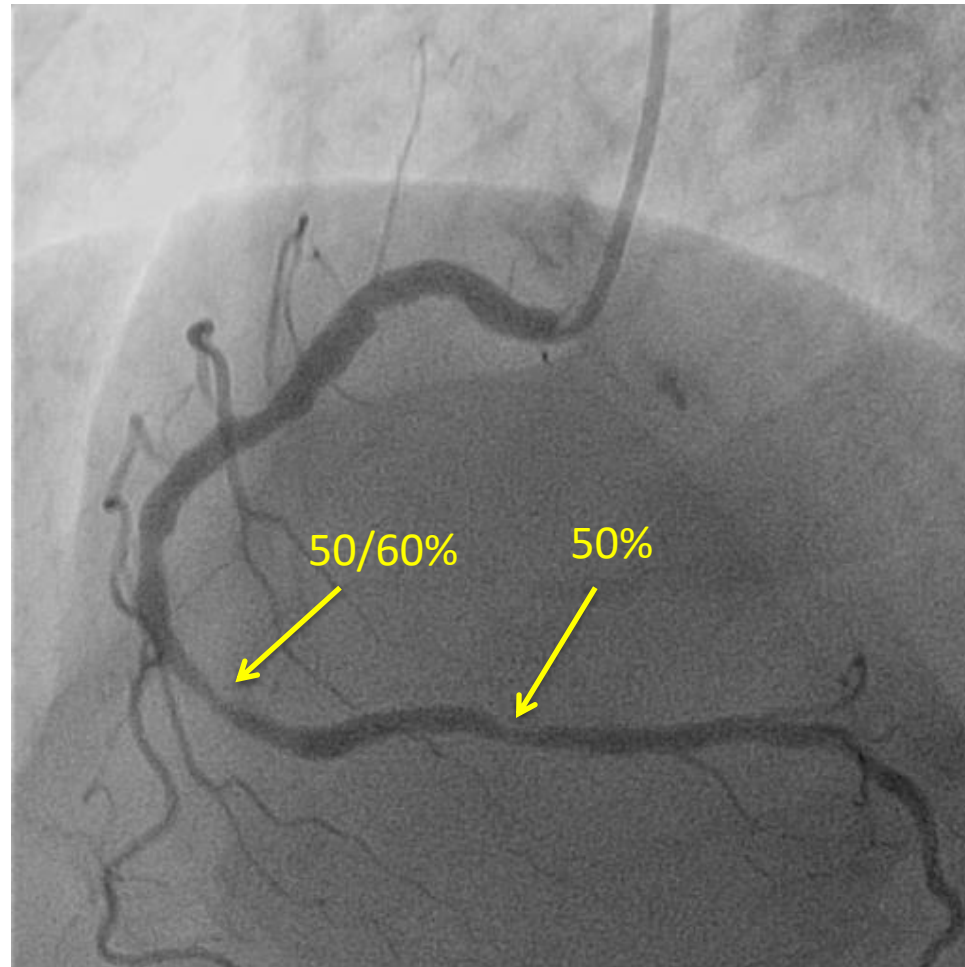


Costo efectividad de la Medición de Reserva Fraccional de Flujo Coronario (FFR)



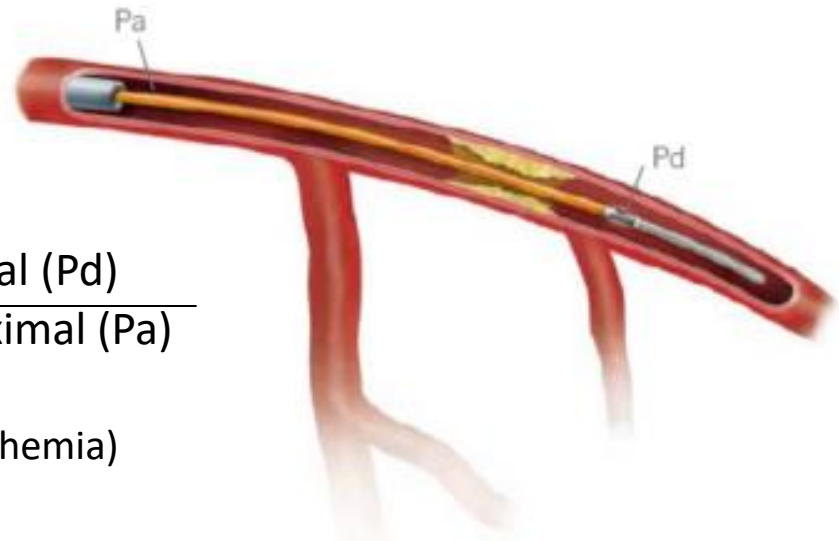
Dr. Alejandro Diego Fernández
*Sub Jefe Servicio de Hemodinamia y Cardiología
Intervencionista*



Reserva Fraccional de Flujo FFR

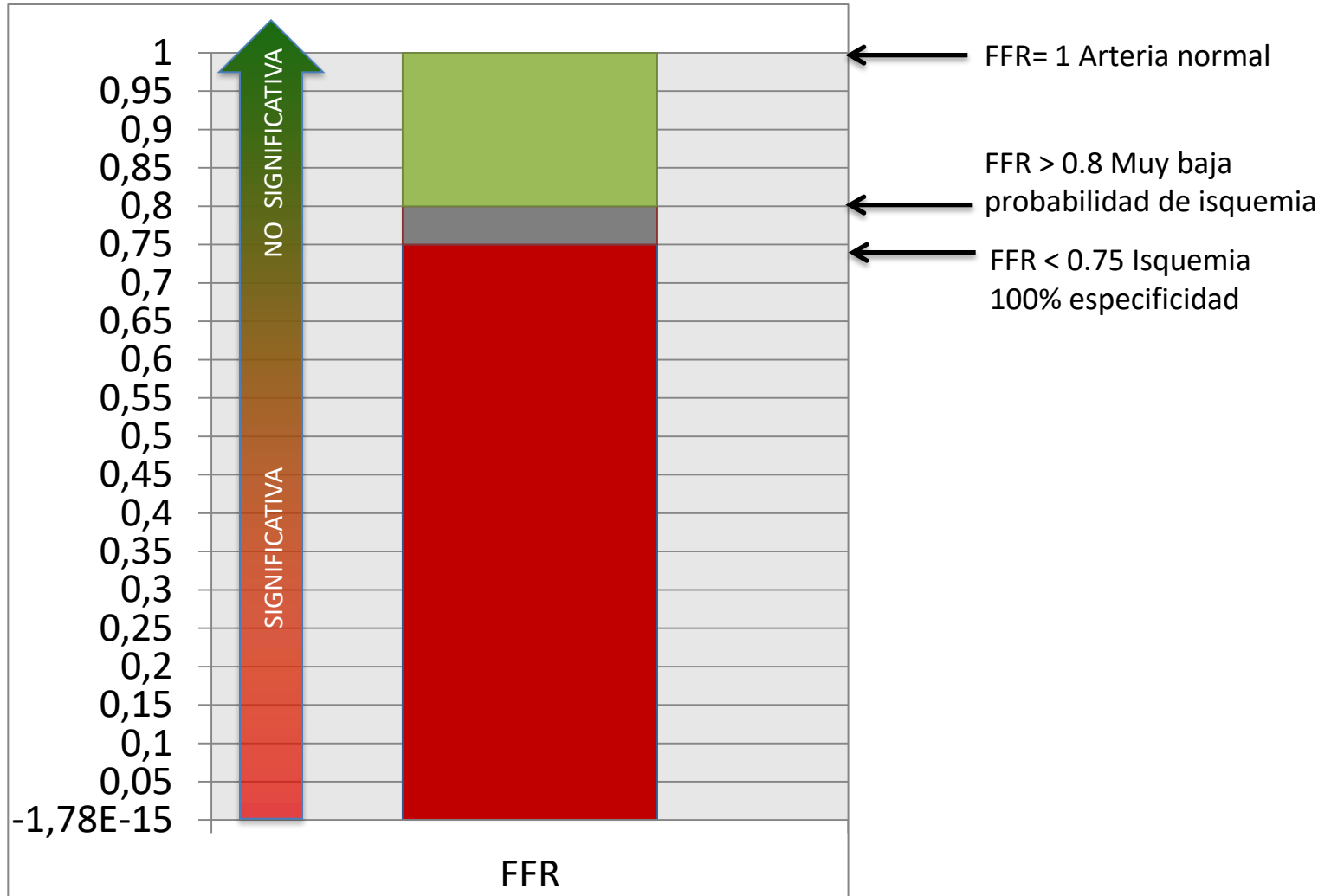
$$\text{FFR} = \frac{\text{Presión Coronaria Distal (Pd)}}{\text{Presión Coronaria Proximal (Pa)}}$$

(Durante Máxima Hiperhemia)

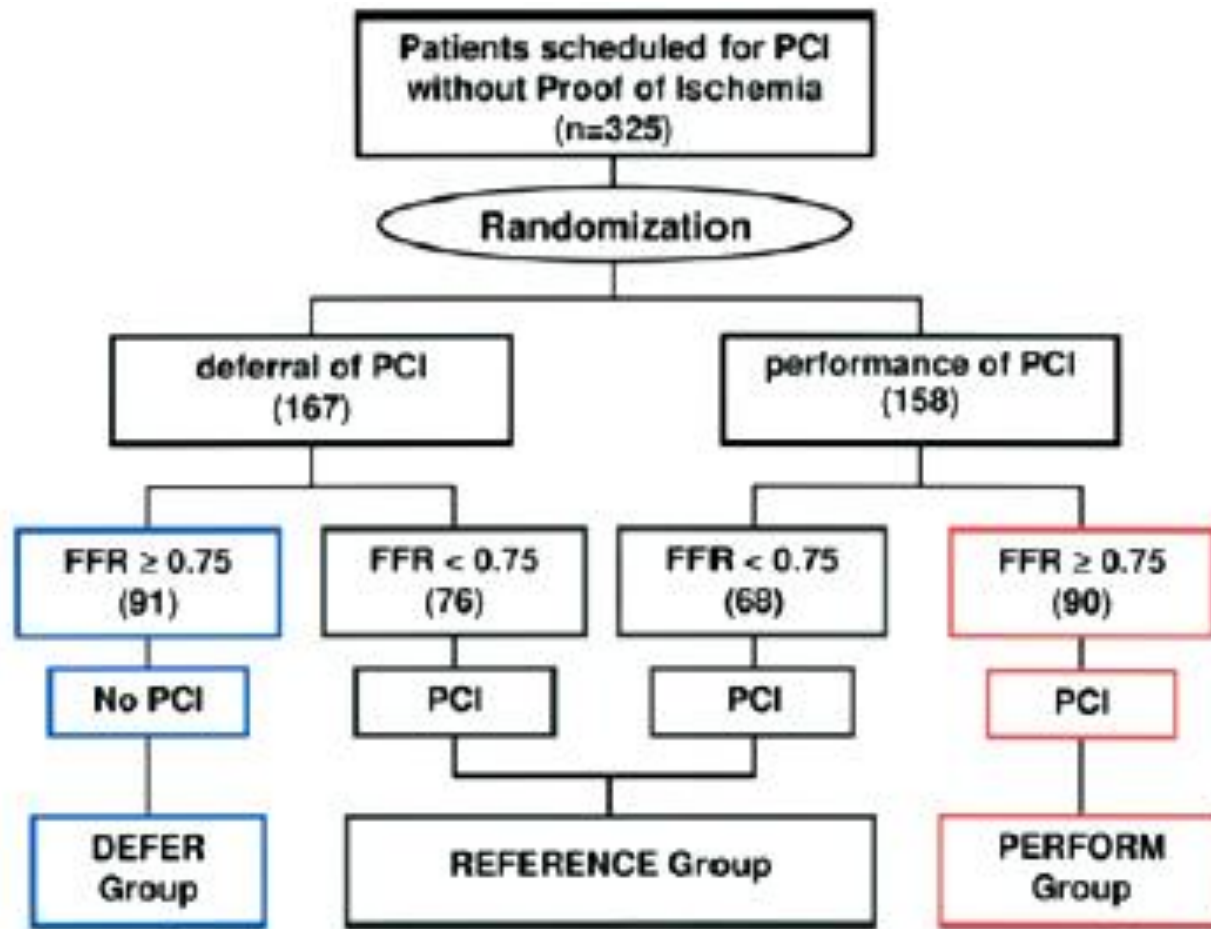


Reserva Fraccional de Flujo

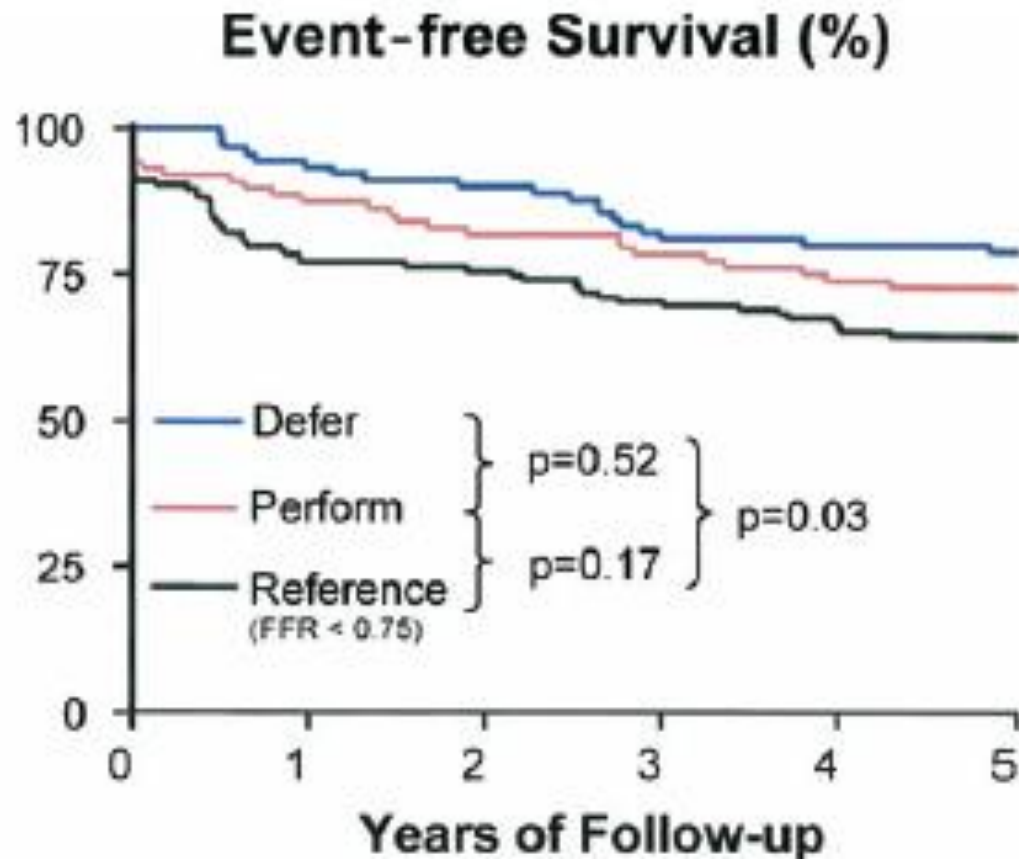
FFR



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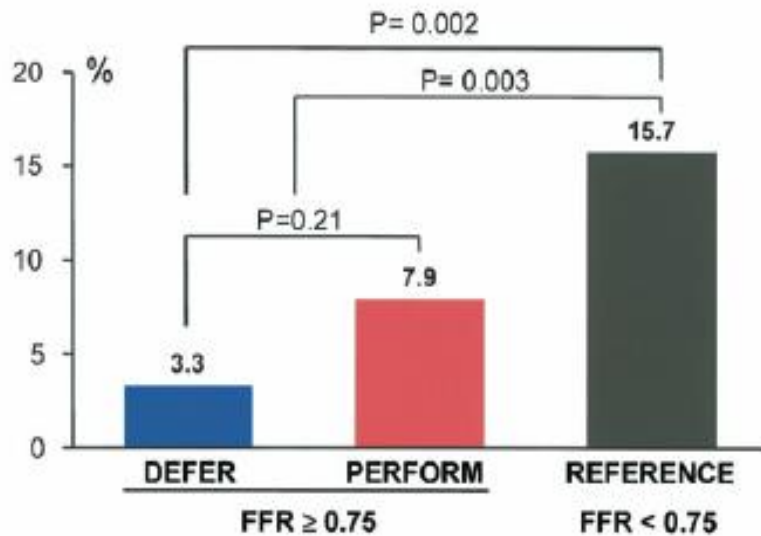


Estudio DEFER

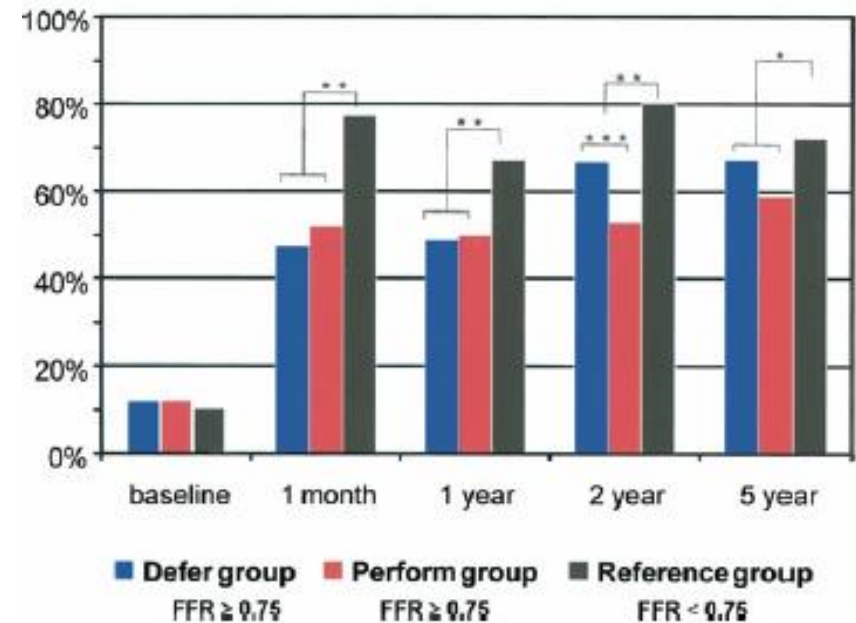


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Cardiac Death and Acute MI after 5 Years



% Patients Free from Chest Pain



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Results 15-year follow-up

All cumulative events

	Any death	Any MI	Any revascularization
Defer	30	2	60
Perform	28	13	53
Reference	52	19	86

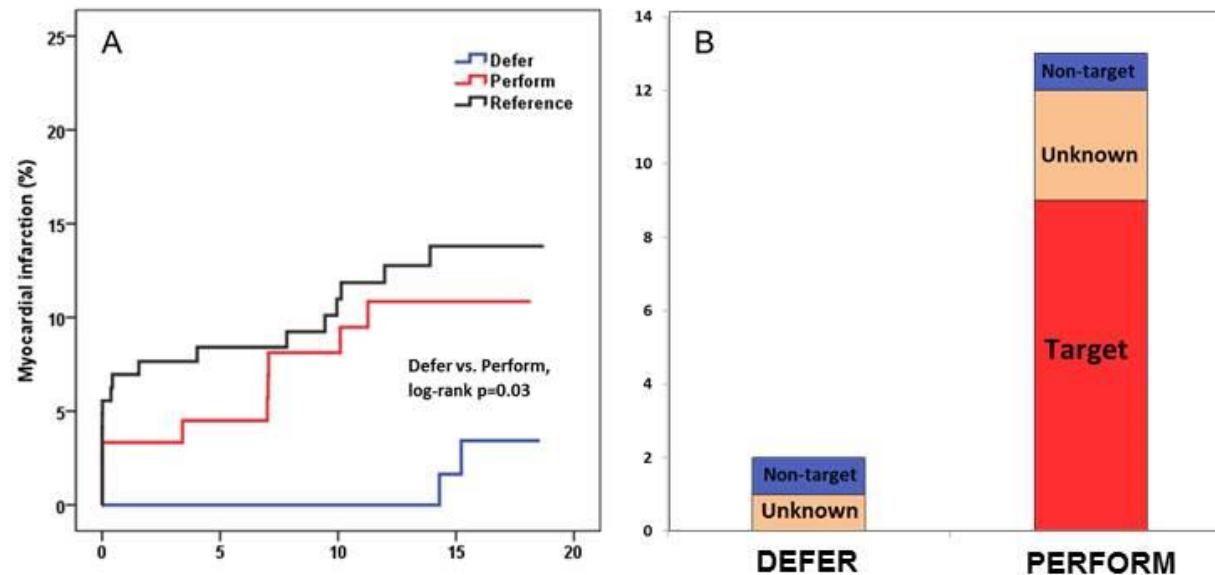
NS indicates no significant difference between Defer and Perform groups for Any death and Any revascularization. * indicates p < 0.02 for Any MI.

* $p < 0.02$

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■ euro
PCR
2015

Myocardial infarction



- Significant higher infarct rate in perform group ($p < 0.03$)
- Most infarctions related to target vessel

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SUMMARY

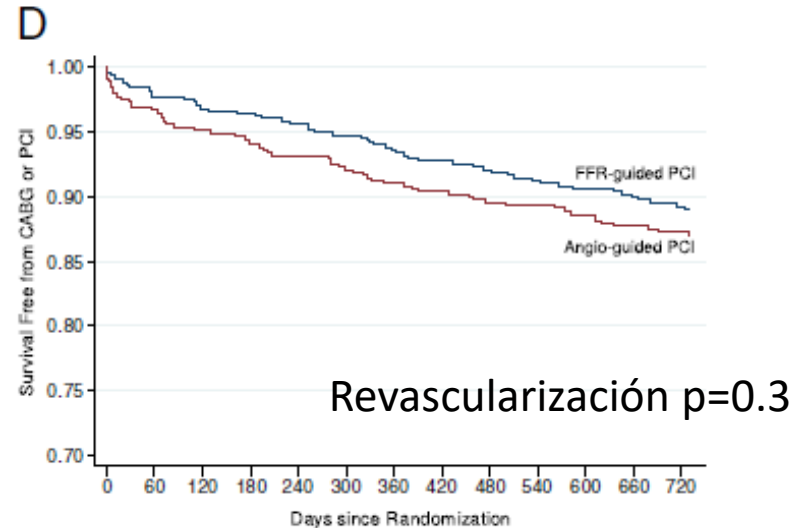
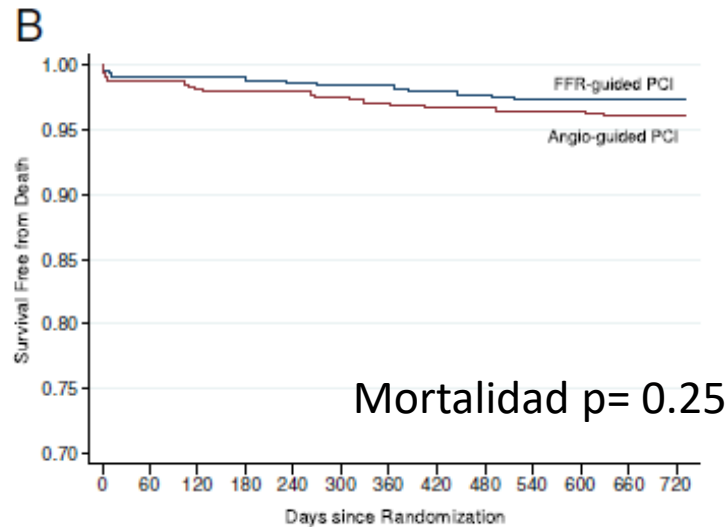
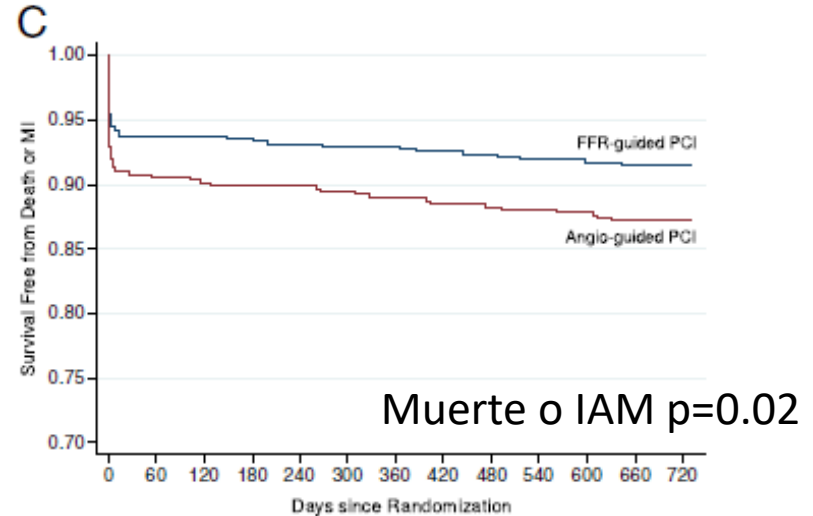
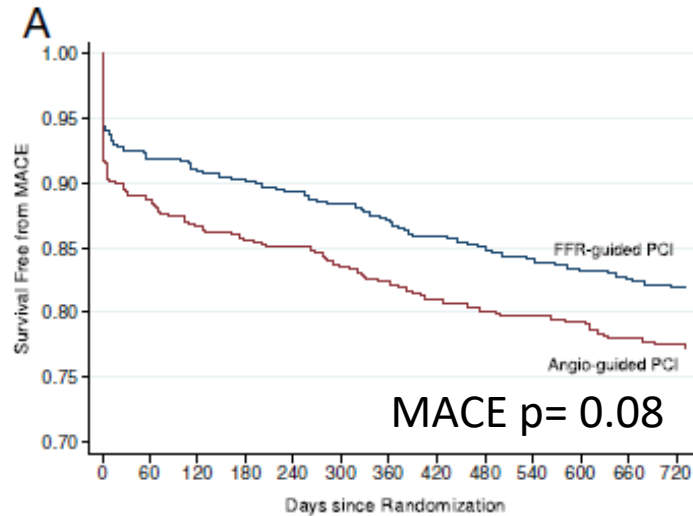
Deferral vs Performance of PCI in non-ischemic stenosis
(based upon FFR > 0,75) ***gives the following very long term***
(> 15 years) outcome:

- ***Mortality:***
no difference in mortality
- ***Myocardial Infarction:***
significant advantage in favour of Defer Group
- ***Repeated PCI/CABG:***
no differences

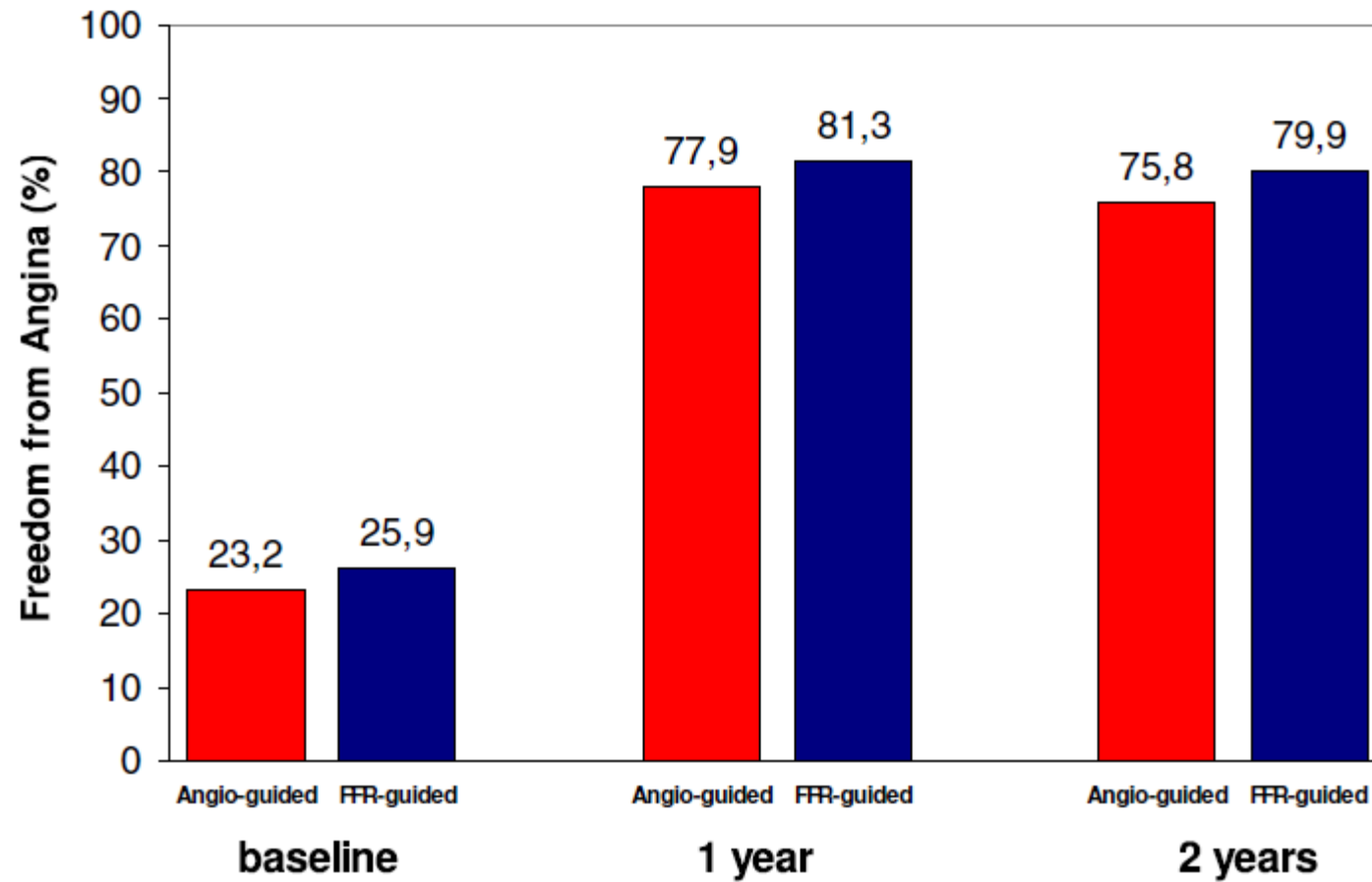
FAME



FAME



FAME



Cost Benefit for Assessment of Intermediate Coronary Stenosis with Fractional Flow Reserve in Public and Private Sectors in Australia



J.C. Murphy, MBBCh PhD ^a, P.S. Hansen, MBBS FRACP PhD ^b,
R. Bhindi, MBBS PhD FRACP ^b, G.A. Figtree, MBBS PhD FRACP ^b,
G.I.C. Nelson, MBBS FRACP PhD ^b,
M.R. Ward, MBBS(Hons) FRACP PhD ^{b*}

^aRoyal North Shore Hospital

^bUniversity of Sydney

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Background	Fractional Flow Reserve (FFR) is a proven technology for guiding percutaneous coronary intervention (PCI), but is not reimbursed despite the fact that it is frequently used to defer PCI.
Methods	Costs incurred with use of FFR were compared in both the public and private sectors with the costs that would have been incurred if the technology was not available using consecutive cases over a two year period in a public teaching hospital and its co-located private hospital.
Results	FFR was performed on 143 lesions in 120 patients. FFR was < 0.80 in 37 lesions in 34 patients and 25 underwent PCI while 11 had CABG. It was estimated that without FFR 78 lesions in 70 patients would have had PCI with 17 patients having CABG with 35 additional functional tests. Despite a cost of \$A1200 per wire, FFR actually saved money. Mean savings in the public sector were \$1200 per patient while in the private sector the savings were \$5000 per patient.
Conclusions	FFR use saves money for the Federal Government in the public sector and for the Private Health Funds in the private sector. These financial benefits are seen in addition to the improved outcomes seen with this technology.
Keywords	Coronary intervention • Fractional flow reserve • Cost effectiveness • Revascularisation • Coronary artery bypass grafting

Clinical Outcomes and Cost-Effectiveness of Fractional Flow Reserve–Guided Percutaneous Coronary Intervention in Patients With Stable Coronary Artery Disease

Three-Year Follow-Up of the FAME 2 Trial (Fractional Flow Reserve Versus Angiography for Multivessel Evaluation)

BACKGROUND: Previous studies found that percutaneous coronary intervention (PCI) does not improve outcome compared with medical therapy (MT) in patients with stable coronary artery disease, but PCI was guided by angiography alone. FAME 2 trial (Fractional Flow Reserve Versus Angiography for Multivessel Evaluation) compared PCI guided by fractional flow reserve with best MT in patients with stable coronary artery disease to assess clinical outcomes and cost-effectiveness.

METHODS: A total of 888 patients with stable single-vessel or multivessel coronary artery disease with reduced fractional flow reserve were randomly assigned to PCI plus MT (n=447) or MT alone (n=441). Major adverse cardiac events included death, myocardial infarction, and urgent revascularization. Costs were calculated on the basis of resource use and Medicare reimbursement rates. Changes in quality-adjusted life-years were assessed with utilities determined by the European Quality of Life–5 Dimensions health survey at baseline and over follow-up.

RESULTS: Major adverse cardiac events at 3 years were significantly lower in the PCI group compared with the MT group (10.1% versus 22.0%; $P<0.001$), primarily as a result of a lower rate of urgent revascularization (4.3% versus 17.2%; $P<0.001$). Death and myocardial infarction were numerically lower in the PCI group (8.3% versus 10.4%; $P=0.28$). Angina was significantly less severe in the PCI group at all follow-up points to 3 years. Mean initial costs were higher in the PCI group (\$9944 versus \$4440; $P<0.001$) but by 3 years were similar between the 2 groups (\$16792 versus \$16737; $P=0.94$). The incremental cost-effectiveness ratio for PCI compared with MT was \$17300 per quality-adjusted life-year at 2 years and \$1600 per quality-adjusted life-year at 3 years. The above findings were robust in sensitivity analyses.

CONCLUSIONS: PCI of lesions with reduced fractional flow reserve improves long-term outcome and is economically attractive compared with MT alone in patients with stable coronary artery disease.

CLINICAL TRIAL REGISTRATION: URL: <https://www.clinicaltrials.gov>. Unique identifier: NCT01132495.

William F. Fearon, MD*
Takeshi Nishi, MD*
Bernard De Bruyne, MD,
PhD
Derek B. Boothroyd, PhD
Emanuele Barbato, MD,
PhD
Pim Tonino, MD, PhD
Peter Jüni, MD
Nico H.J. Pijls, MD, PhD
Mark A. Hlatky, MD
for the FAME 2 Trial Investigators

*Drs Fearon and Nishi contributed equally.

Correspondence to: William F. Fearon, MD, Division of Cardiovascular Medicine, Stanford Cardiovascular Institute, Stanford University School of Medicine, 300 Pasteur Dr, H2103, Stanford, CA 94305–5218. E-mail: wfearon@stanford.edu

Sources of Funding, see page 486

Key Words: angiography ■ coronary artery disease ■ fractional flow reserve, myocardial ■ percutaneous coronary intervention ■ stents

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Original Studies

Clinical Usefulness and Cost Effectiveness of Fractional Flow Reserve Among INdian Patients (FIND Study)

G. Sengottuvelu,^{1*} MD, DM, DNB, Fellowship in Interventional cardiology (France), FRCP (Glasgow), FMMC, FSCAI, FSCI, FACP, Babu Chakravarthy,² MD, DM, Ravindran Rajendran,³ MD, DM, and Sreyes Ravi,⁴ MBBS

Objectives: To study the clinical usefulness, cost benefit, and medium term outcome of fractional flow reserve (FFR) based management of coronary artery disease of intermediate severity. **Background:** In spite of the advantages of FFR there is paucity of data in Indian population who have frequent diffuse, small and multivessel disease where it would probably be more beneficial in terms of cost and outcome. **Methods:** The treating cardiologist's management decision with both FFR and angiographic data was compared with that of a reviewing cardiologist decision based on a retrospective analysis of angiogram alone. **Results:** Eighty-one vessels with intermediate lesions in 59 patients required 26 stents lesser when FFR data was added to the angiogram. The concordance of management decision was about 58% which means that >40% of intermediate lesions would be misclassified as significant based on angiography alone.

There were no major events at a mean follow up of 11 ± 5 months. The net cost benefit in favor of FFR based management was INR 8,57,600 (USD 15,600) in our centre. Conclusion: Indians with more severe form of CAD benefit from a FFR based management plan for intermediate lesions, both clinically and economically. © 2014 Wiley Periodicals, Inc.

Key words: fractional flow reserve; cost benefit; intermediate lesions; multivessel disease

IMPACTO ECONOMICO DE LA MEDICION DE RESERVA DE FLUJO FRACCIONAL EN LESIONES CORONARIAS INTERMEDIAS

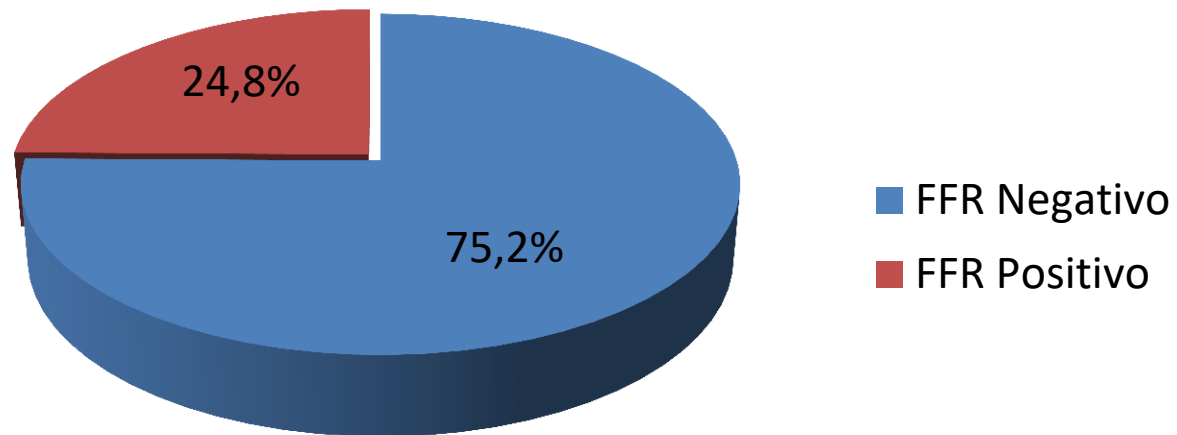
MEDINA DE CHAZAL, Horacio Agustin | COHEN, Fernando | FERNANDEZ, Alejandro Diego | AGATIELLO, Carla Romina | BUCAFUSCO, Andrea | AVILA, Daniel | ROJAS MATAS, Carlos Alberto | BERROCAL, Daniel Horacio

Tabla 1. Características Basales	n = 100
Edad (media +-DS)	69,5(±11,1)
Sexo Masculino	56%
Factores de riesgo cardiovascular	
- Hipertensión	72%
- Diabetes	26%
- Dislipemia	61%
- Tabaquismo actual	13%
Antecedentes coronarios	
- Enfermedad coronaria conocida	47%
- Angioplastia previa	35%
- CRM previa	6%
Otros	
- Cirugía cardiovascular distinta a CRM	3%
- Enfermedad vascular extracoronaria	26%
- Anticoagulación	9%
- Internado	61%
- Apremio positivo	51% (SPECT 38% - EcoStress 4% Angio TC 5%)

Resultados

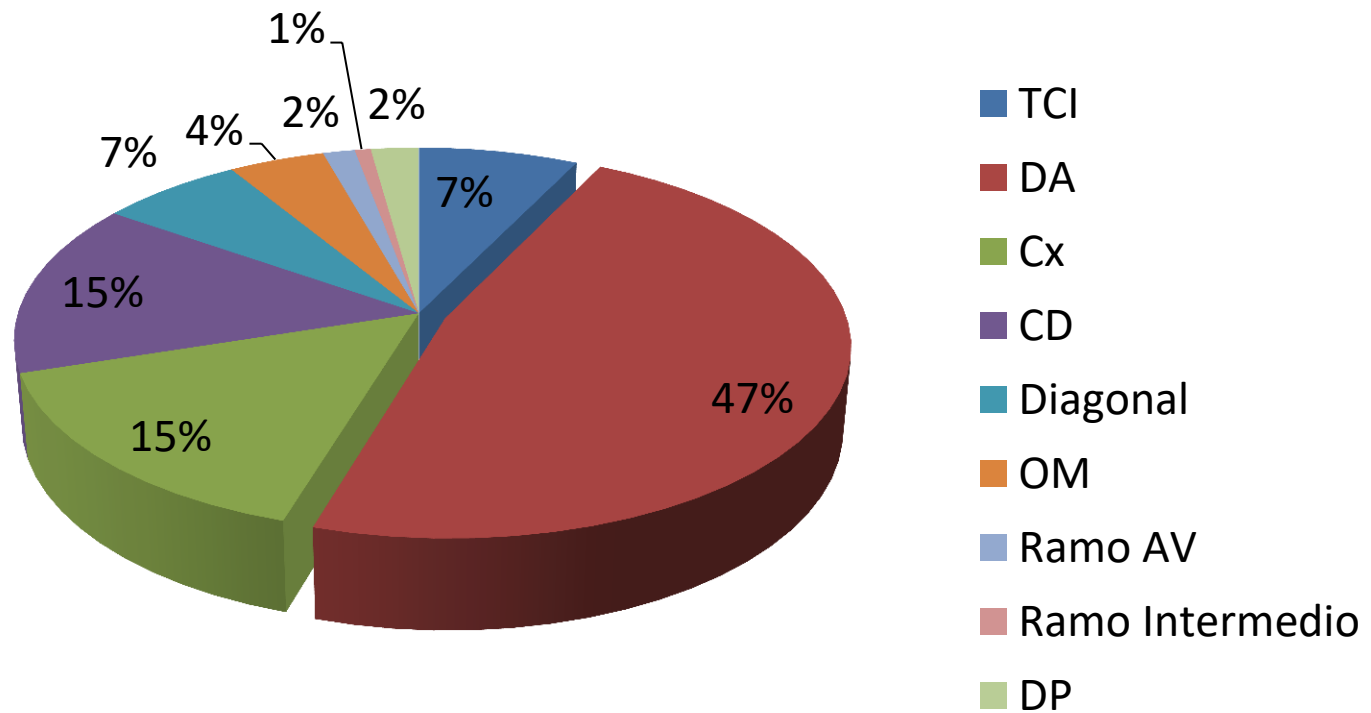
- Se analizaron 137 lesiones coronarias intermedias en 100 pacientes.
- No hubo diferencias significativas entre los grupos.

Resultado de la medición de FFR (n=100)



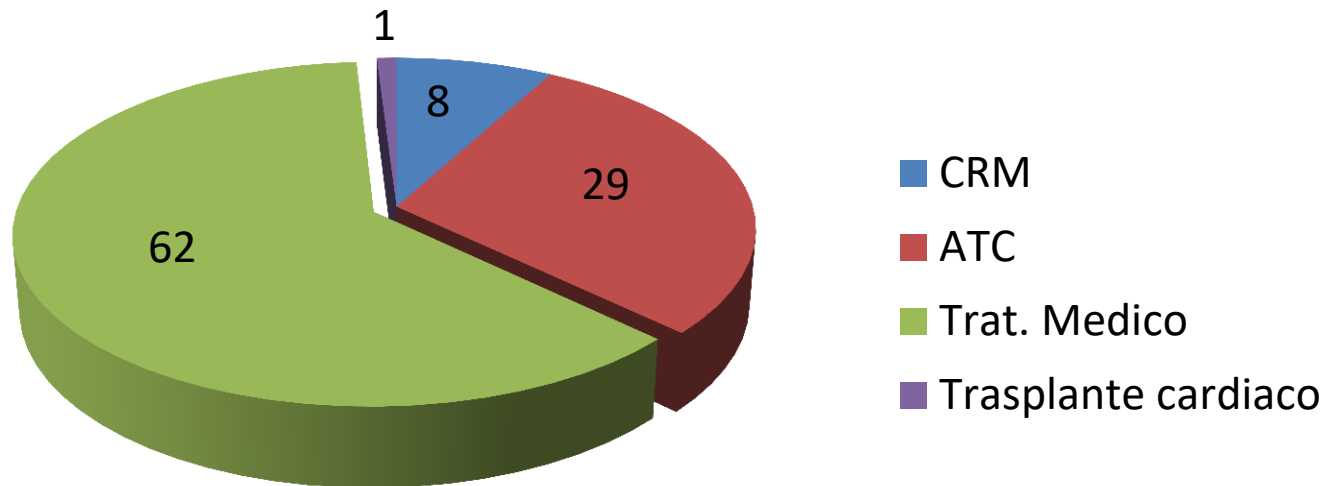
Resultados

Arterias Estudiadas (n=137)



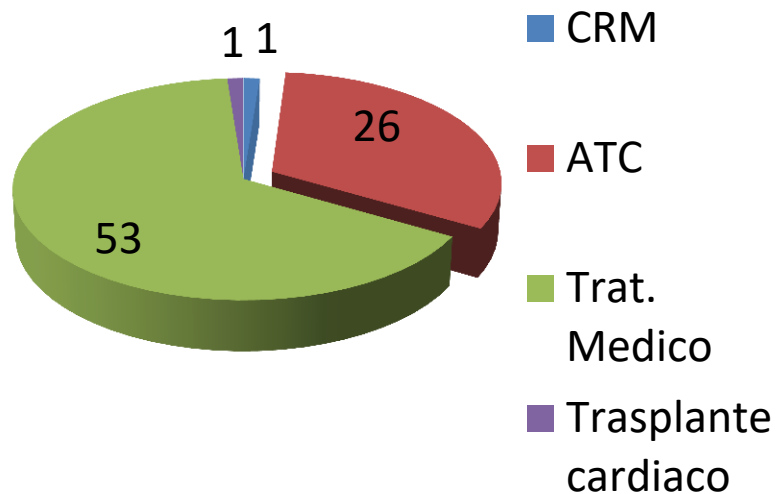
Resultados

Conducta terapéutica según resultado de FFR

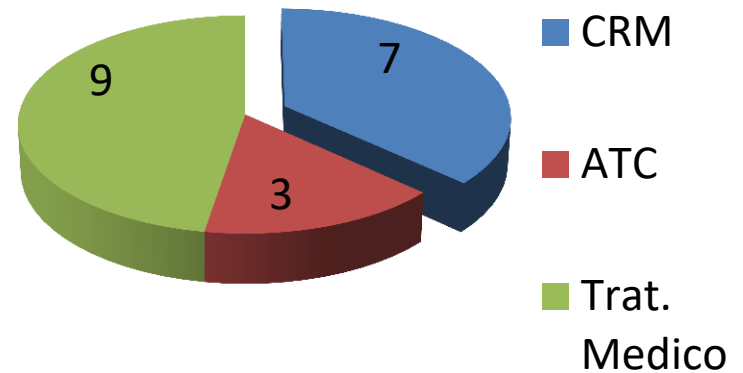


Cambio en la estrategia inicial de Tratamiento

**Estrategia inicial ATC
(n=81)**



**Estrategia inicial CRM
(n=19)**



Resultados

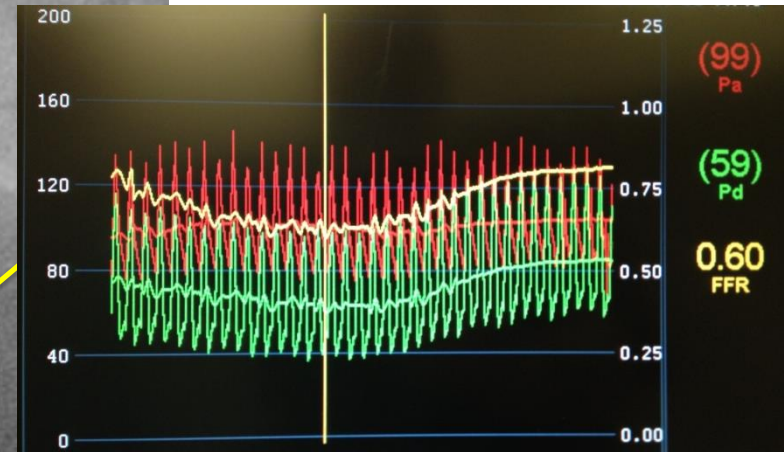
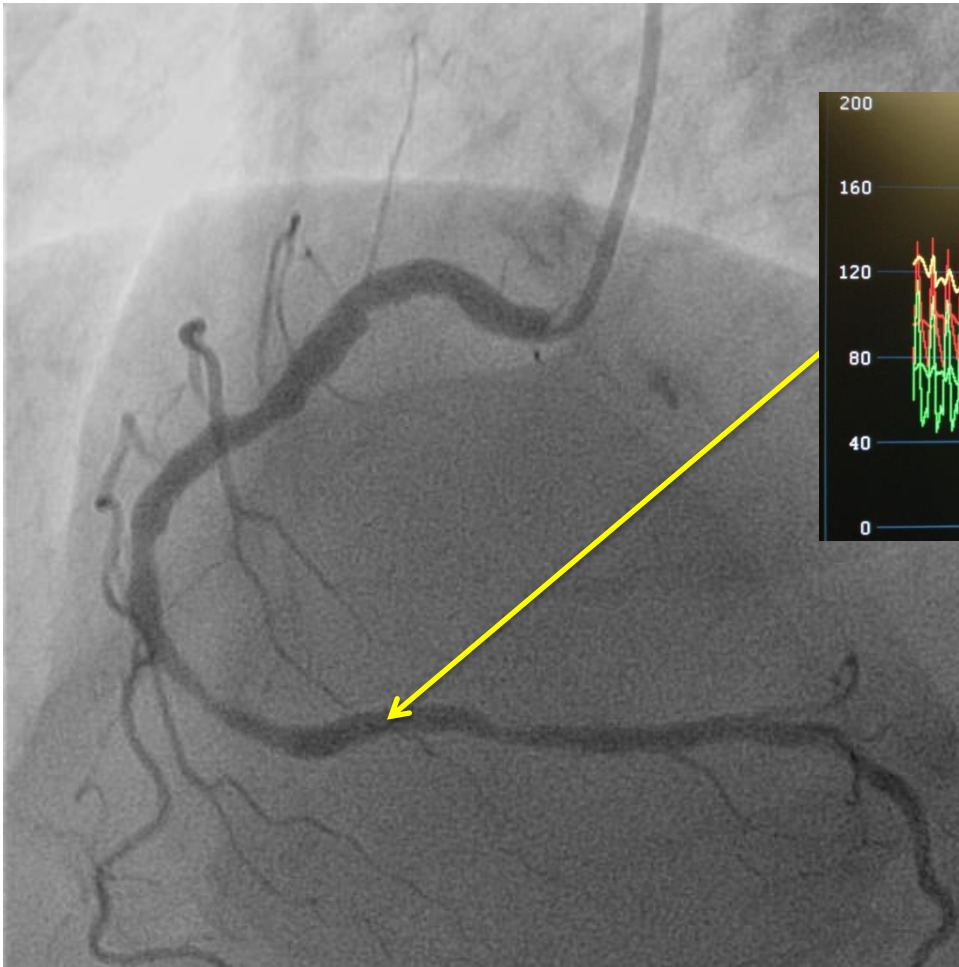
Costos en recursos y procedimientos

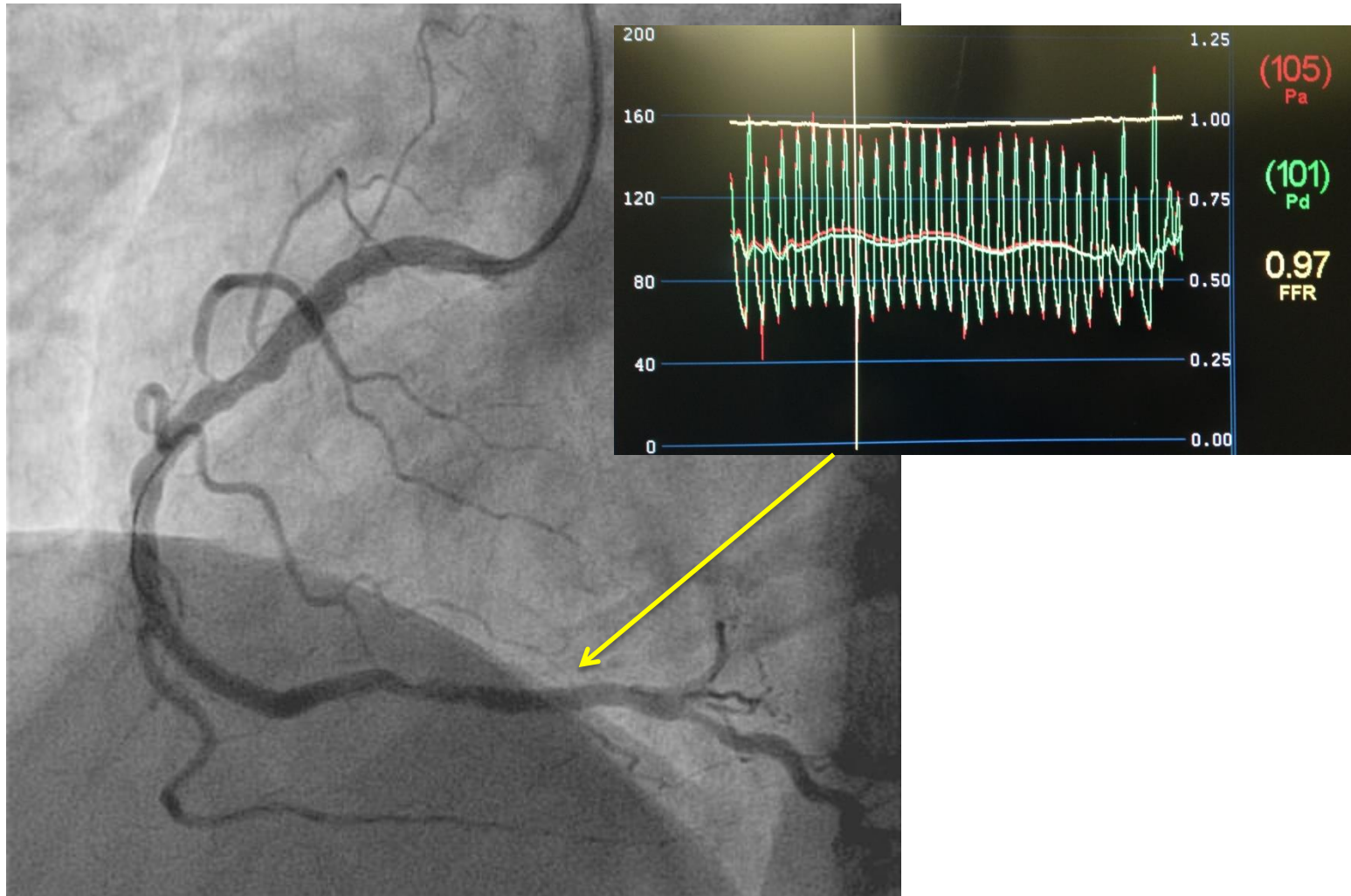
CCG	\$ 23505
FFR	\$ 27648,24
Angioplastía	\$ 96053,98
DES	\$ 44781,73
BMS	\$ 16967,45
UCIC 24 hs	\$ 35609,58
CRM	\$ 453536,58
Anestesia	\$ 56512,5

Mediante la medición de FFR en las 137 lesiones intermedias evaluadas, se realizó angioplastía en 29 pacientes. 8 pacientes presentaron indicación de CRM. El costo total de dichos procedimientos fue de **\$ 15.000.101,77**

Sin la utilización de FFR (asumiendo significancia hemodinámica en todas las lesiones intermedias evaluadas) se llevarían a cabo 81 angioplastías y 19 CRM. El costo total hubiese sido **\$ 30.730.982,38**

*La utilización de FFR en lesiones intermedias significó un ahorro de **52 angioplastias, 87 stents, 11 cirugías y 95 días de internación en Unidad Coronaria. La utilización de FFR generó un ahorro de \$ 15.730.880,60 lo que representó el 48,8% del costo total.***





Resultados

Costos en recursos y procedimientos

CCG	U\$S 857,87
FFR	U\$S 1009,06
Angioplastía	U\$S 3505,62
DES	U\$S 1634,37
BMS	U\$S 619,25
UCIC 24 hs	U\$S 1299,62
CRM	U\$S 16552,43
Anestesia	U\$S 2062,50

Mediante la medición de FFR en las 137 lesiones intermedias evaluadas, se realizó angioplastía en 29 pacientes. 8 pacientes presentaron indicación de CRM. El costo total de dichos procedimientos fue de U\$S 547.448,97

Sin la utilización de FFR (asumiendo significancia hemodinámica en todas las lesiones intermedias evaluadas) se llevarían a cabo 81 angioplastías y 19 CRM. El costo total hubiese sido U\$S 1.121.568,70

La utilización de FFR en lesiones intermedias significó un ahorro de 52 angioplastias, 87 stents, 11 cirugías y de 95 días de internación en Unidad Coronaria. La utilización de FFR generó un ahorro de U\$S 574.119,73 lo que representó el 48,8% del costo total.