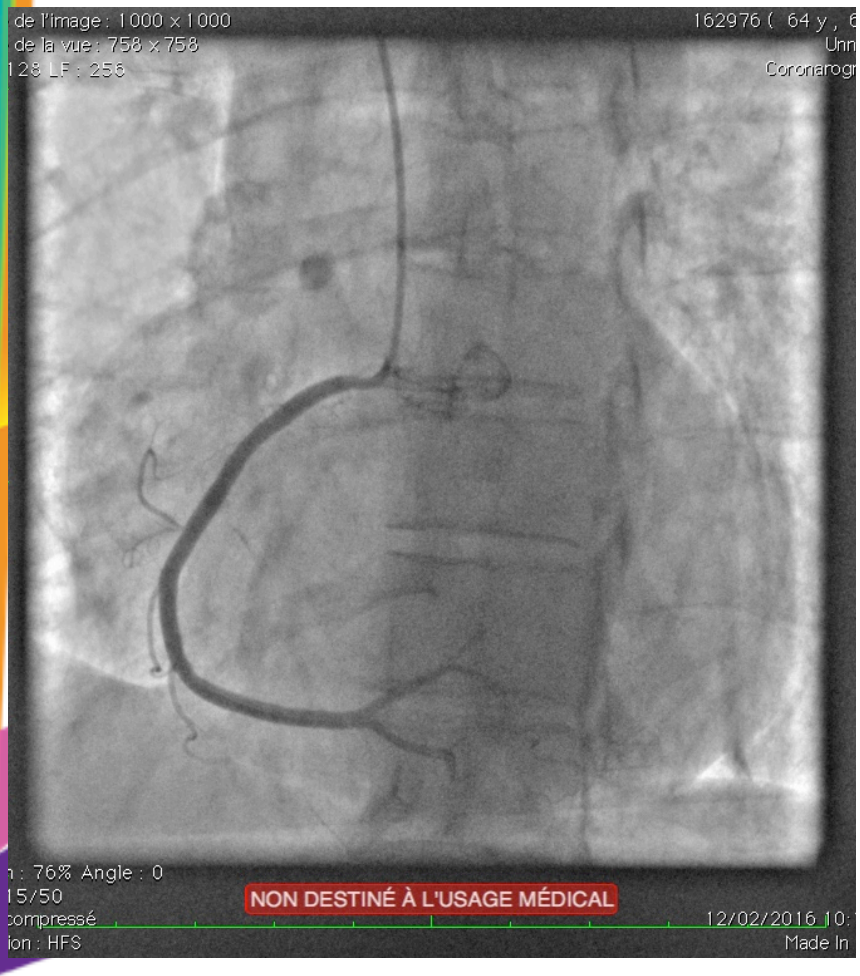
	FFR 0.8	FFR 0.75	FFR gray zone*
iFR cut-off	0.9	0.85	0.85
ROC AUC	0.87	0.90	0.93
Classification match	80%	88%	92%
Sensitivity	81%	75%	82%
Specificity	79%	91%	96%
PPV	71%	70%	86%
NPV	87%	93%	95%

* Accounting for the 0.75 - 0.8 FFR gray zone

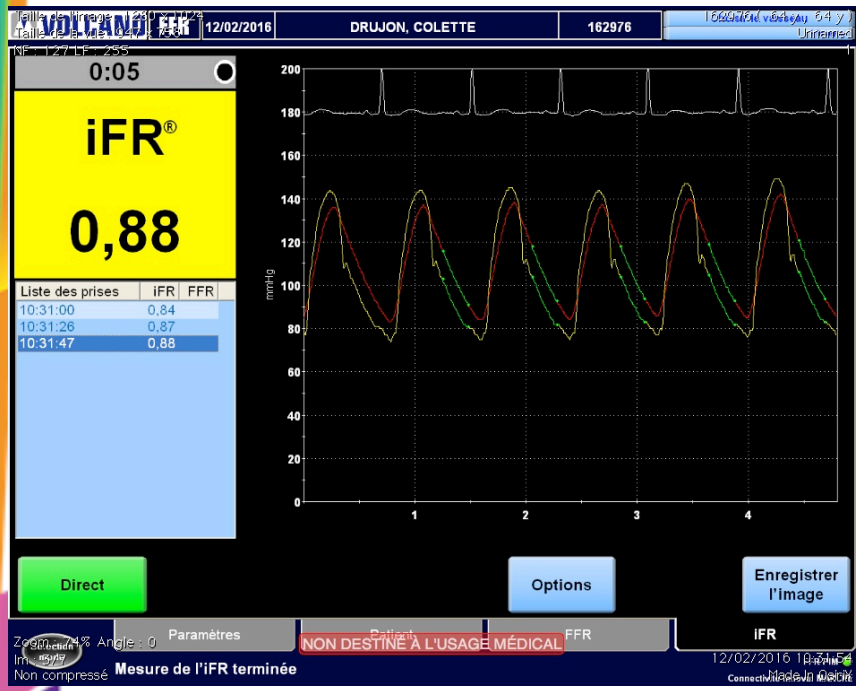


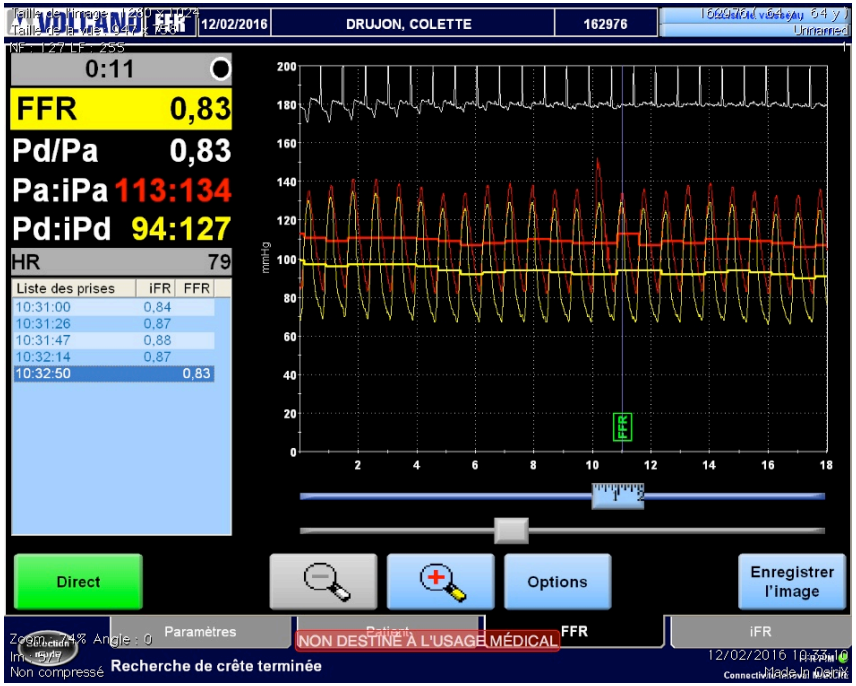
Petraco , Am Heart J 2014;168:739-48

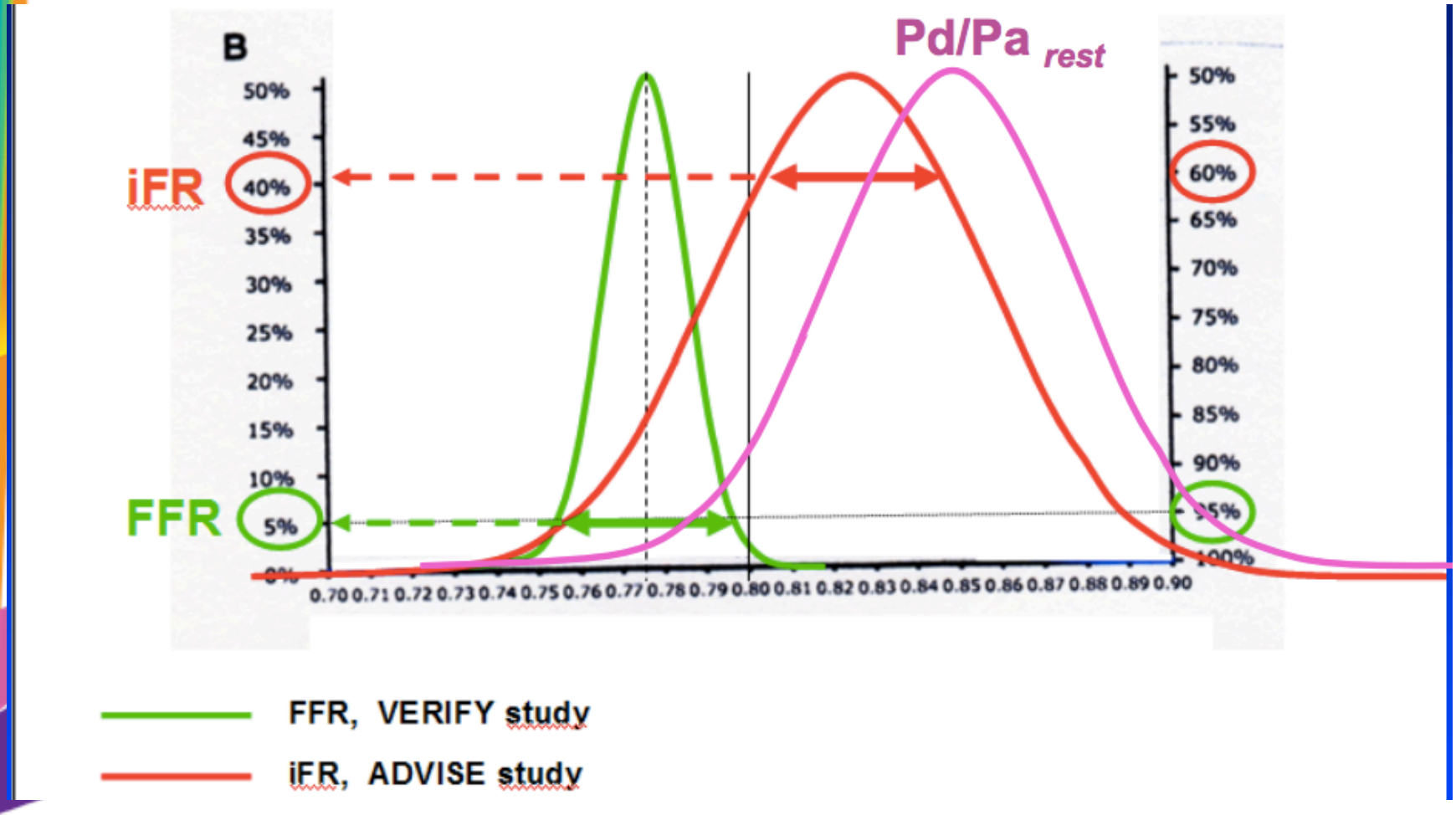
iFR


de l'image : 1000 x 1000
de la vue : 758 x 758
128 LF : 256
162976 (64 y ,
Unn
Coronarogr
: 76% Angle : 0
15/50
compressé
ion : HFS
NON DESTINÉ À L'USAGE MÉDICAL
12/02/2016 10:
Made In

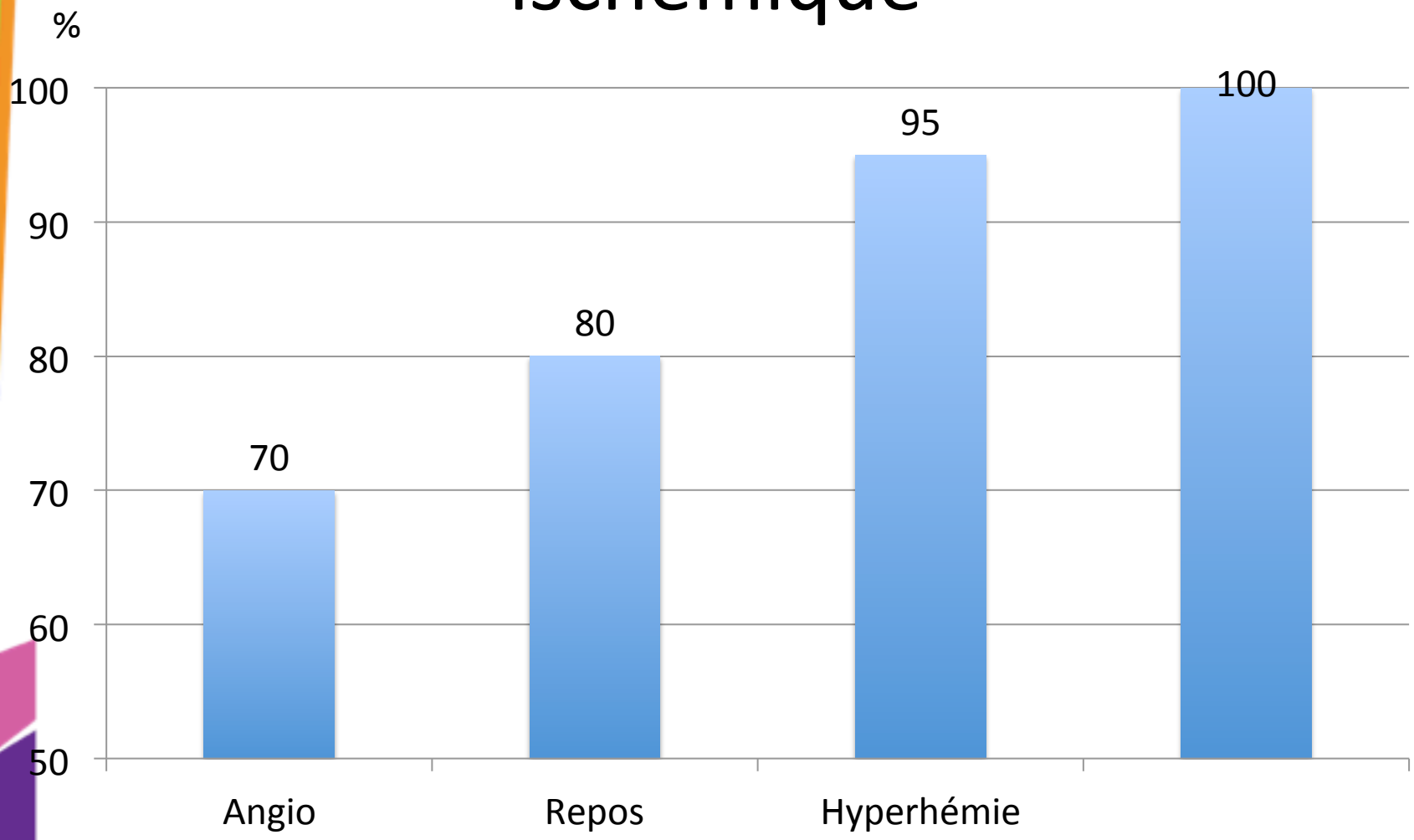

Taille de l'image : 1000 x 1000
Taille de la vue : 758 x 758
NF : 128 LF : 256
162976 (64 y , 64 y)
Unnamed
Coronarographie
1
Zoom : 76% Angle : 0
Im : 1/50
Non compressé
Position : HFS
NON DESTINÉ À L'USAGE MÉDICAL
12/02/2016 10:11:22
Made In OsiriX


12/02/2016
DRUJON, COLETTE
162976
0:05
iFR®
0,88
Liste des prises
iFR
FFR
10:31:00 0,84
10:31:26 0,87
10:31:47 0,88
mmHg
Direct
Options
Enregistrer l'image
Paramètres
Patient
FFR
iFR
NON DESTINÉ À L'USAGE MÉDICAL
Non compressé
Mesure de l'iFR terminée


12/02/2016
DRUJON, COLETTE
162976
0:11
FFR 0,83
Pd/Pa 0,83
Pa:iPa 113:134
Pd:iPd 94:127
HR 79
Liste des prises
iFR
FFR
10:31:00 0,84
10:31:26 0,87
10:31:47 0,88
10:32:14 0,87
10:32:50 0,83
mmHg
Direct
Options
Enregistrer l'image
Paramètres
Patient
FFR
iFR
NON DESTINÉ À L'USAGE MÉDICAL
Non compressé
Recherche de crête terminée


B
Pd/Pa rest
iFR
FFR
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
50%
55%
60%
65%
70%
75%
80%
85%
90%
95%
100%
0.70 0.71 0.72 0.73 0.74 0.75 0.76 0.77 0.78 0.79 0.80 0.81 0.82 0.83 0.84 0.85 0.86 0.87 0.88 0.89 0.90
FFR, VERIFY study
iFR, ADVISE study

Précision diagnostique lésion ischémique

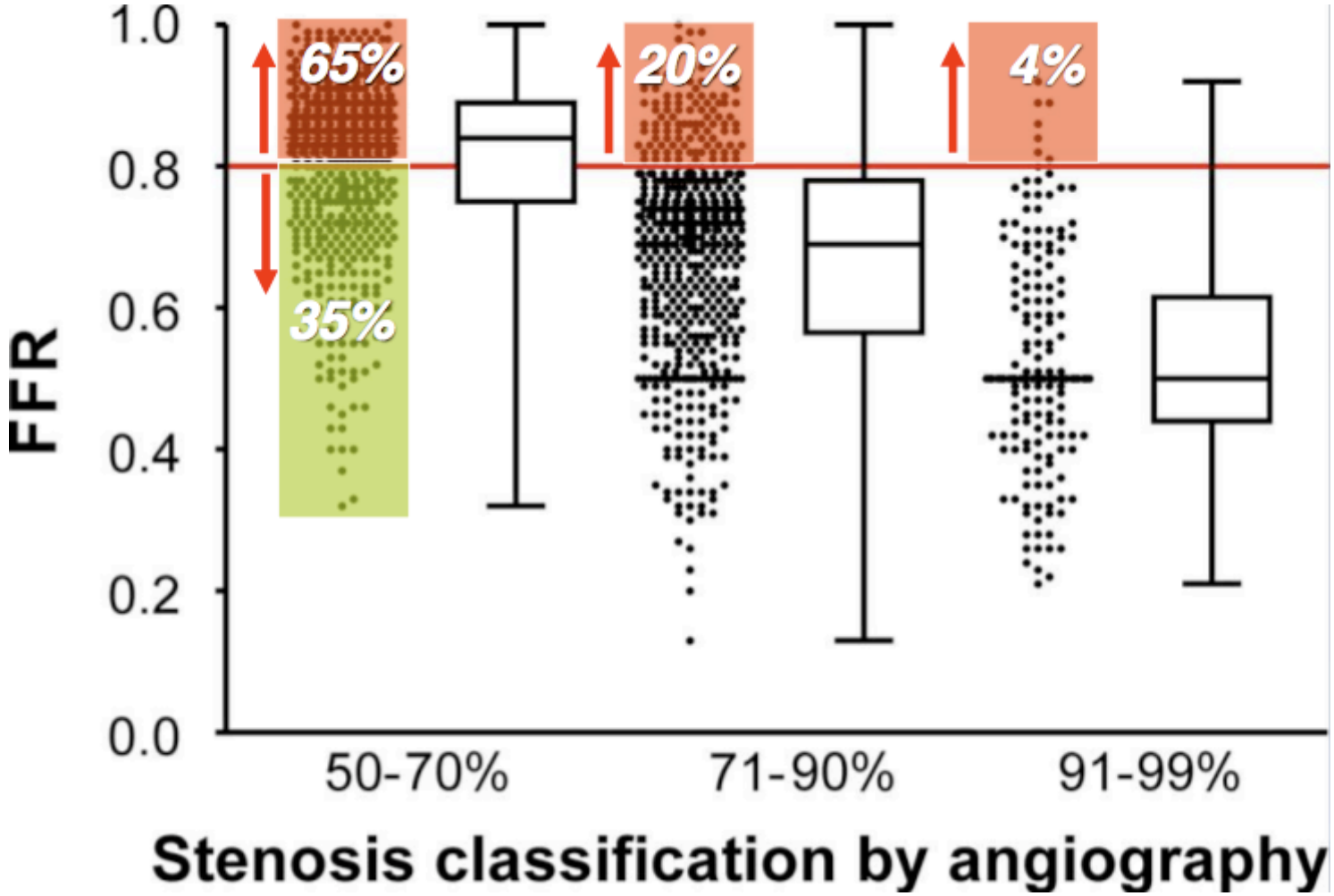


Conclusions

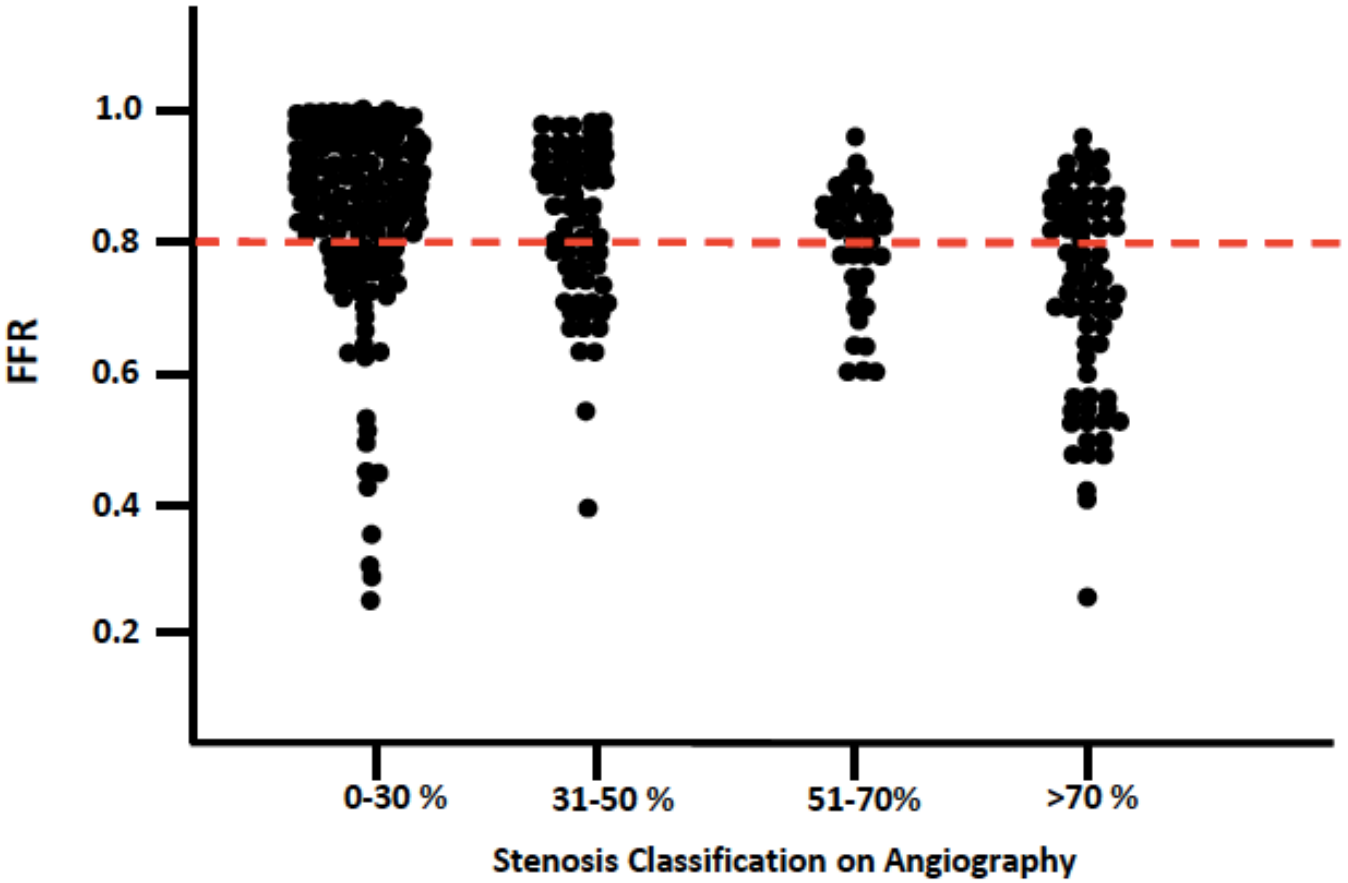
- L'utilisation du guide pression sans stimulus adjuvant est possible
- Quelque soit la technique utilisée, un valeur < 0,80 signe la fonctionnalité de la sténose
- Quelle valeur seuil retenir pour
  - Rapport Pd/Pa de repos – aucune étude
  - Contraste 0,83 zone grise : 0,84-0,88 ?
  - iFr 0,9 zone grise : 0,86-0,93
- Manque études de validation

INFLUENCE DE LA FFR SUR L'ACTIVITE ANGIOPLASTIE

FFR vs Angiographie



Tonino, TCT 2009



RIPCORD STUDY, Circulation 2014

R3F registry
The FFR real life in France

- French prospective and multicentric Registry
- Inclusions 2008-2010
- 1101 Patients
- Hop, 6 month and 1 year fol up
- Electronic CRF

Circulation
JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Heart Association.

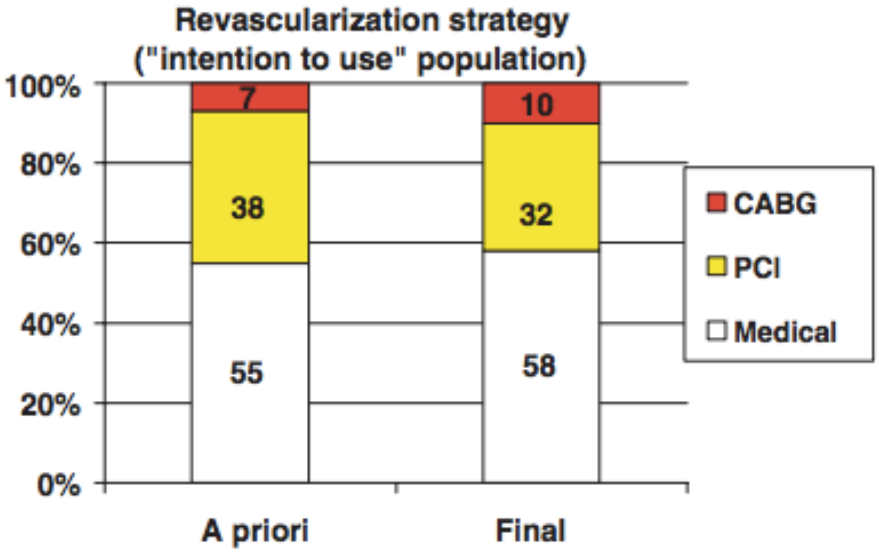
Outcome Impact of Coronary Revascularization Strategy Reclassification With Fractional Flow Reserve at Time of Diagnostic Angiography: Insights From a Large French Multicenter Fractional Flow Reserve Registry

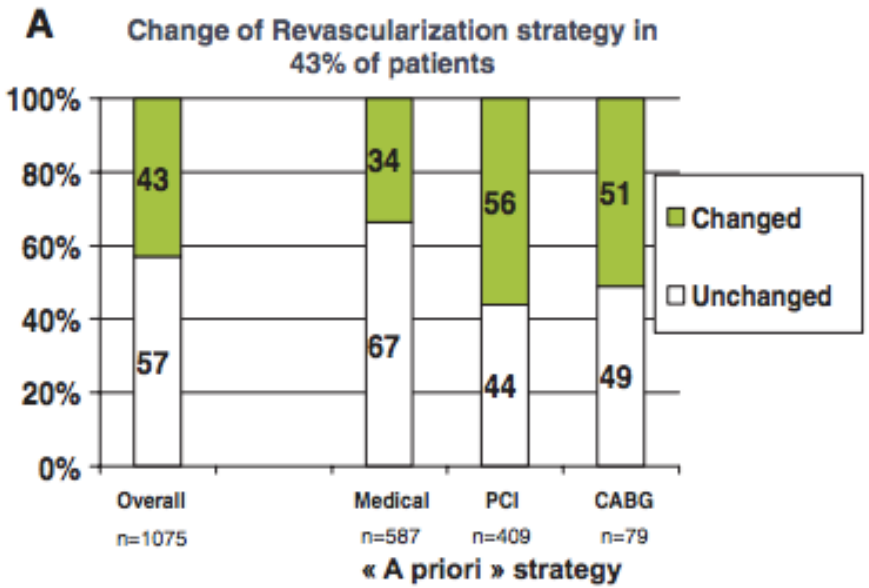
Eric Van Belle, Gilles Rioufol, Christophe Pouillot, Thomas Cuisset, Karim Bougrini, Emmanuel Teiger, Stéphane Champagne, Loic Belle, Didier Barreau, Michel Hanssen, Cyril Besnard, Raphael Dauphin, Jean Dallongeville, Yassine El Hahi, Georgios Sideris, Christophe Bretelle, Nicolas Lhoest, Pierre Barnay, Laurent Leborgne and Patrick Dupouy

Circulation. published online November 19, 2013;
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231

Print ISSN: 0009-7322. Online ISSN: 1524-4539

VanBelle, Dupouy et col Circulation. 2014;129:173-185

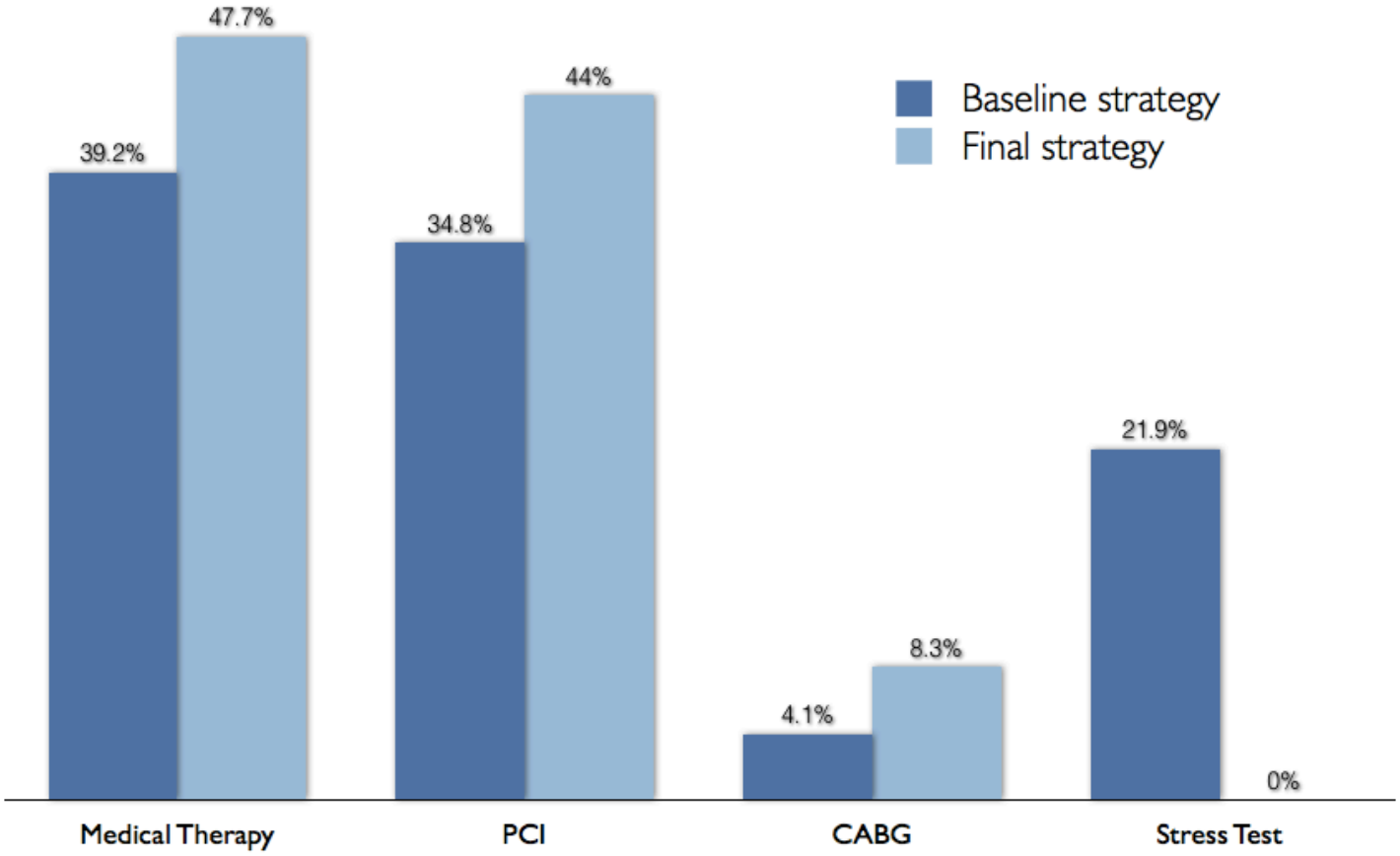




-6% angioplastie

VanBelle, Dupouy et col Circulation. 2014;129:173-185

Post-It study



Baptista et al, Circ Intervent in press

Routine FFR

		FFR PLAN 2				Total
		Medical	PCI	CABG	Further Info	
PLAN 1	Medical	63	6	3	0	72
ANGIO	PCI	24	64	2	0	90
	CABG	1	3	19	0	23
	Further info	1	7	6	1	15
Total		89	80	30	1	200

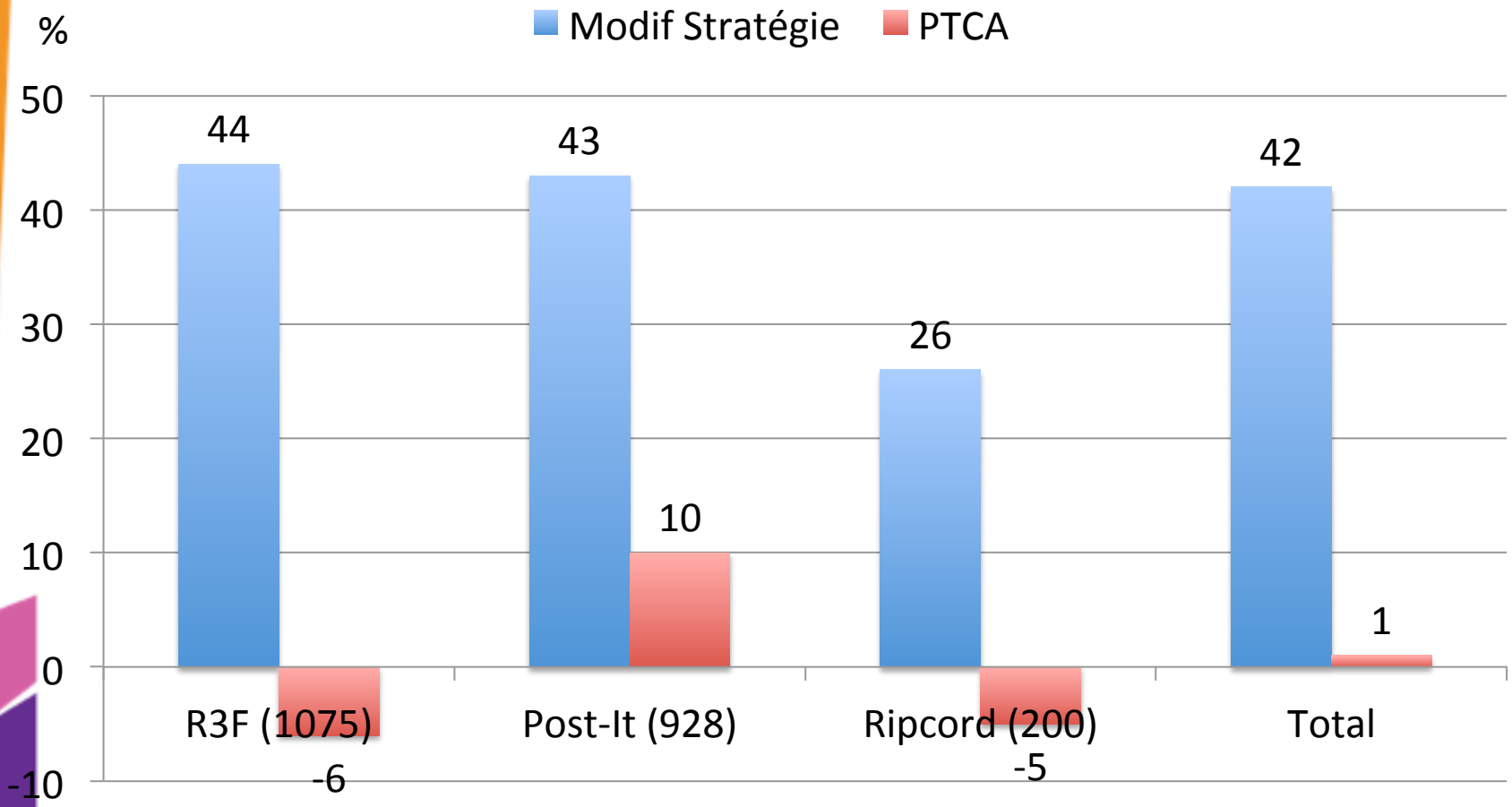
Fishers exact test $p<0.0001$

Summary

- Agreement about category of management in 147 out of 200 (74%)
  - ie after FFR management change in 26% of cases

-10% ANGIOPLASTIES

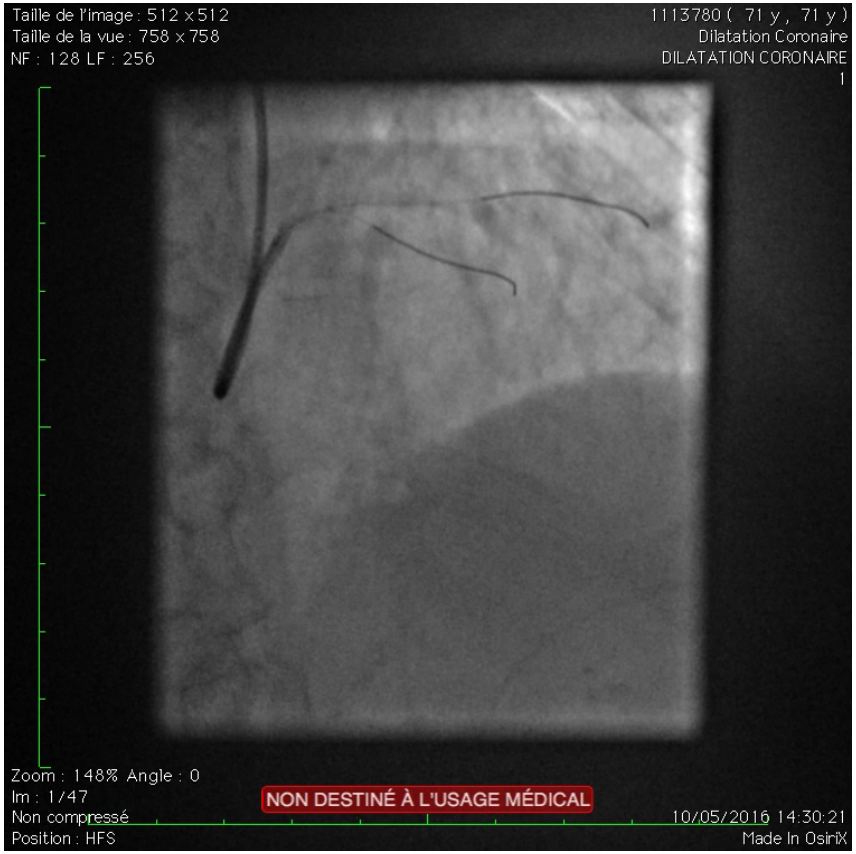
RIPCORD STUDY, Circulation 2014


%
Modif Stratégie
PTCA
50
40
30
20
10
0
-10
44
43
26
42
10
1
-6
-5
R3F (1075)
Post-It (928)
Ripcord (200)
Total

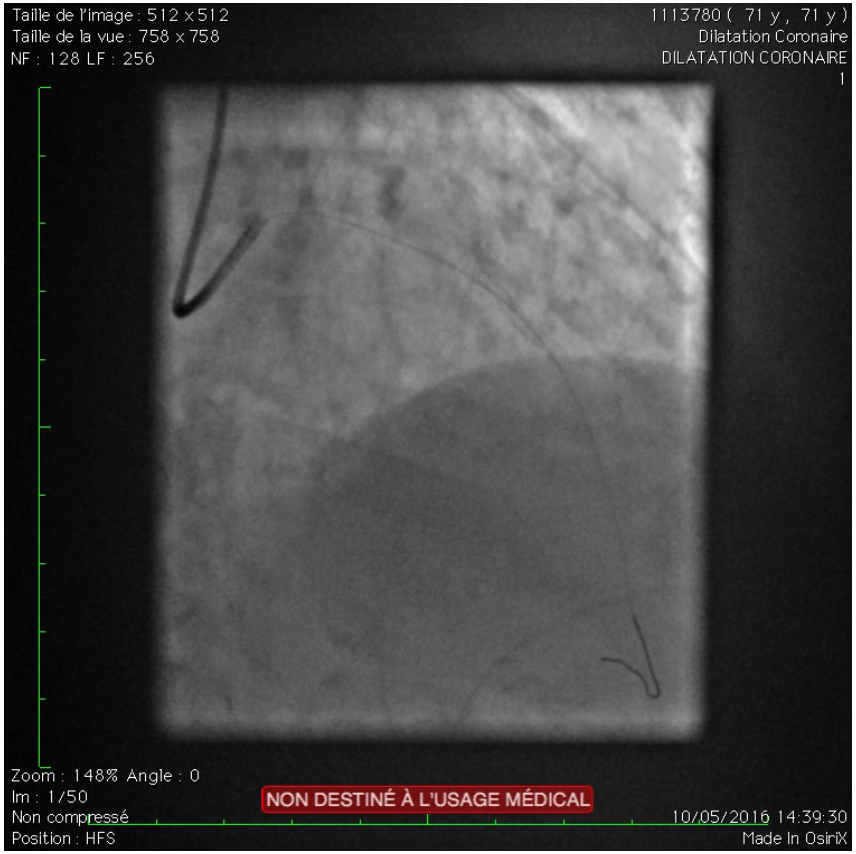
Conclusions

- L'utilisation de la FFR a peu d'impact sur le tau de revascularisation par angioplastie

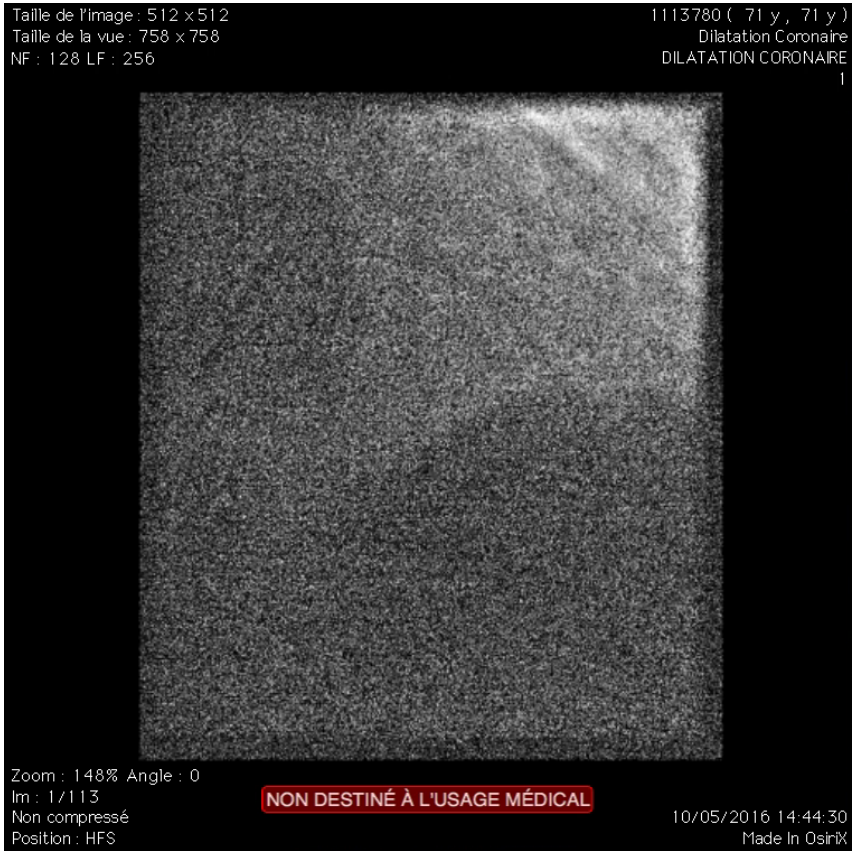
La FFR dans les lésions de bifurcation



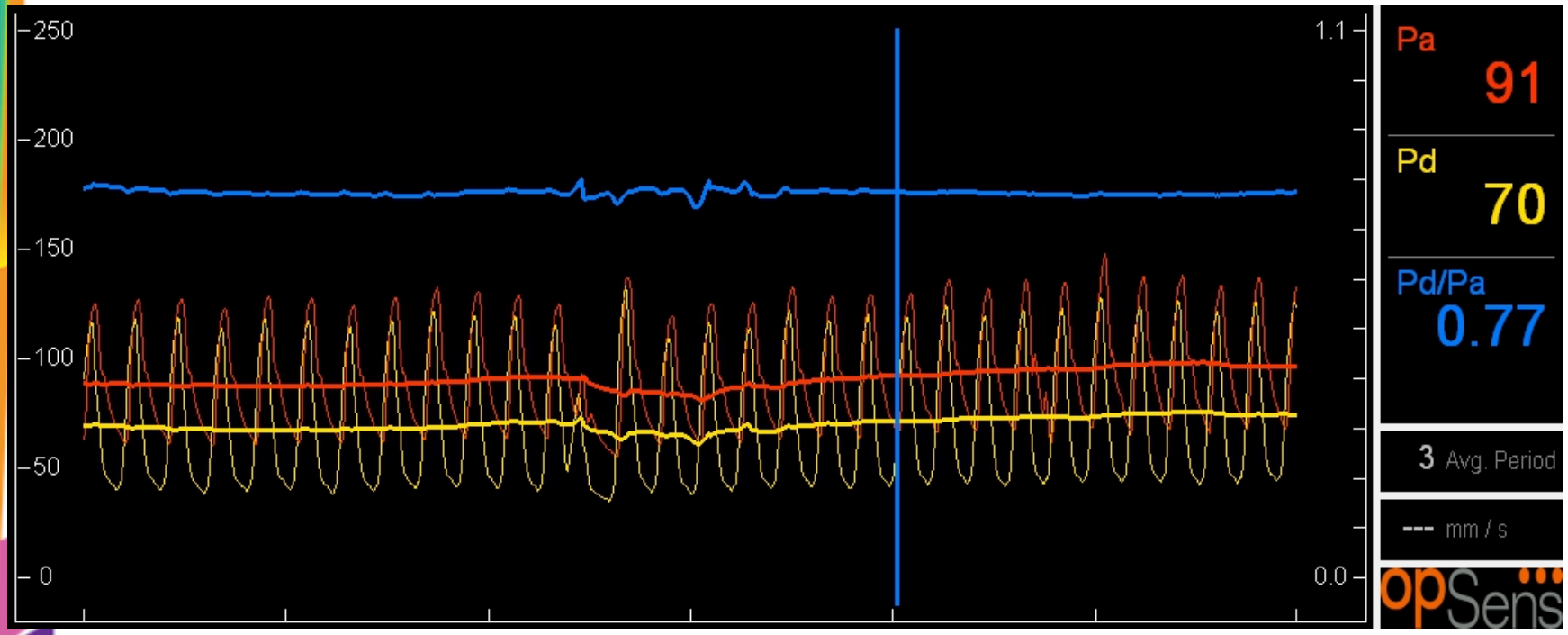

de l'image : 512 x 512
de la vue : 758 x 758
128 LF : 256
1113780 (71 y ,
Dilatation Coro
DILATATION COR
: 148% Angle : 0
23/50
compressé
ion : HFS
NON DESTINÉ À L'USAGE MÉDICAL
10/05/2016 14:
Made In

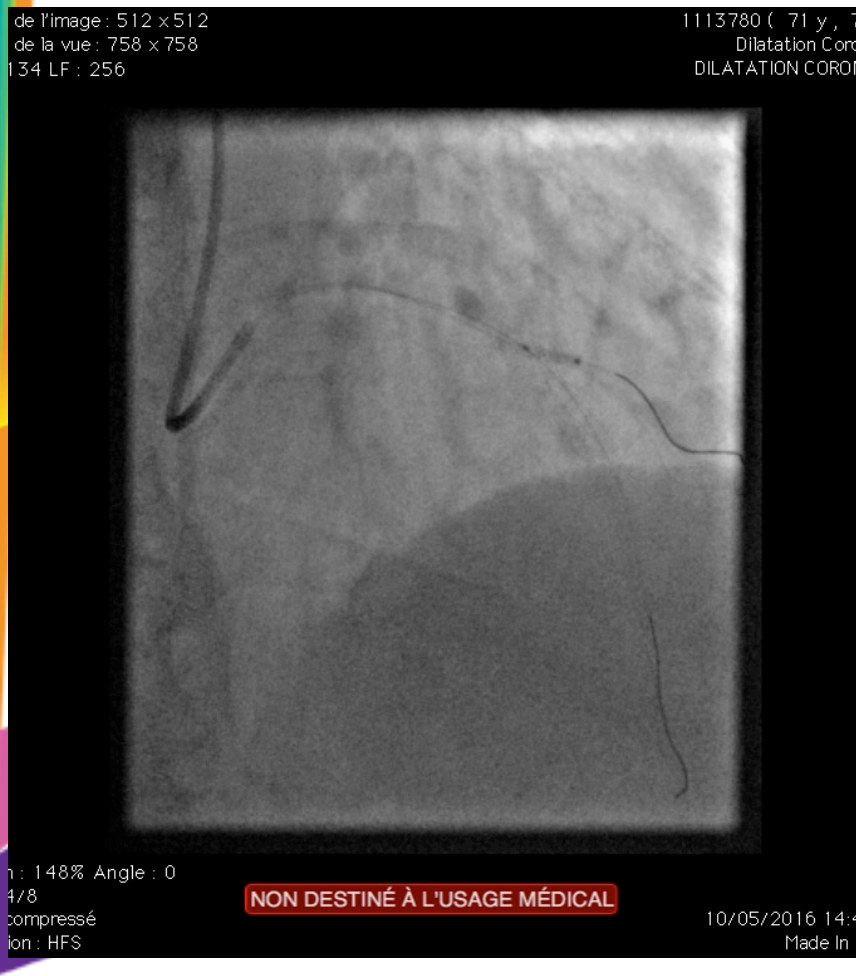

Taille de l'image : 512 x 512
Taille de la vue : 758 x 758
NF : 128 LF : 256
1113780 (71 y , 71 y)
Dilatation Coronaire
DILATATION CORONAIRE
1
Zoom : 148% Angle : 0
Im : 1/50
Non compressé
Position : HFS
NON DESTINÉ À L'USAGE MÉDICAL
10/05/2016 14:39:30
Made In OsiriX

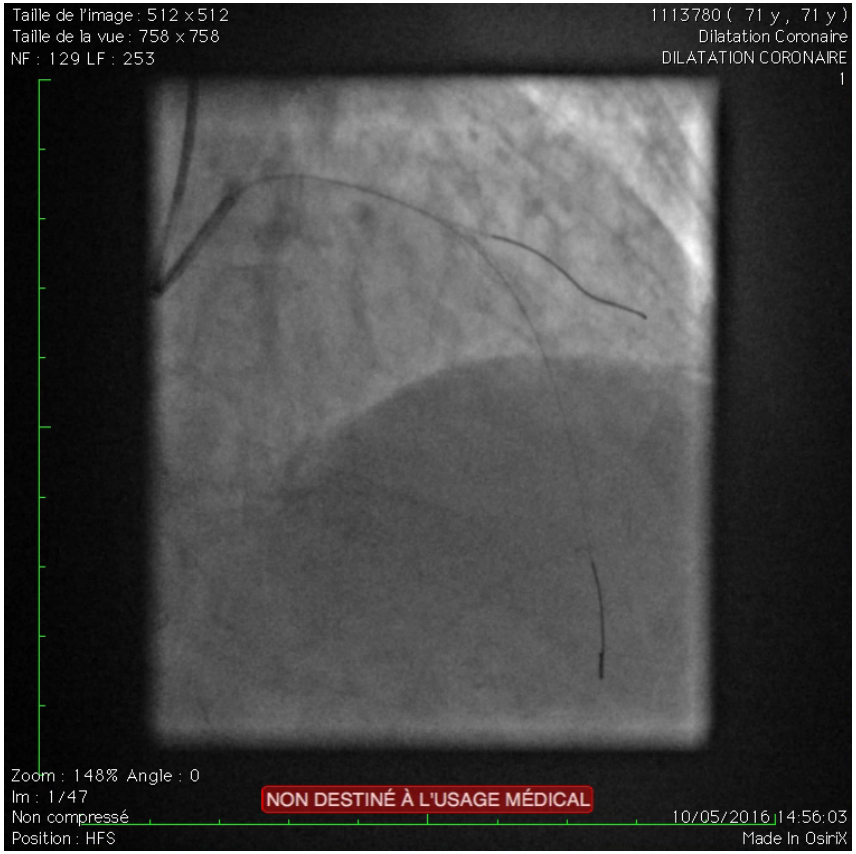

de l'image : 512 x 512
de la vue : 758 x 758
128 LF : 256
1113780 (71 y ,
Dilatation Coro
DILATATION COR
: 148% Angle : 0
1/46
compressé
ion : HFS
NON DESTINÉ À L'USAGE MÉDICAL
10/05/2016 14:
Made In


Taille de l'image : 512 x 512
Taille de la vue : 758 x 758
NF : 128 LF : 256
1113780 (71 y , 71 y)
Dilatation Coronaire
DILATATION CORONAIRE
1
Zoom : 148% Angle : 0
Im : 1/113
Non compressé
Position : HFS
NON DESTINÉ À L'USAGE MÉDICAL
10/05/2016 14:44:30
Made In OsiriX

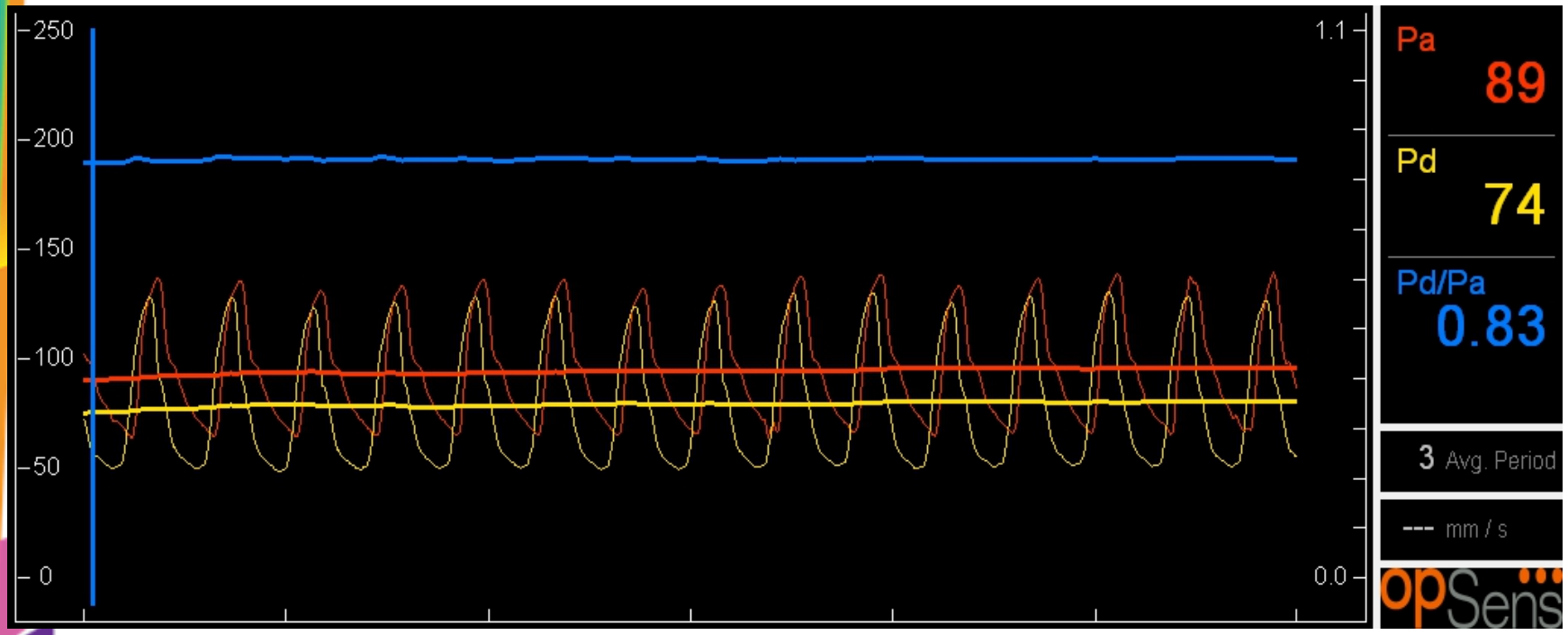
FFR Diag aprés stent IVA




de l'image : 512 x 512
de la vue : 758 x 758
134 LF : 256
1113780 (71 y ,
Dilatation Corc
DILATATION COROI
: 148% Angle : 0
4/8
compressé
ion : HFS
NON DESTINÉ À L'USAGE MÉDICAL
10/05/2016 14:
Made In


Taille de l'image : 512 x 512
Taille de la vue : 758 x 758
NF : 129 LF : 253
1113780 (71 y , 71 y)
Dilatation Coronaire
DILATATION CORONAIRE
1
Zoom : 148% Angle : 0
Im : 1/47
Non compressé
Position : HFS
NON DESTINÉ À L'USAGE MÉDICAL
10/05/2016 14:56:03
Made In OsiriX

FFR après KB Diag

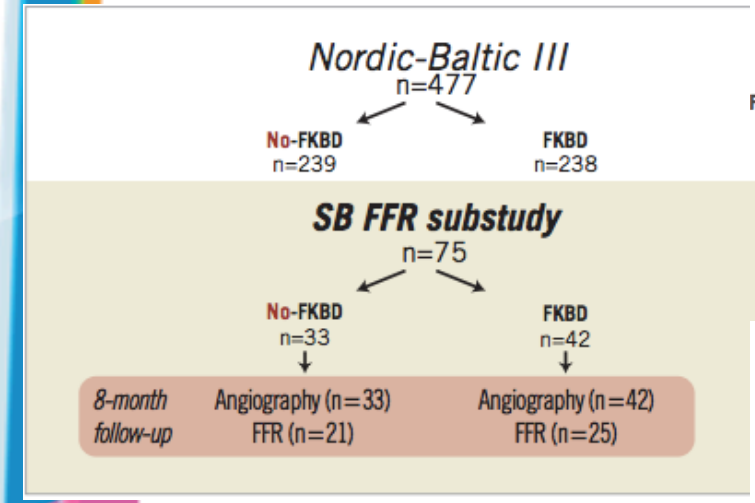


FFR dans les bifurcations

Table 1. FFR during bifurcation intervention.

	FFR is useful	FFR is generally not recommended
Pre-intervention	To assess the functional significance of MB To assess the functional significance of pure SB stenosis	Small SB To determine functional significance of SB when there is a significant MB stenosis SB FFR to predict the functional significance of jailed SB
Post MB stenting	To assess the functional significance of jailed SB and to predict the outcomes	Small SB Long diffuse, highly angulated or calcified SB SB slow flow
Post SB angioplasty	To assess SB procedural success and to predict the outcomes after KBI	SB slow flow SB severe dissection
Post SB stenting	To evaluate residual ischaemia	To predict procedural outcomes of complex two stenting

FFR: fractional flow reserve; KBI: kissing balloon inflation; MB: main branch; SB: side branch



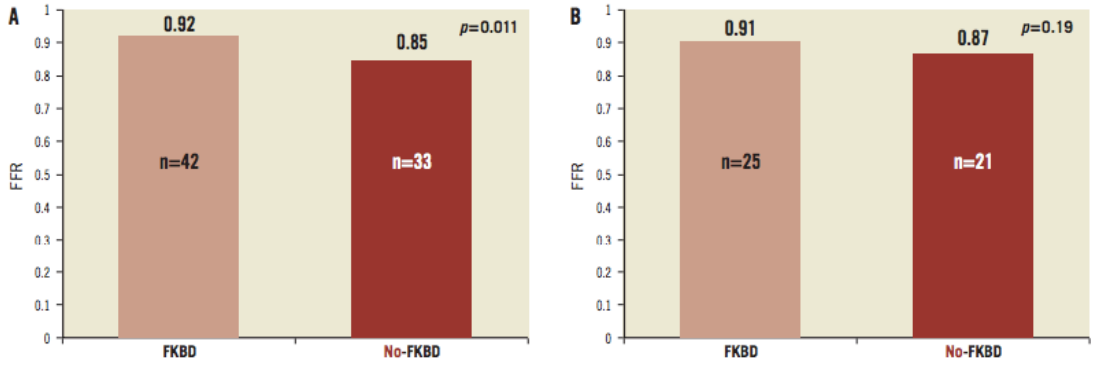
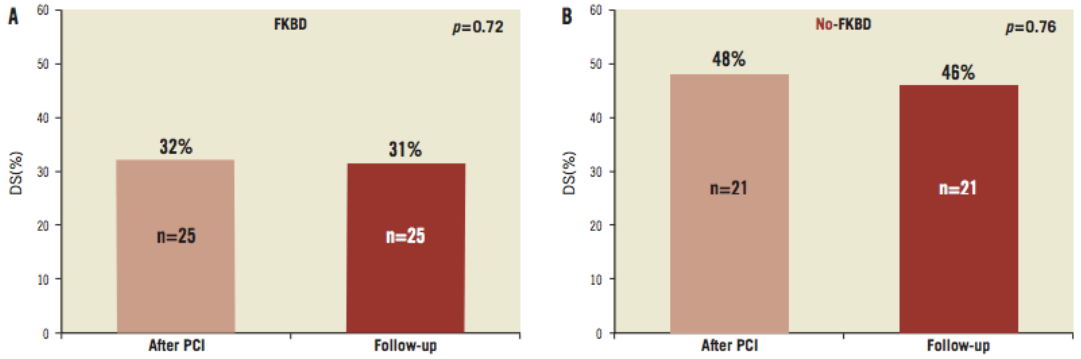
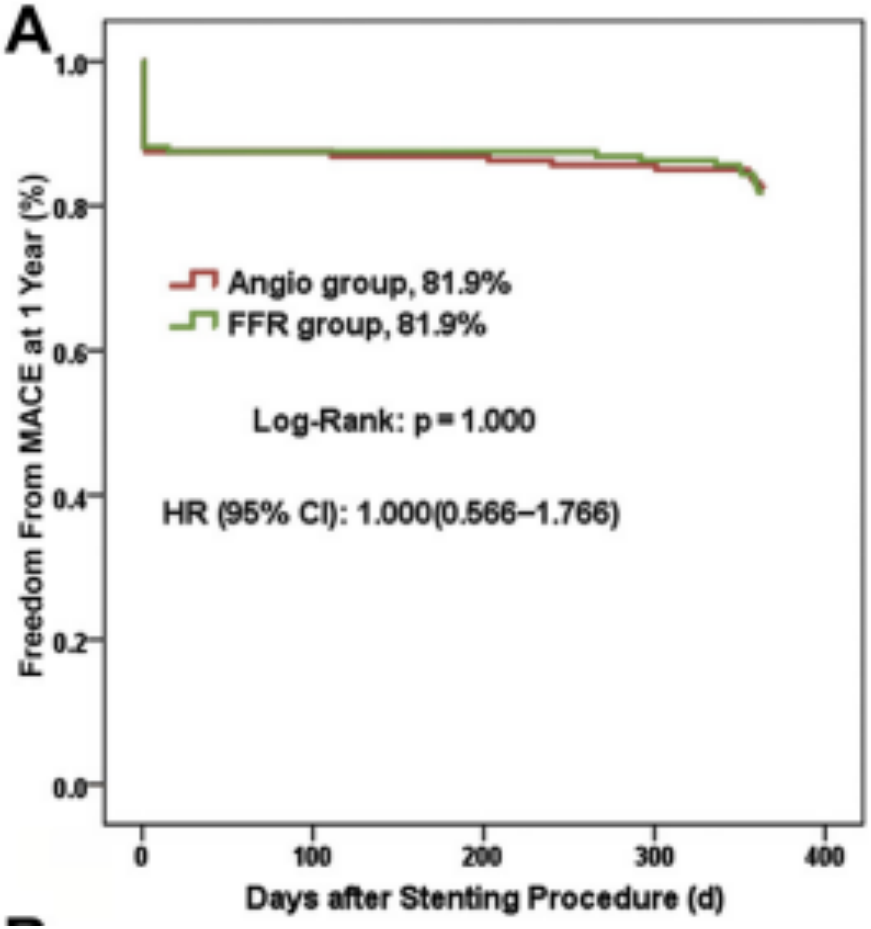


Figure 4. *A) Mean FFR in SB after PCI. B) Mean FFR in SB at 8-month follow-up.*

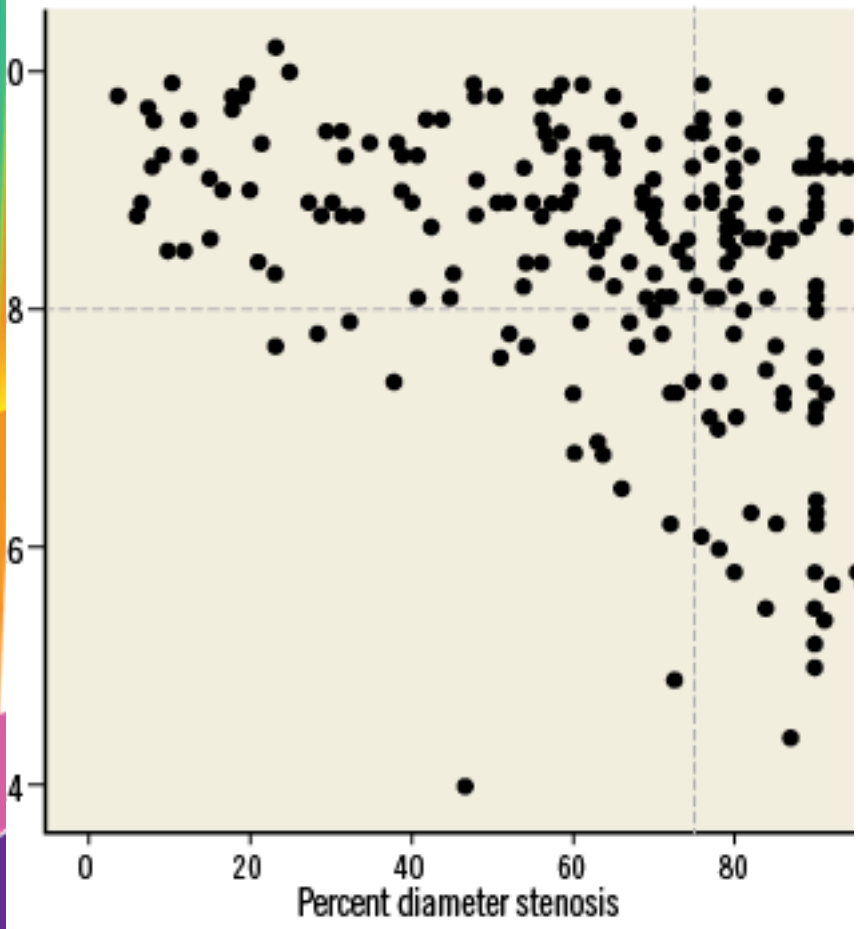


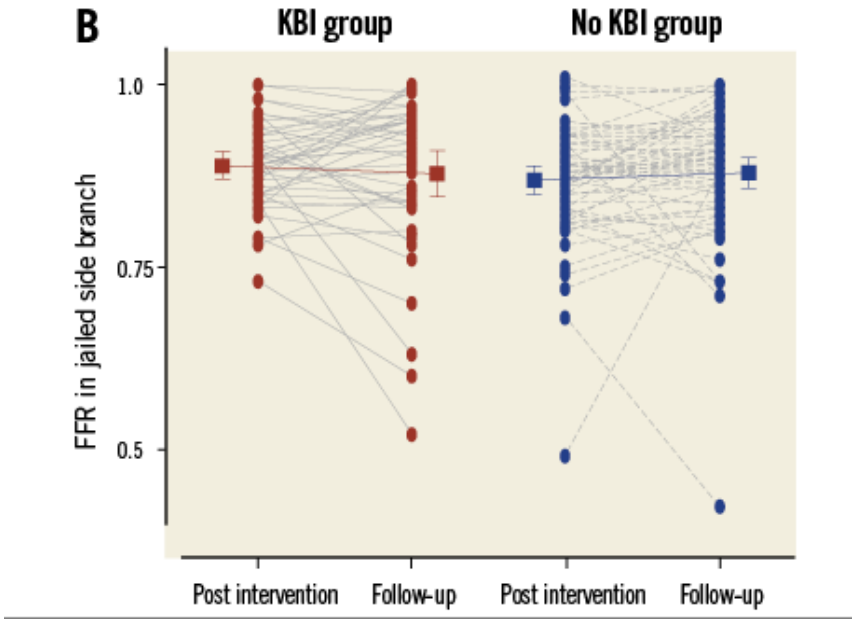
Indulis Kumsars ; EuroIntervention 2012;7:1155-1161

DKCRUSCH-IV Study



Shao-Liang Chen , J Am Coll Cardiol Intv 2015;8:536–46





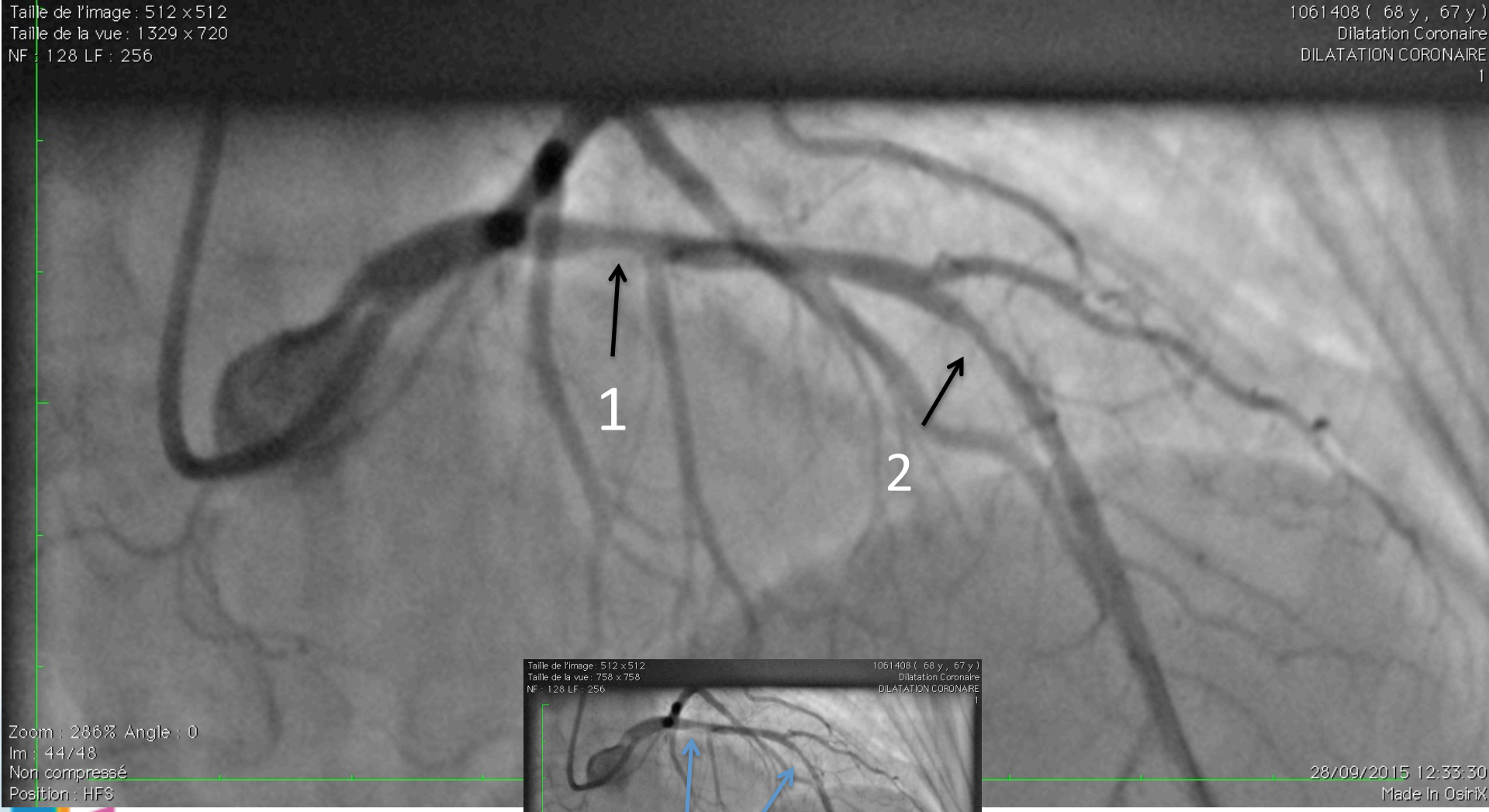
Joo Myung Lee ; EuroIntervention 2015;11

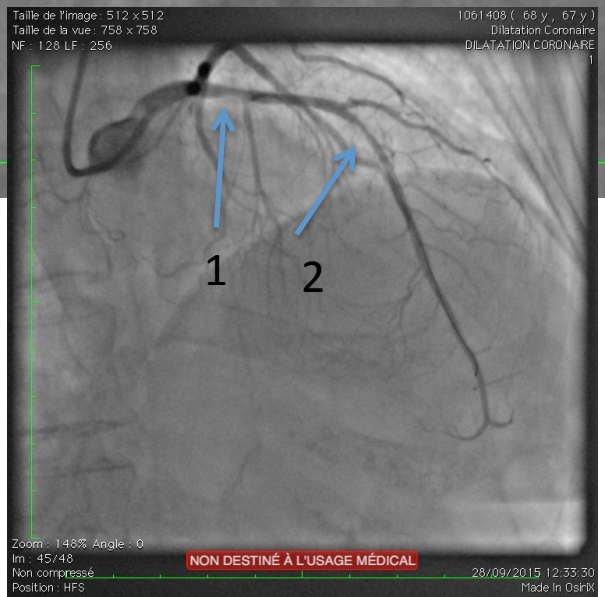
Serial FFR measurement in jailed side branch		
Koo BK et al 2008	100 patients with provisional strategy Repeated SB FFR at 6-month follow-up (n=65).	1. At 6-month follow-up, there were no changes in FFR in lesions with (0.86±0.06 to 0.84±0.01, p=0.4) and without SB balloon angioplasty (0.87±0.06 to 0.89±0.07, p=0.1). 2. Binary restenosis rate was 48%; however, functional restenosis (FFR <0.75) rate was 8% (5/65). There were no changes in SB FFR during the 8-month follow-up period (0.92 to 0.91, p=0.80 in KBI group and 0.87 to 0.87, p=0.91 in no KBI group).
Nordic-Baltic Bifurcation III 2012	75 patients with provisional strategy Repeated SB FFR at 8-month follow-up (n=46)	There were no changes in SB FFR during the 8-month follow-up period (0.92 to 0.91, p=0.80 in final KBI group and 0.87 to 0.87, p=0.91 in no final KBI group)
FFR-guided PCI vs. Angio-guided PCI for jailed side branch		
Koo BK et al 2008	110 patients with provisional strategy, SB intervention when FFR <0.75. Control group: 110 patients without FFR measurements.	1. The FFR-guided group showed significantly less frequent SB intervention (30% in FFR-guided vs. 45% in angiography-guided group, p=0.03). 2. There was no difference in 9-month TVR (4.6% vs. 3.7%, p=0.7).
DKCRUSH-VI 2014	320 patients with Medina 1,1,1 or 0,1,1 bifurcation lesions. Randomly assigned to FFR-guided (FFR <0.80) or angiography-guided SB treatment.	1. Treatment of SB was less in FFR-guided group than in angiography-guided group (SB stenting: 25.9% vs. 38.1%, p=-0.01). 2. MACE (cardiac death, MI, TVR) rate at 1 year was comparable (18.1% vs. 18.1%, p=1.00). Restenosis at distal MB was more frequent in angiography-guided group than in FFR-guided group (9.2% vs. 1.2%, p=0.01).

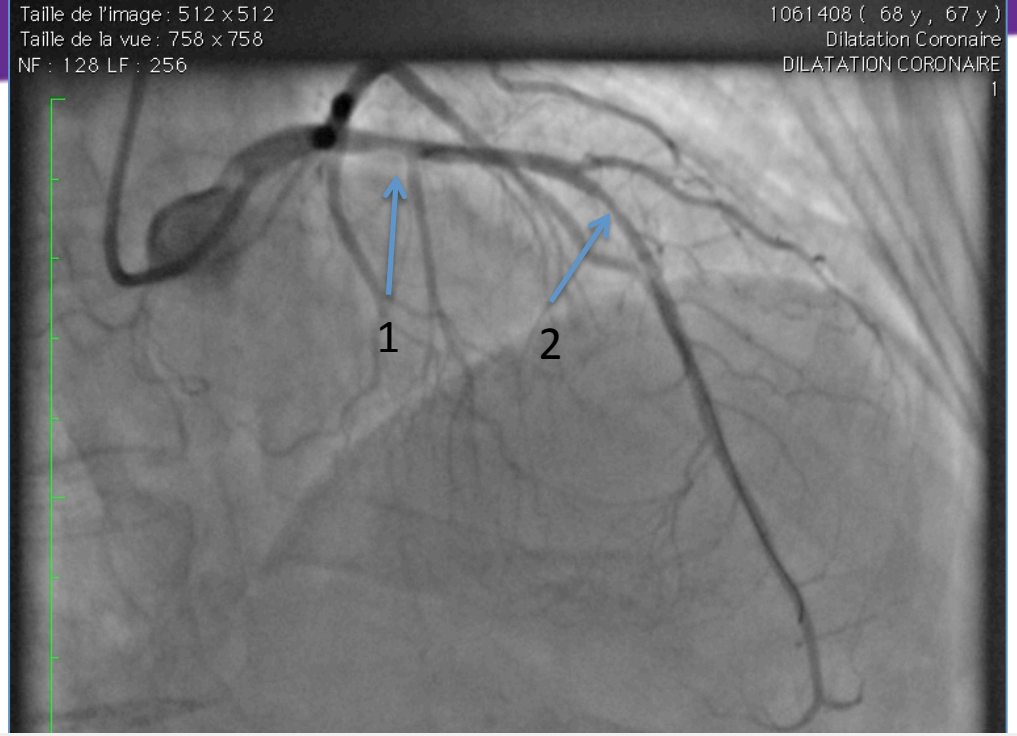
Conclusion

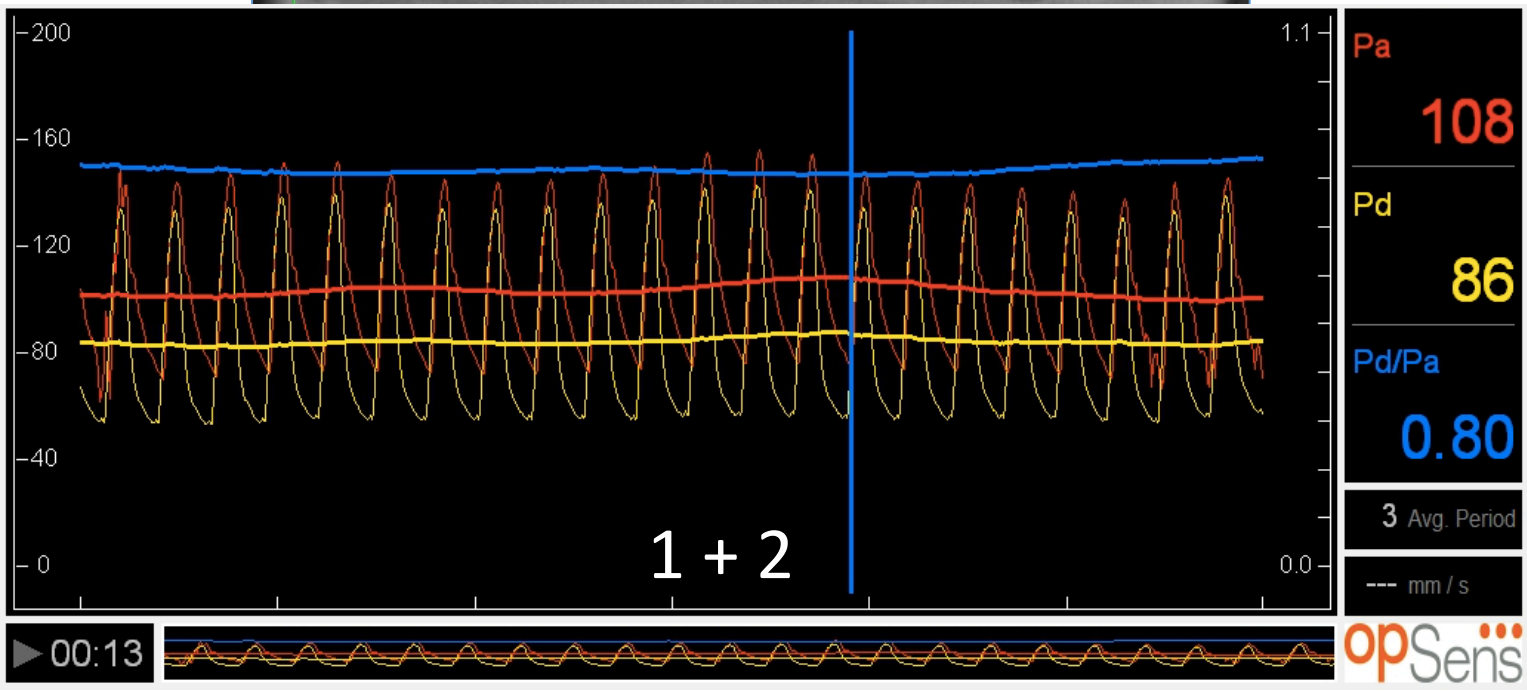
- Quelques avantages .. À la marge :
- Il est difficile de montrer un bénéfice clinique à l'utilisation de la FFR dans les bifs
- Souvent, petit territoire (sauf TC)
- Avantage au niveau de la simplification de la procédure en limitant le nombre de kissing

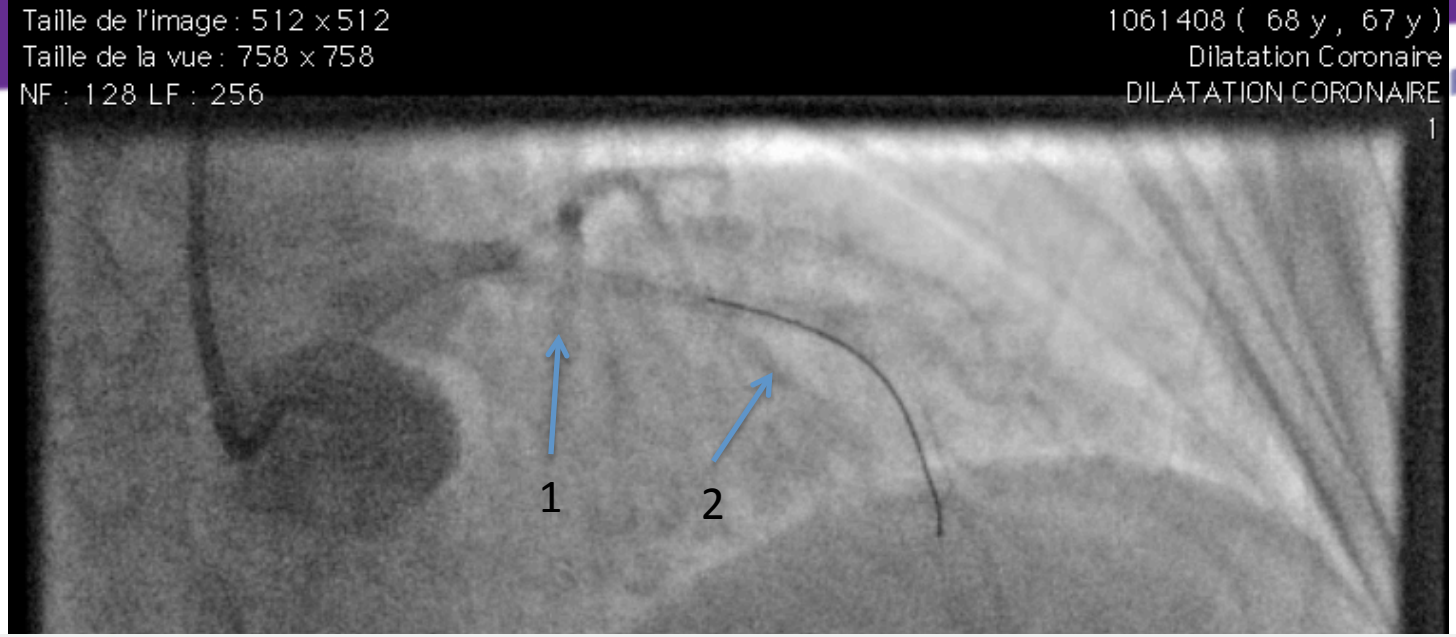
LÉSIONS MULTIPLES

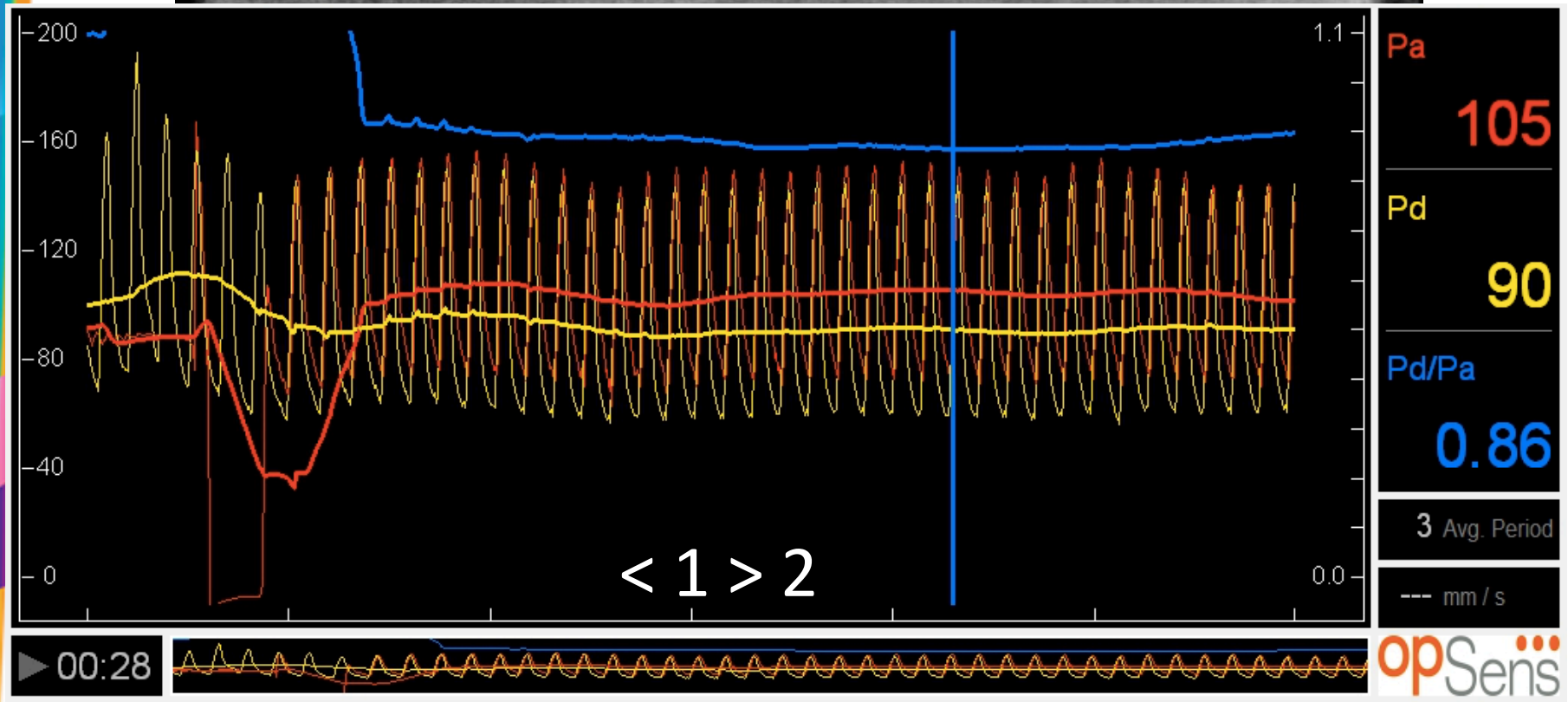

Taille de l'image : 512 x 512
Taille de la vue : 1329 x 720
NF : 128 LF : 256
1061408 (68 y , 67 y)
Dilatation Coronaire
DILATATION CORONAIRE
1
1
2
Zoom : 286% Angle : 0
Im : 44/48
Non compressé
Position : HFS
28/09/2015 12:33:30
Made In OsiriX

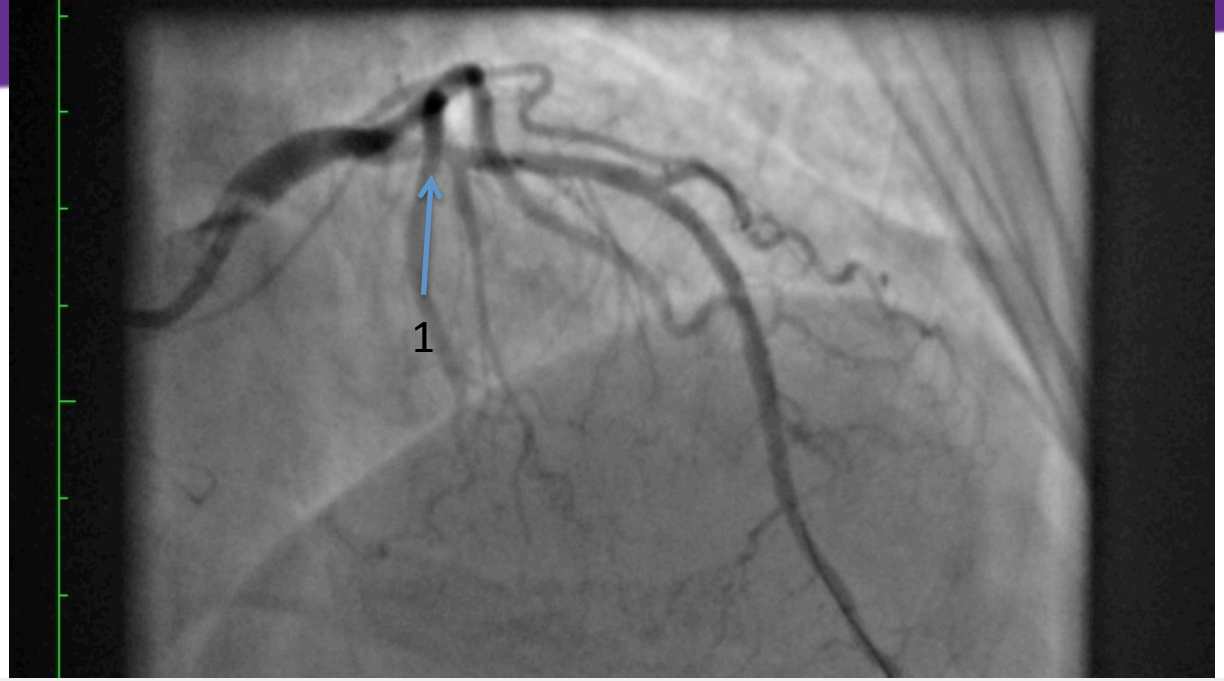

Taille de l'image : 512 x 512
Taille de la vue : 758 x 758
NF : 128 LF : 256
1061408 (68 y , 67 y)
Dilatation Coronaire
DILATATION CORONAIRE
1
1
2
Zoom : 148% Angle : 0
Im : 45/48
Non compressé
Position : HFS
NON DESTINÉ À L'USAGE MÉDICAL
28/09/2015 12:33:30
Made In OsiriX

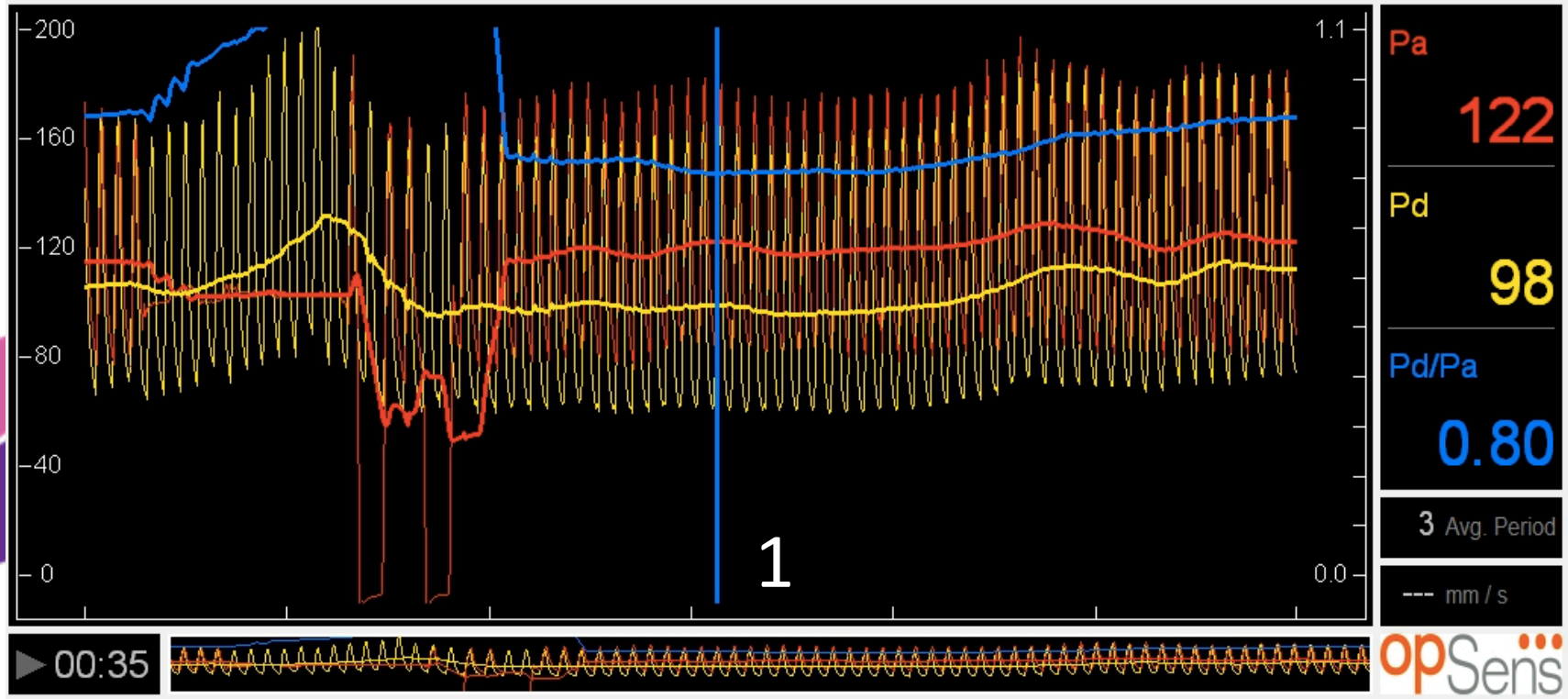

Taille de l'image : 512 x 512
Taille de la vue : 758 x 758
NF : 128 LF : 256
1061408 (68 y , 67 y)
Dilatation Coronaire
DILATATION CORONAIRE
1
1
2

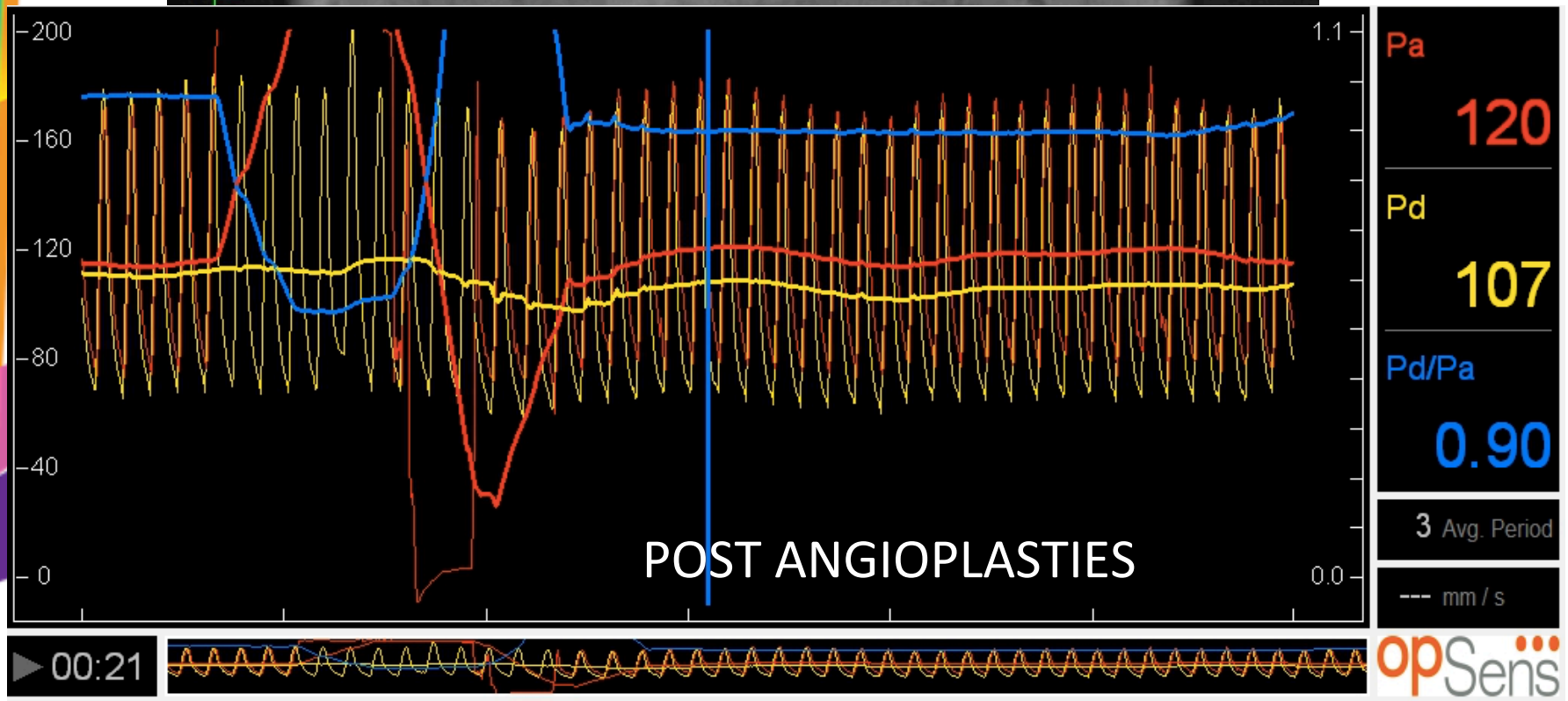

200
160
120
80
40
0
1.1
0.0
1 + 2
Pa
108
Pd
86
Pd/Pa
0.80
3 Avg. Period
--- mm / s
00:13
opSens


Taille de l'image : 512 x 512
Taille de la vue : 758 x 758
NF : 128 LF : 256
1061408 (68 y , 67 y)
Dilatation Coronaire
DILATATION CORONAIRE
1
1
2


200
160
120
80
40
0
1.1
0.0
< 1 > 2
Pa
105
Pd
90
Pd/Pa
0.86
3 Avg. Period
--- mm / s
00:28
opSens


1

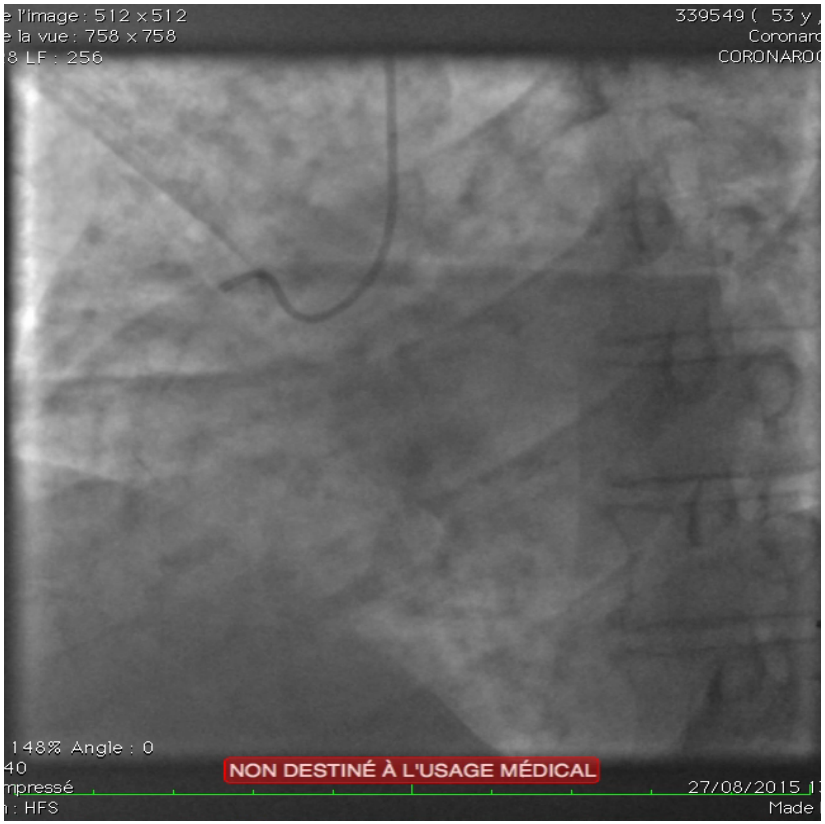

200
160
120
80
40
0
1.1
0.0
1
Pa
122
Pd
98
Pd/Pa
0.80
3 Avg. Period
--- mm / s
00:35
opSens

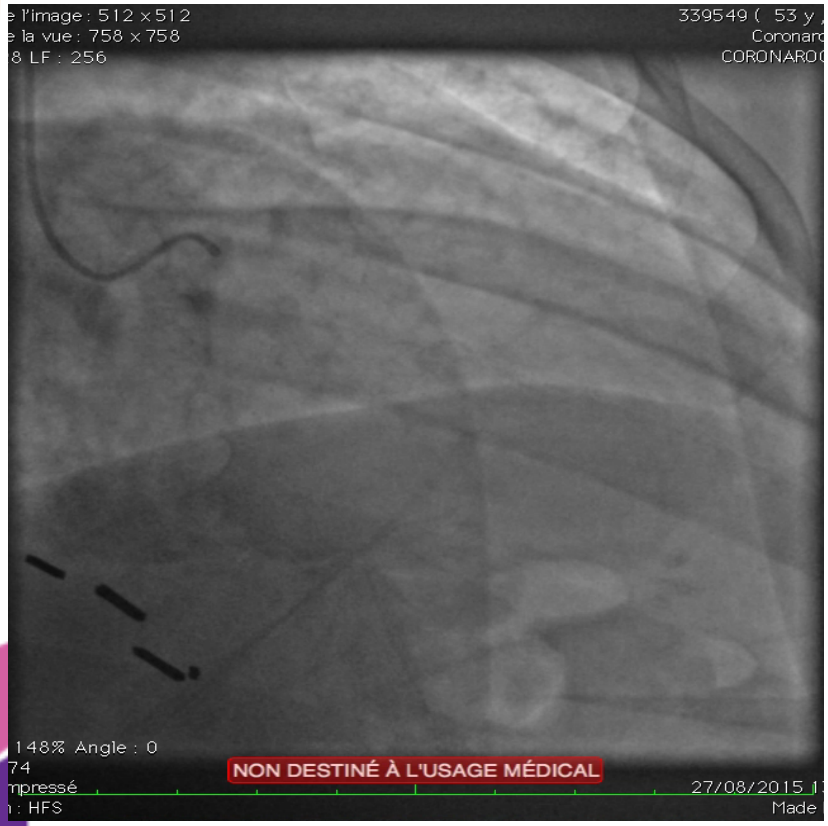


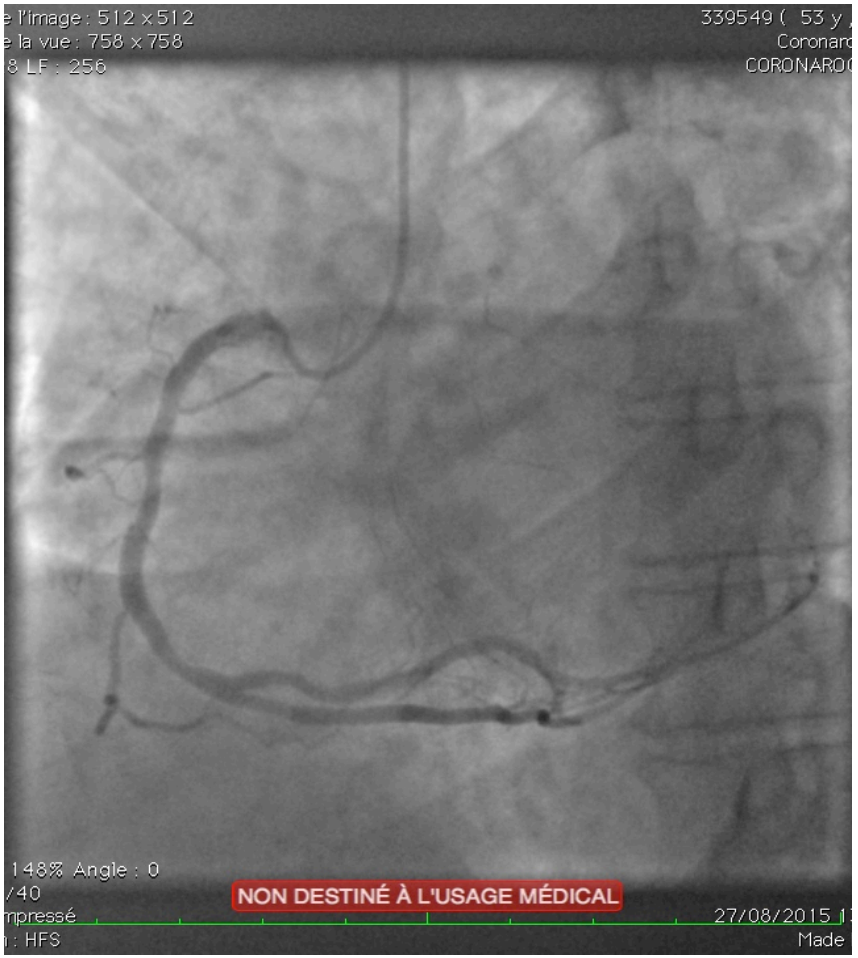
POST ANGIOPLASTIES

IMPORTANCE DU TERRITOIRE DEPENDANT DE LA LESION


l'image : 512 x 512
la vue : 758 x 758
8 LF : 256
339549 (53 y
Coronarc
CORONAROG
148% Angle : 0
59
mpressé
: HFS
NON DESTINÉ À L'USAGE MÉDICAL
27/08/2015 1
Made

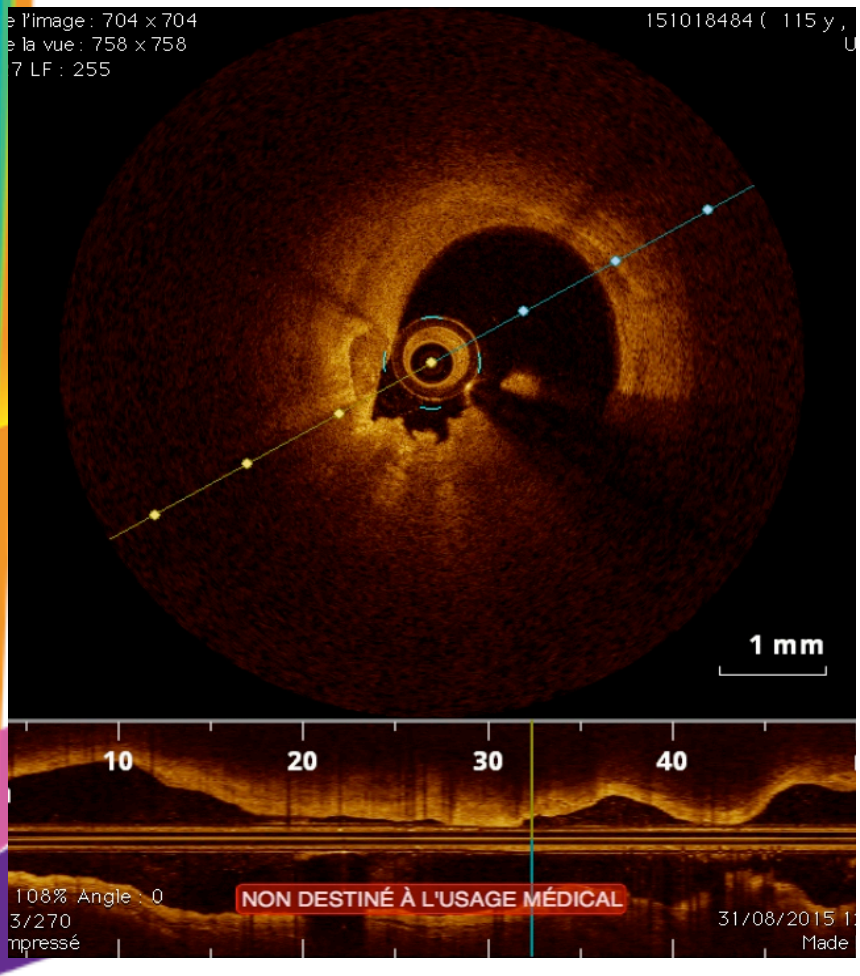

l'image : 512 x 512
la vue : 758 x 758
8 LF : 256
339549 (53 y
Coronarc
CORONAROG
148% Angle : 0
40
mpressé
: HFS
NON DESTINÉ À L'USAGE MÉDICAL
27/08/2015 1
Made

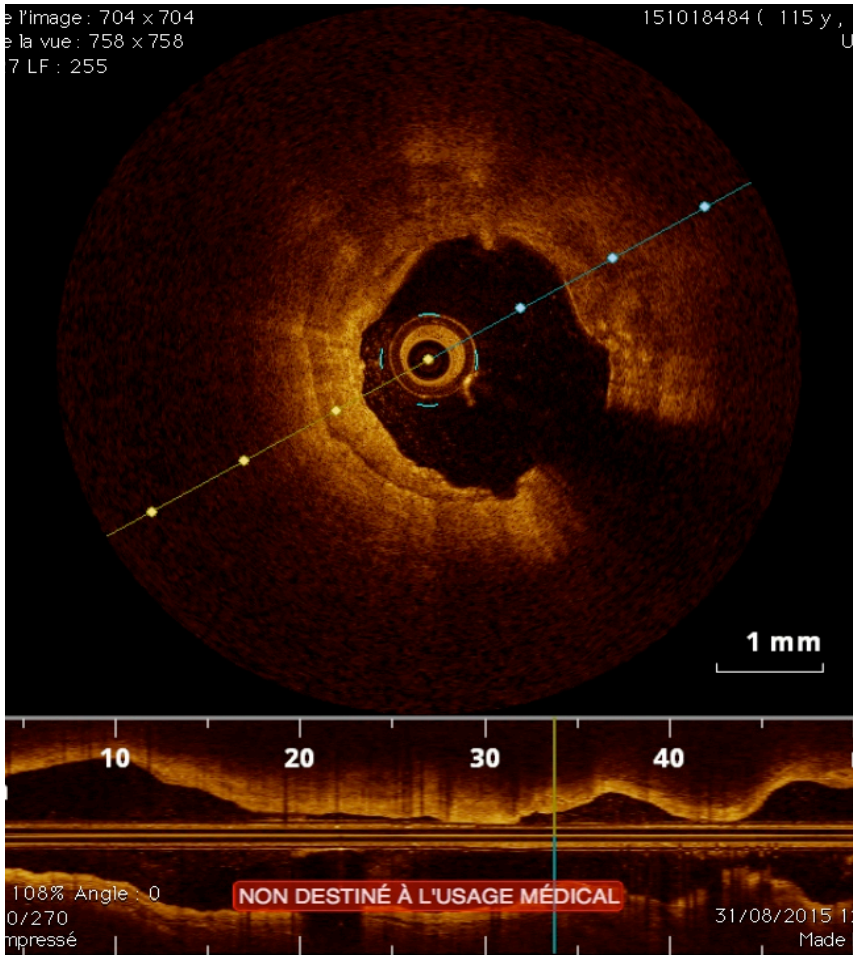

l'image : 512 x 512
la vue : 758 x 758
8 LF : 256
339549 (53 y
Coronaro
CORONARO
148% Angle : 0
74
NON DESTINÉ À L'USAGE MÉDICAL
mpressé
27/08/2015
: HFS
Made


l'image : 512 x 512
la vue : 758 x 758
8 LF : 256
339549 (53 y
Coronaro
CORONARO
148% Angle : 0
/40
NON DESTINÉ À L'USAGE MÉDICAL
mpressé
27/08/2015
: HFS
Made

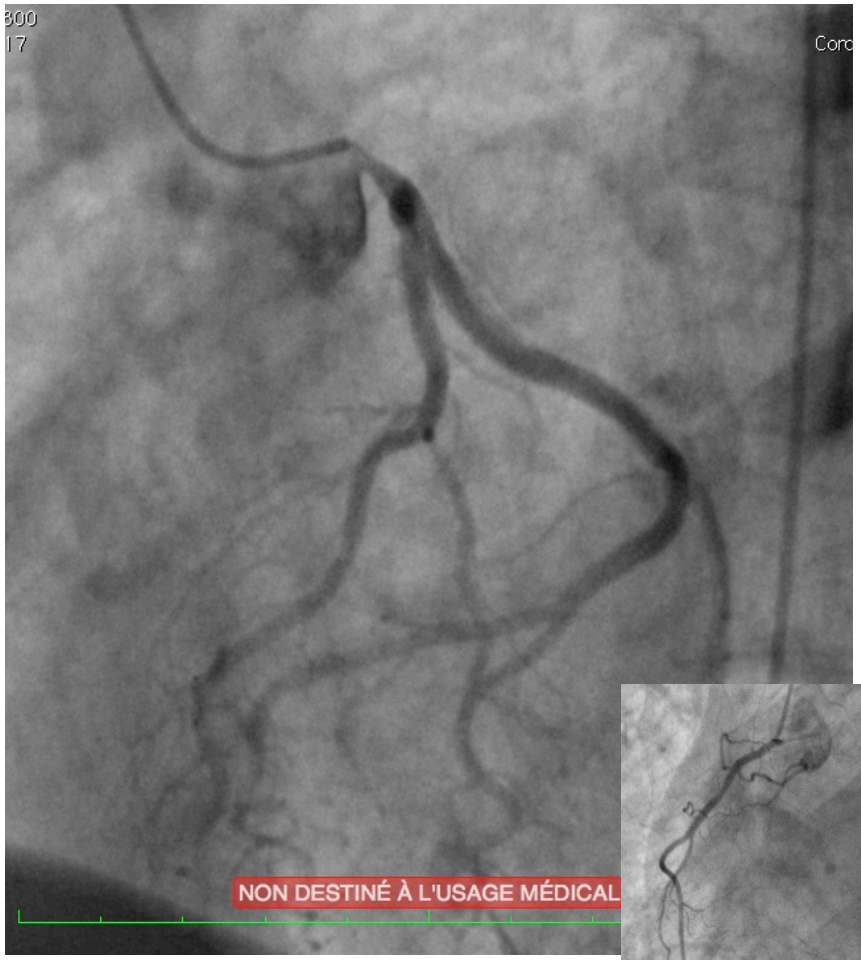
FFR = 0,80 .....


Mac-Lab - [Administrateur] - BOISSEAU, NICOLAS A11022707790
Etude Mesures Résultats Temps réel Consultation Fenêtres Administration Aide
Consultation: Page 1
FFR=0,80
I
II
III
Haut
FFR
P1 AO
P2 AO
Bas
13:20:22 13:20:24 13:20:26 13:20:28 13:20:30 13:20:32 13:20:34
Journal
Tous
R Heure Récapitulatif Commentaire
13:20:27 FFR: Pa=115; Pd=93; FFR=0,80
13:21:52 SpO2 96%; FC 85 min-1; 209/***/29 P1; FR 12/min
BOISSEAU, NICOL
SCO
kg
FC
SpO2
PNI
RR
Temp
18:08:00
27/08/2015

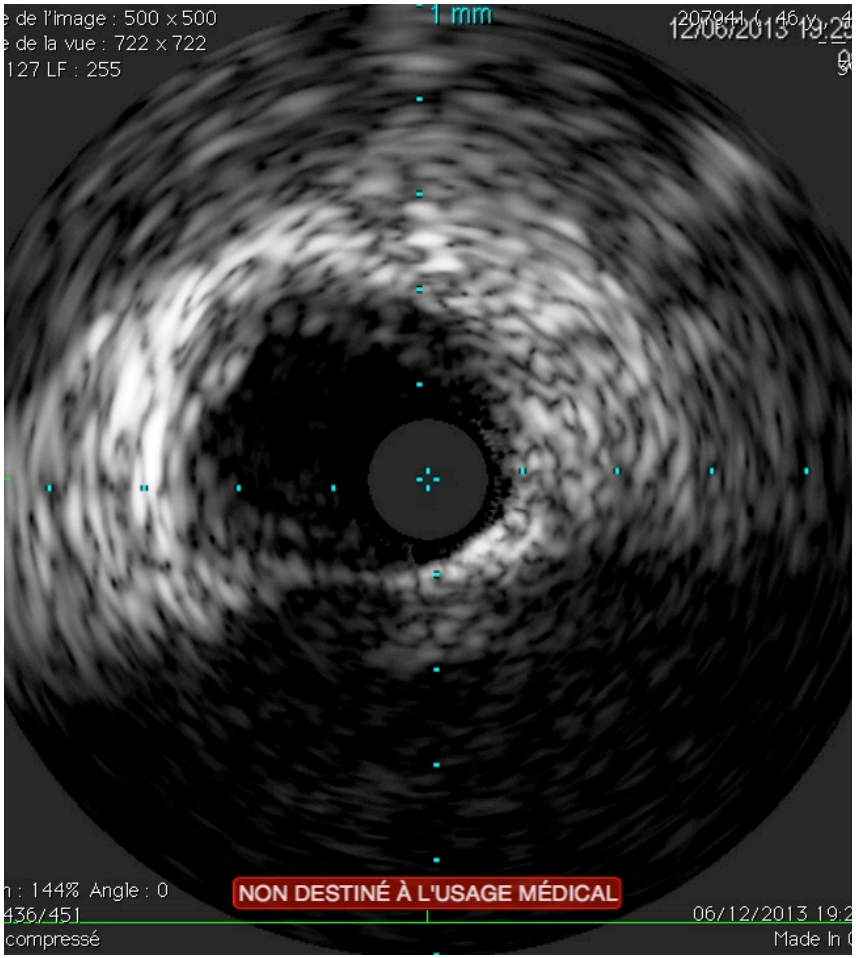

l'image : 704 x 704
la vue : 758 x 758
7 LF : 255
151018484 (115 y ,
1 mm
10
20
30
40
108% Angle : 0
3/270
mpressé
NON DESTINÉ À L'USAGE MÉDICAL
31/08/2015 1
Made


l'image : 704 x 704
la vue : 758 x 758
7 LF : 255
151018484 (115 y ,
1 mm
10
20
30
40
108% Angle : 0
0/270
mpressé
NON DESTINÉ À L'USAGE MÉDICAL
31/08/2015 1
Made

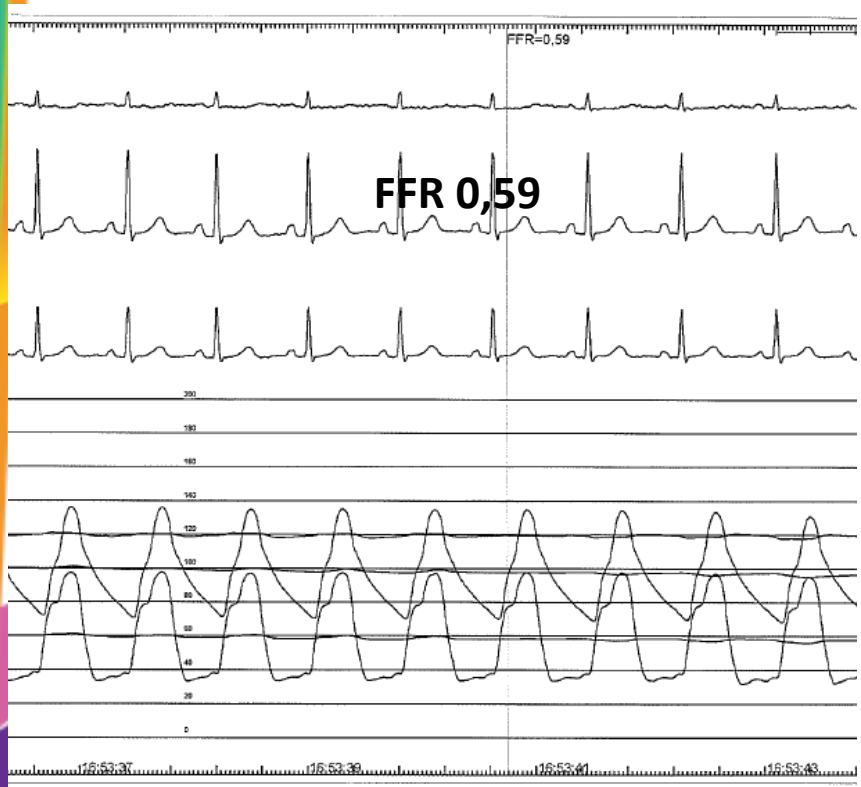
40 y Woman. Chest pain at stress



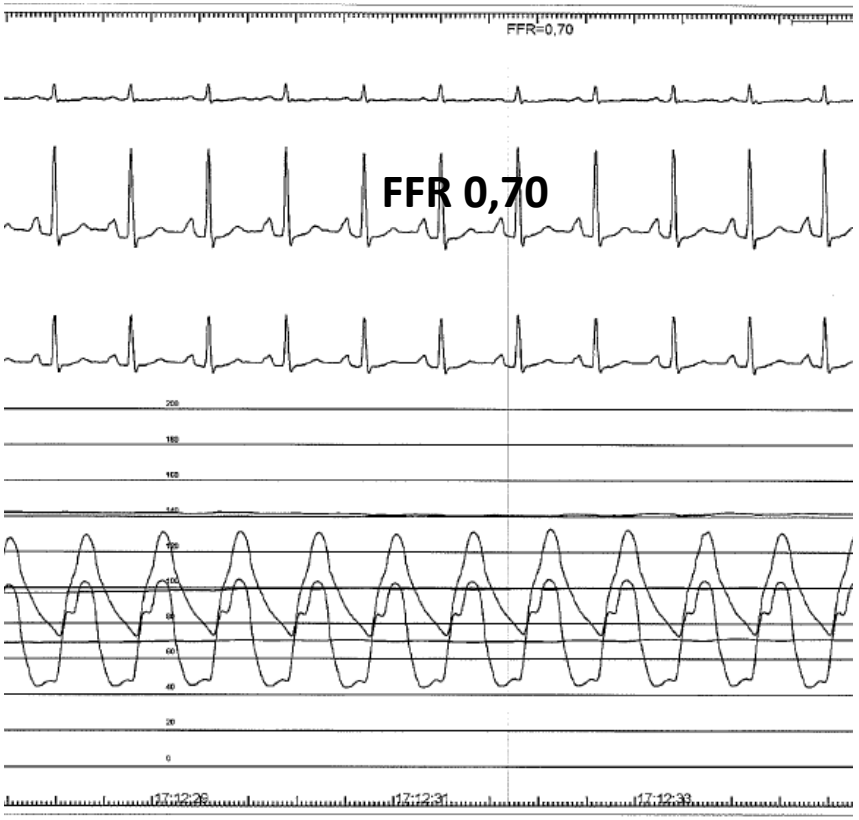
LM ostium 5 mm²



FFR LAD



FFR LCX



AVANT FFR

	Odds Ratio*	Lower CI	Upper CI	*P* Value
Lesion severity (1% decrease of % stenosis) by angiography*	1.03	1.02	1.04	<0.0001
Number of diseased vessels by angiography				<0.0001
1	2.41	1.52	3.84	
2	2.64	1.64	4.24	
3	3.75	2.31	6.08	
Lesion complexity ACC/AHA: B2/C vs A/B1 by angiography†	1.52	1.20	1.93	0.0005
Diabetes mellitus	1.42	1.13	1.78	0.003
Age (1-y increase)	0.98	0.97	0.99	0.005

Table 3. Correlates of P
Angiography Parameters

Lesion severity (1% decrease of				
Number of diseased vessels by				
1				
2				
3				
Lesion complexity ACC/AHA: B2				
Diabetes mellitus				
Age (1-y increase)				
Smoking	0.76	0.60	0.96	0.02
Noninvasive testing (reference group: not done)				0.06
Not positive	0.65	0.45	0.93	
Positive	0.89	0.702	1.13	
Clinical instability				
Lesion length (1-mm increase) l				
Proximal lesion (including left m				
LVEF (reference group: <30%)				
30%–50%				
>50%				
LAD location†				
Male sex				
Previous revascularization				

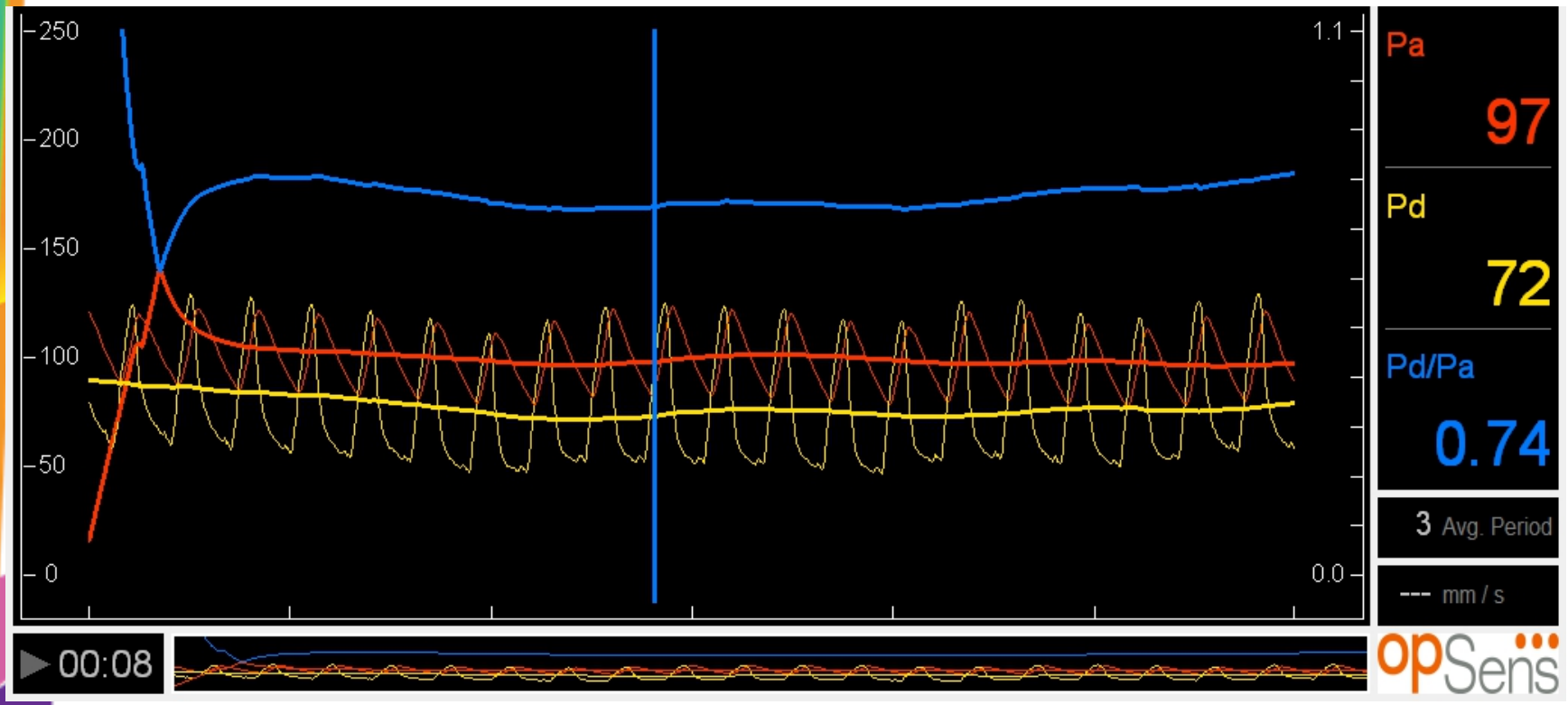
			P Value
			<0.0001
			<0.0001
			<0.0001
			<0.0001
			<0.0001
Lesion complexity ACC/AHA: B2/C vs A/B1 by angiography*	−0.01	−0.02	−0.01	0.001
LVEF (reference group <30%)				0.008
30%–50%	0.03	0.02	0.05	
>50%	0.04	0.03	0.06	
				0.15
			0.02	
			0.01	
			0.01	0.37
			0.01	0.61
			0.01	0.61
			0.01	0.63
			0.01	0.78
			0.01	0.83

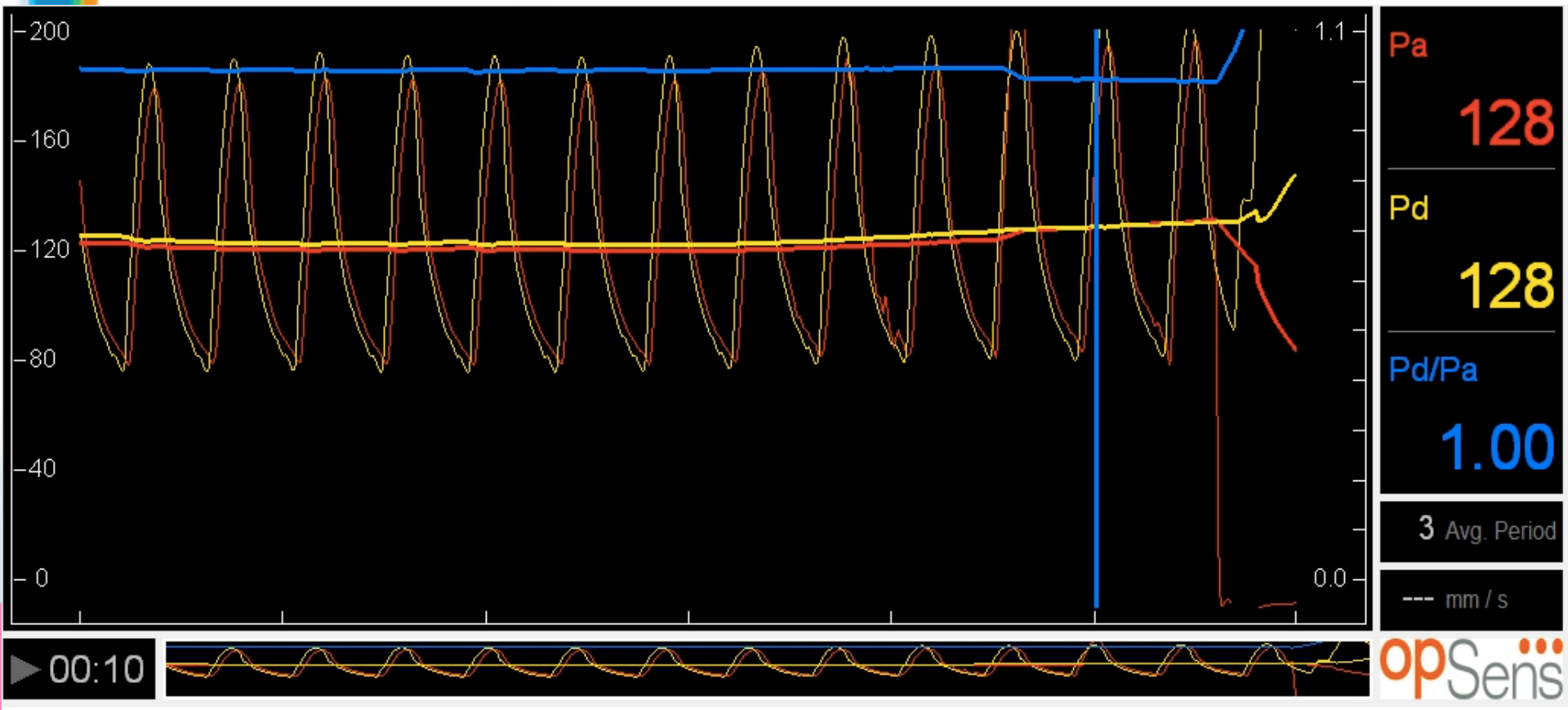
APRES FFR

	Estimates	Lower CI	Upper CI	*P* Value
LAD location*	−0.05	−0.06	−0.03	<0.0001
Lesion length (1-mm increase)*	−0.01	−0.01	−0.01	<0.0001
Lesion severity (1% decrease of % stenosis)*	−0.01	−0.01	−0.01	<0.0001
Number of diseased vessels (reference group=0)				<0.0001
1	−0.02	−0.03	−0.01	
2	−0.04	−0.06	−0.03	
3	−0.03	−0.05	−0.02	
Age (1-y increase)	0.01	0.01	0.01	<0.0001
Lesion complexity ACC/AHA: B2/C vs A/B1 by angiography*	−0.01	−0.02	−0.01	0.001

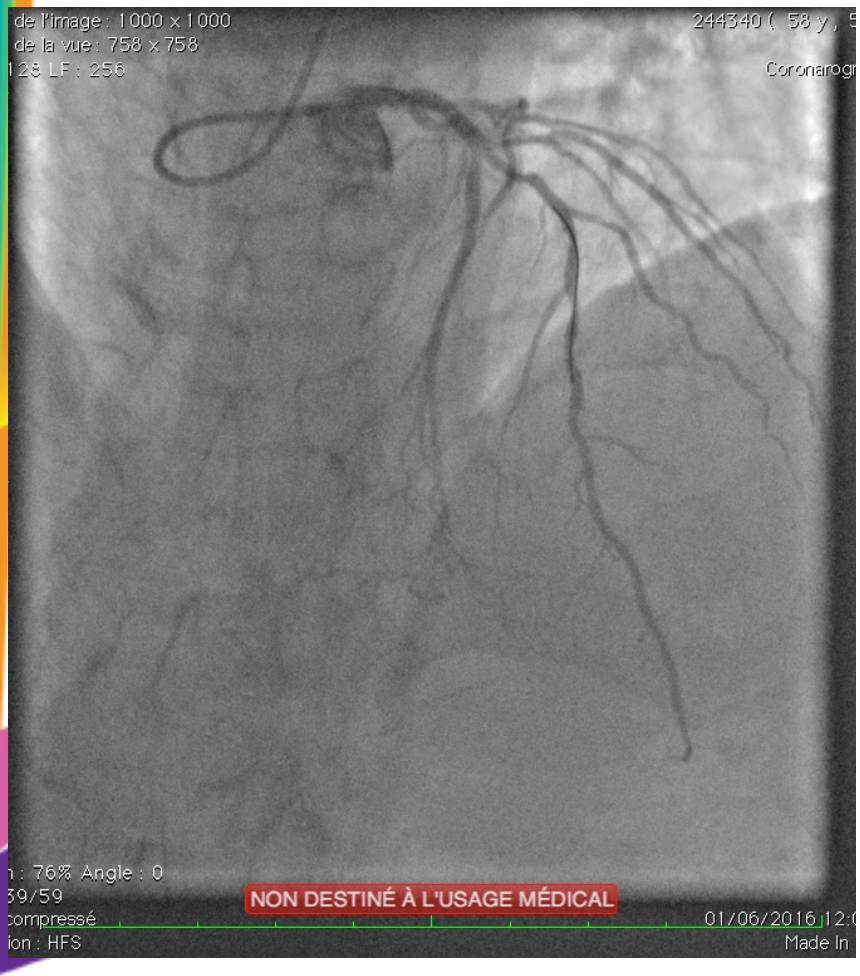
VanBelle, Dupouy et col Circulation. 2014;129:173-185

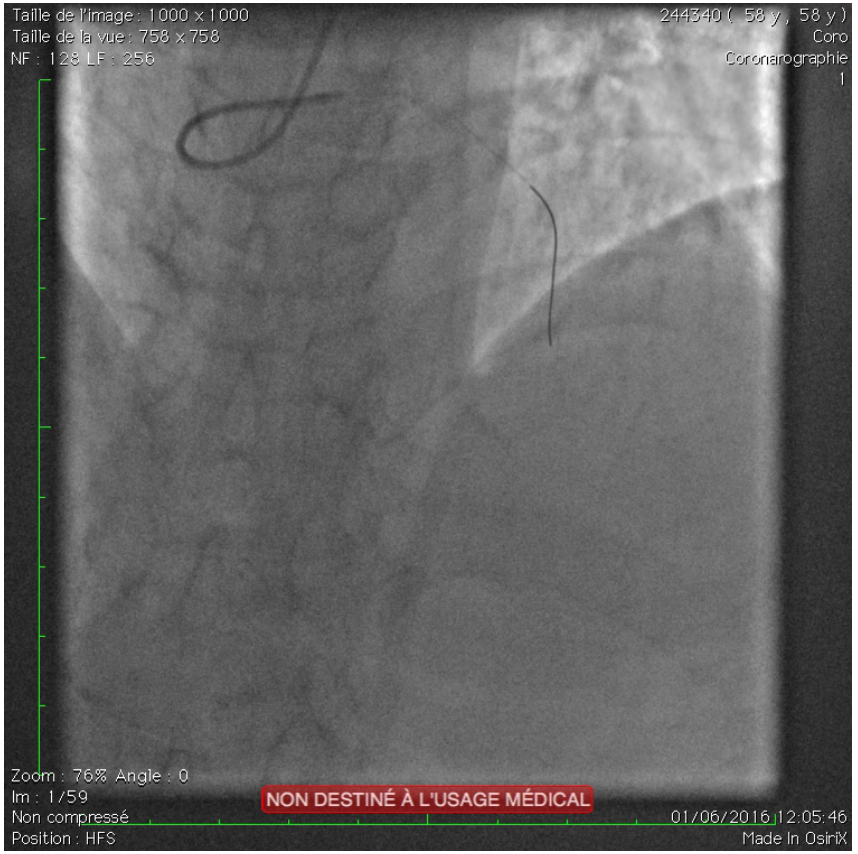
Gradient adenosine



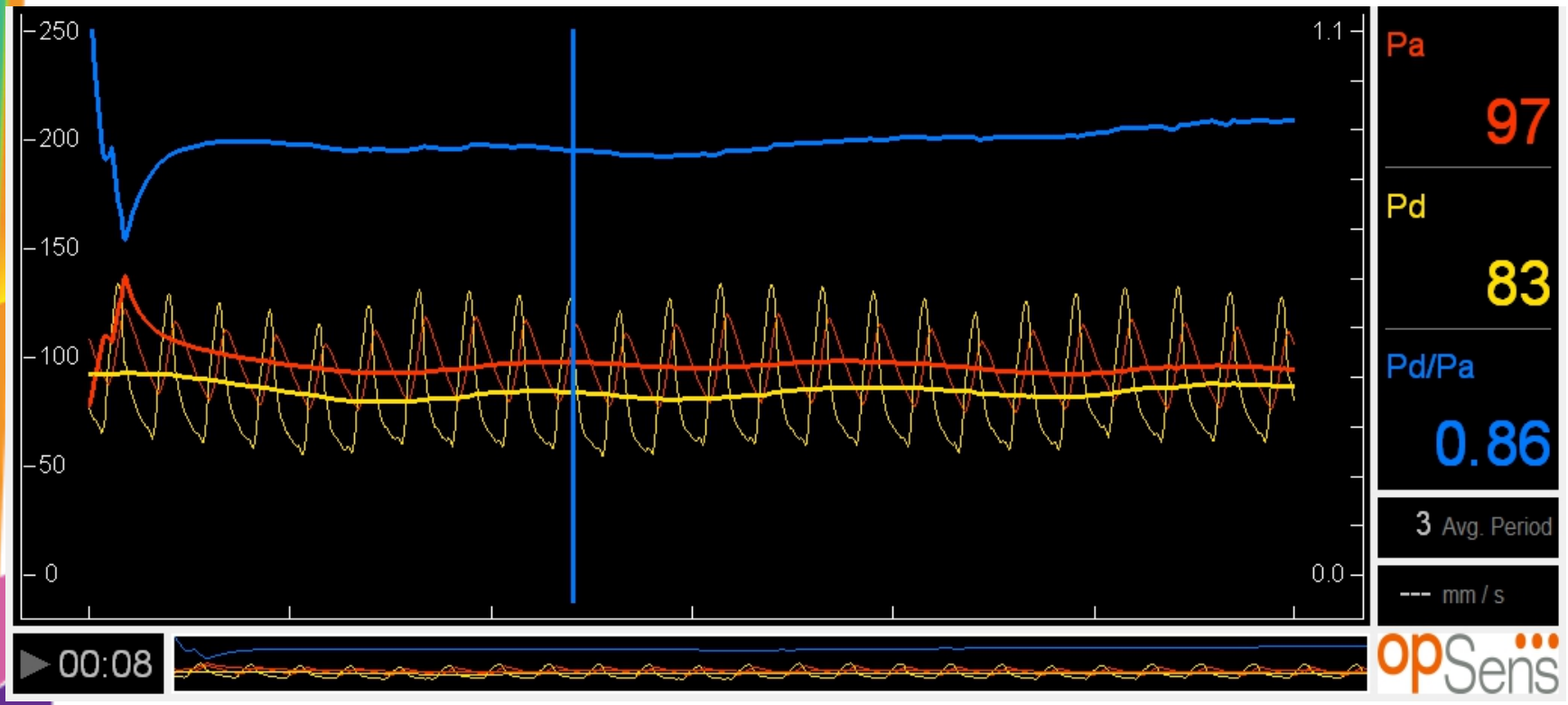

200
160
120
80
40
0
1.1
0.0
Pa
128
Pd
128
Pd/Pa
1.00
3 Avg. Period
--- mm / s
00:10
opSens

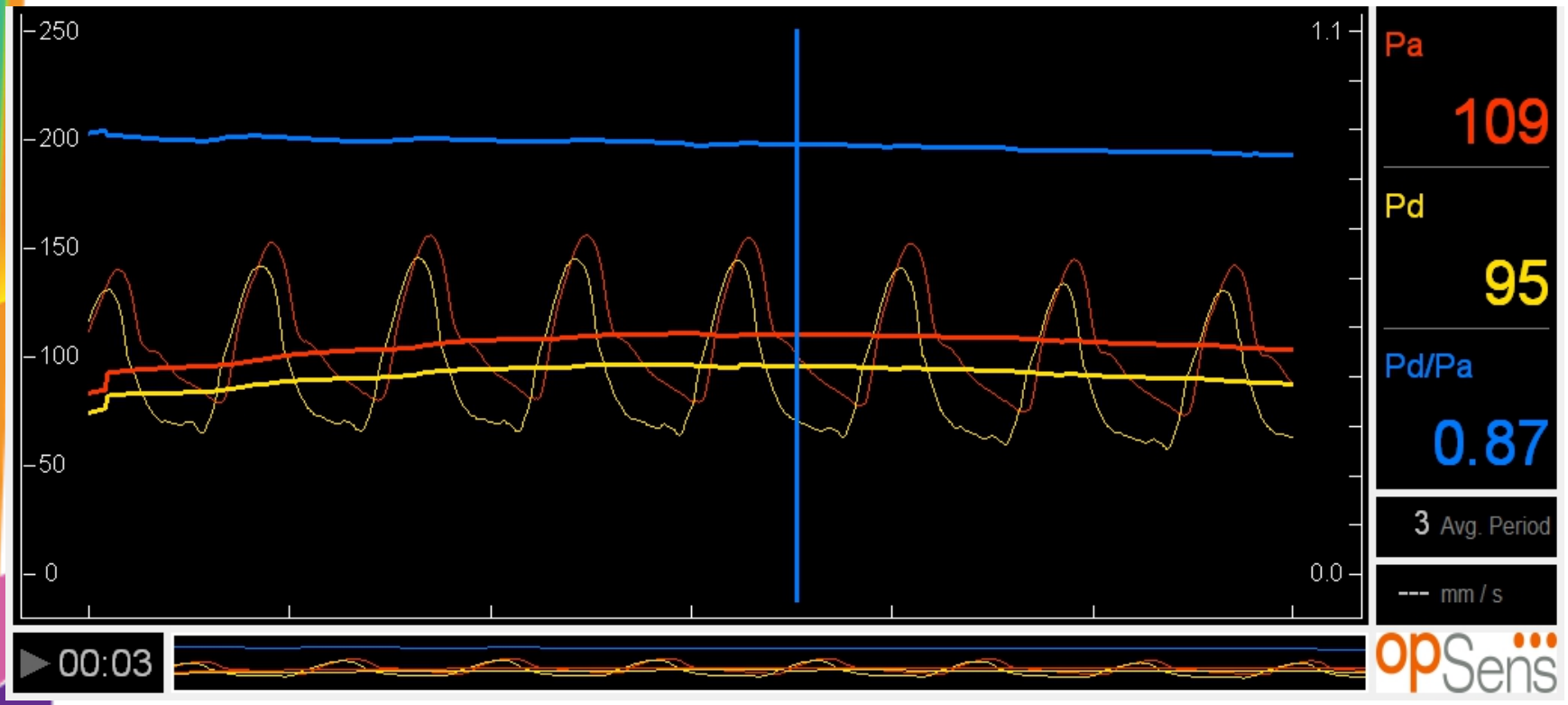
Lésions multiples



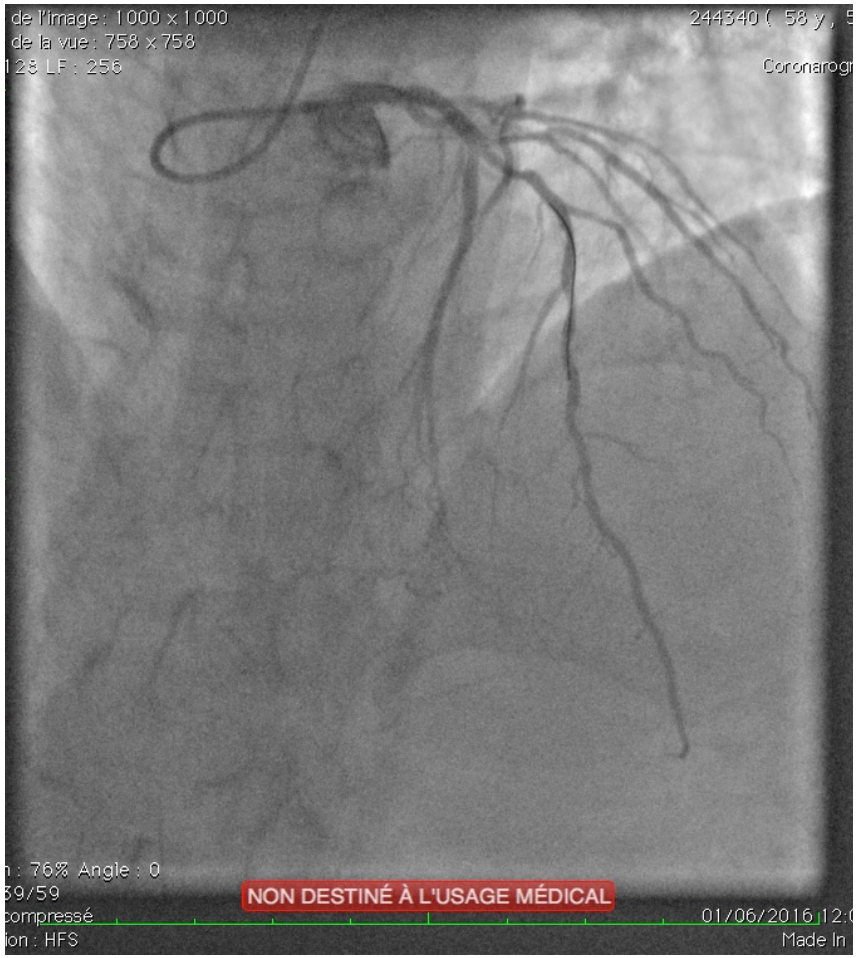


Adénosine


250
200
150
100
50
0
1.1
0.0
Pa
97
Pd
83
Pd/Pa
0.86
3 Avg. Period
--- mm / s
00:08
opSens


250
200
150
100
50
0
1.1
0.0
Pa
109
Pd
95
Pd/Pa
0.87
3 Avg. Period
--- mm / s
00:03
opSens


de l'image : 1000 x 1000
de la vue : 758 x 758
128 LF : 256
244340 (58 y ,
Coronarogr
: 76% Angle : 0
40/58
compressé
ion : HFS
NON DESTINÉ À L'USAGE MÉDICAL
01/06/2016 12:
Made In


de l'image : 1000 x 1000
de la vue : 758 x 758
128 LF : 256
244340 (58 y ,
Coronarogr
: 76% Angle : 0
59/59
compressé
ion : HFS
NON DESTINÉ À L'USAGE MÉDICAL
01/06/2016 12:
Made In