Angioplastia de Tronco de la Coronaria izquierda

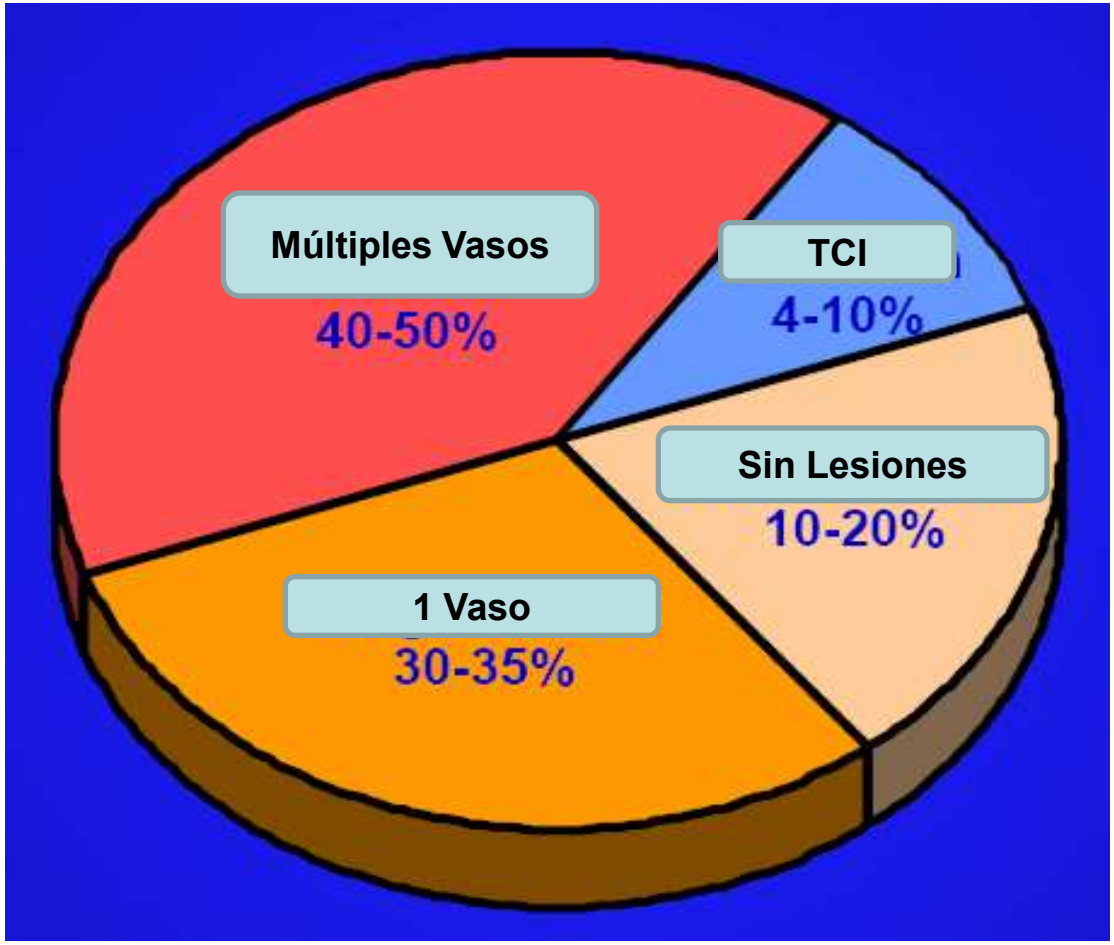
Racionalidad y Evidencia

Dr. Fernando Cura

Jefe de Cardiología Intervencionista y Terapéuticas Endovasculares

ICBA Instituto Cardiovascular de Buenos Aires

Enfermedad coronaria en los SCA



ICBA Instituto Cardiovascular de Buenos Aires

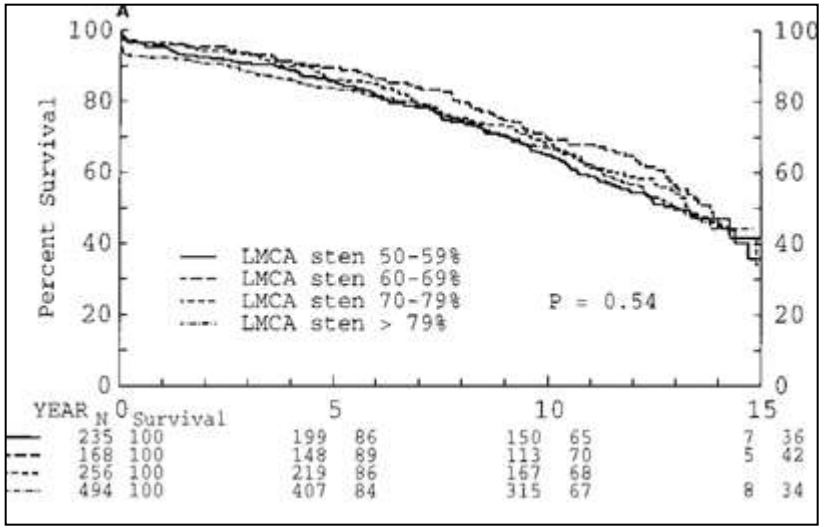
Anderson et al. JACC 2007

REPORTS ON THERAPY

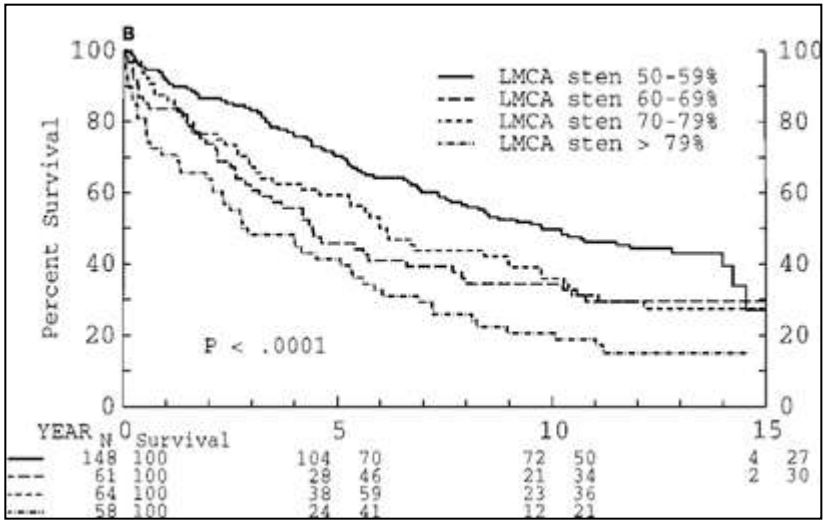
Effect of Coronary Bypass Surgery on Survival Patterns in Subsets of Patients With Left Main Coronary Artery Disease

Report of the Collaborative Study in Coronary Artery Surgery (CASS)

Tratamiento Quirúrgico



Tratamiento Médico

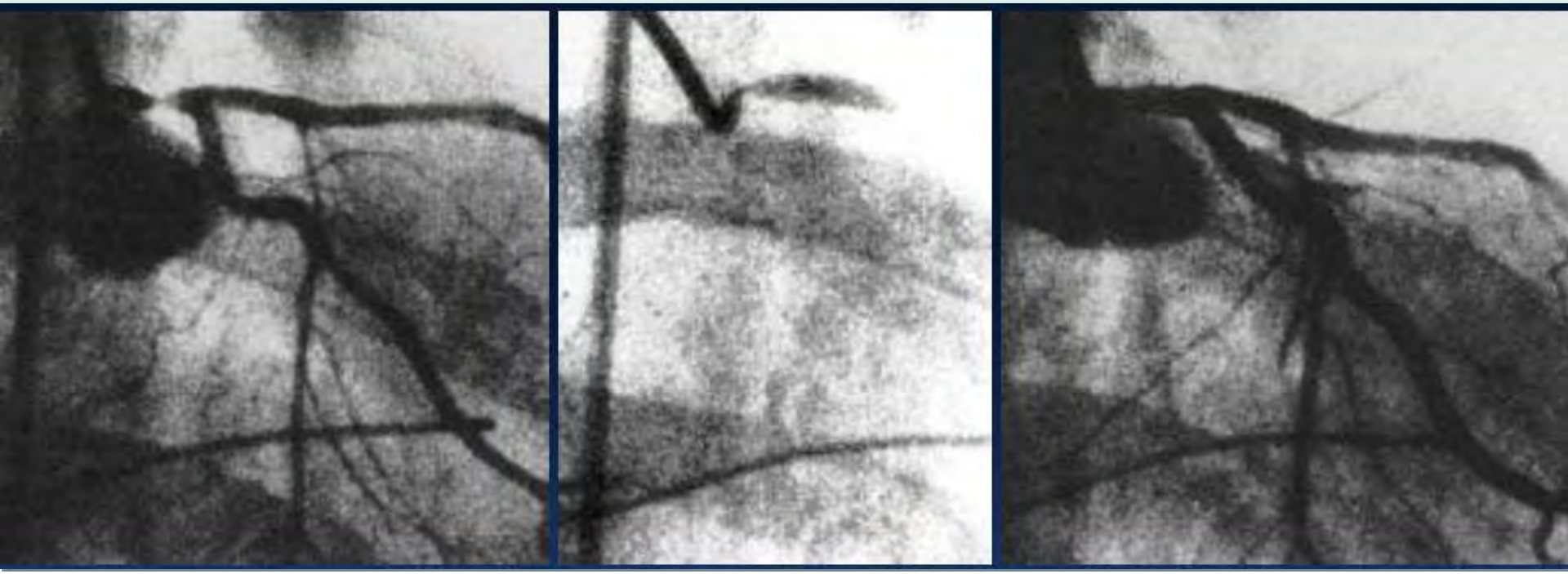


In a small subset of patients with left main coronary stenosis of 50 to 59 percent and a left ventricular score of 5 to 9, the 3 year survival rate was 96 percent and 93 percent for the surgical and medical groups, respectively (NS).

ICBA Instituto Cardiovascular de Buenos Aires

Caracciolo E A et al. Circulation. 1995;91:2325-2334
AmJ Cardiol. 1981 Oct;48(4):765-77.

Tercer angioplastia de A. Gruntzig

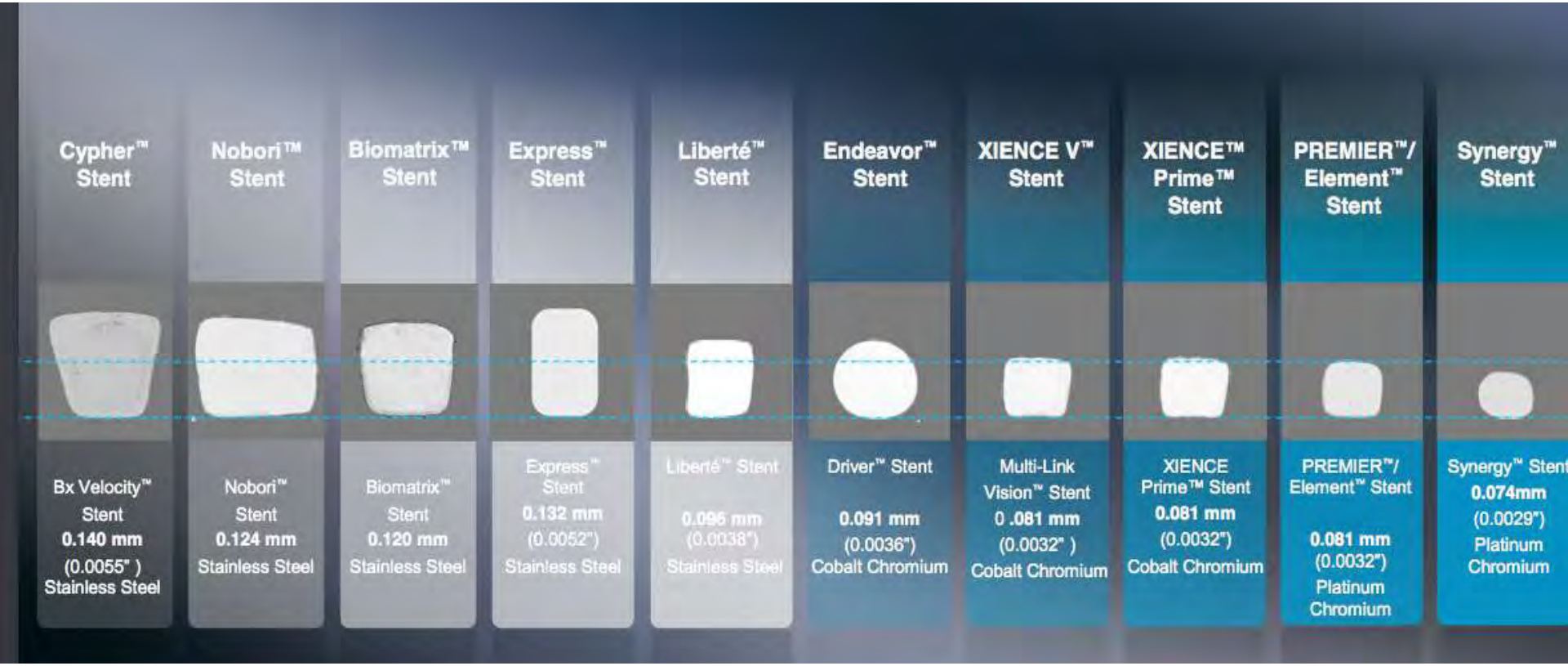


- Paciente de 43 años con angina desde septiembre 1977
- ATC con balon en noviembre
- **Muere subitamente 4 meses mas tarde**

ICBA Instituto Cardiovascular de Buenos Aires

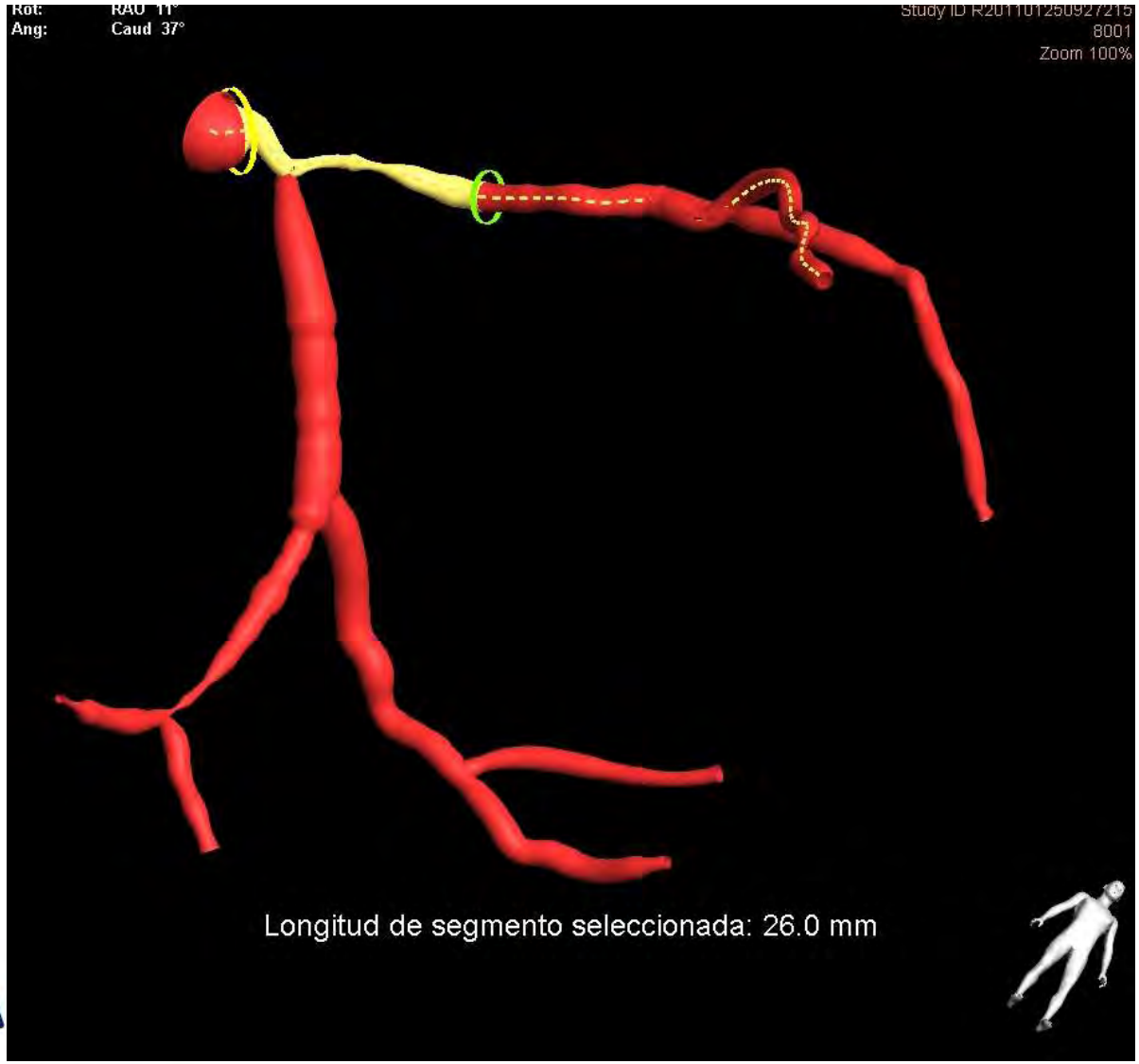
Gruntzig A. Lancet 1978, 1, 263

Tamaño del strut del stent



ICBA Instituto Cardiovascular de Buenos Aires

Adaptabilidad = Conformabilidad

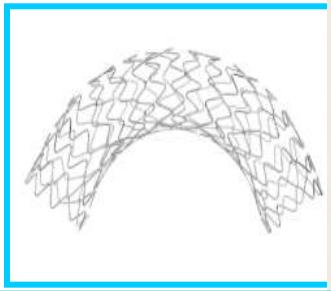


ICBA

1 Generación DES

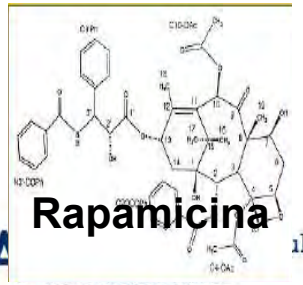
2 Generación DES

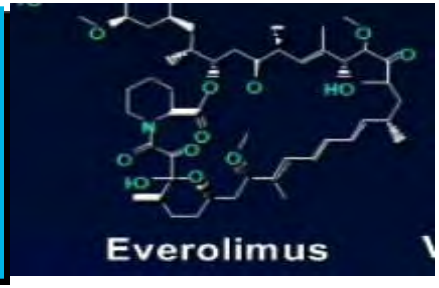
Taxus | **Cypher** | **Resolute** | **Promus Element** | **Xience**

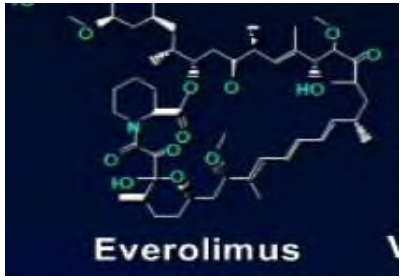


Everolimus Drug/ Fluorinated Copolymer

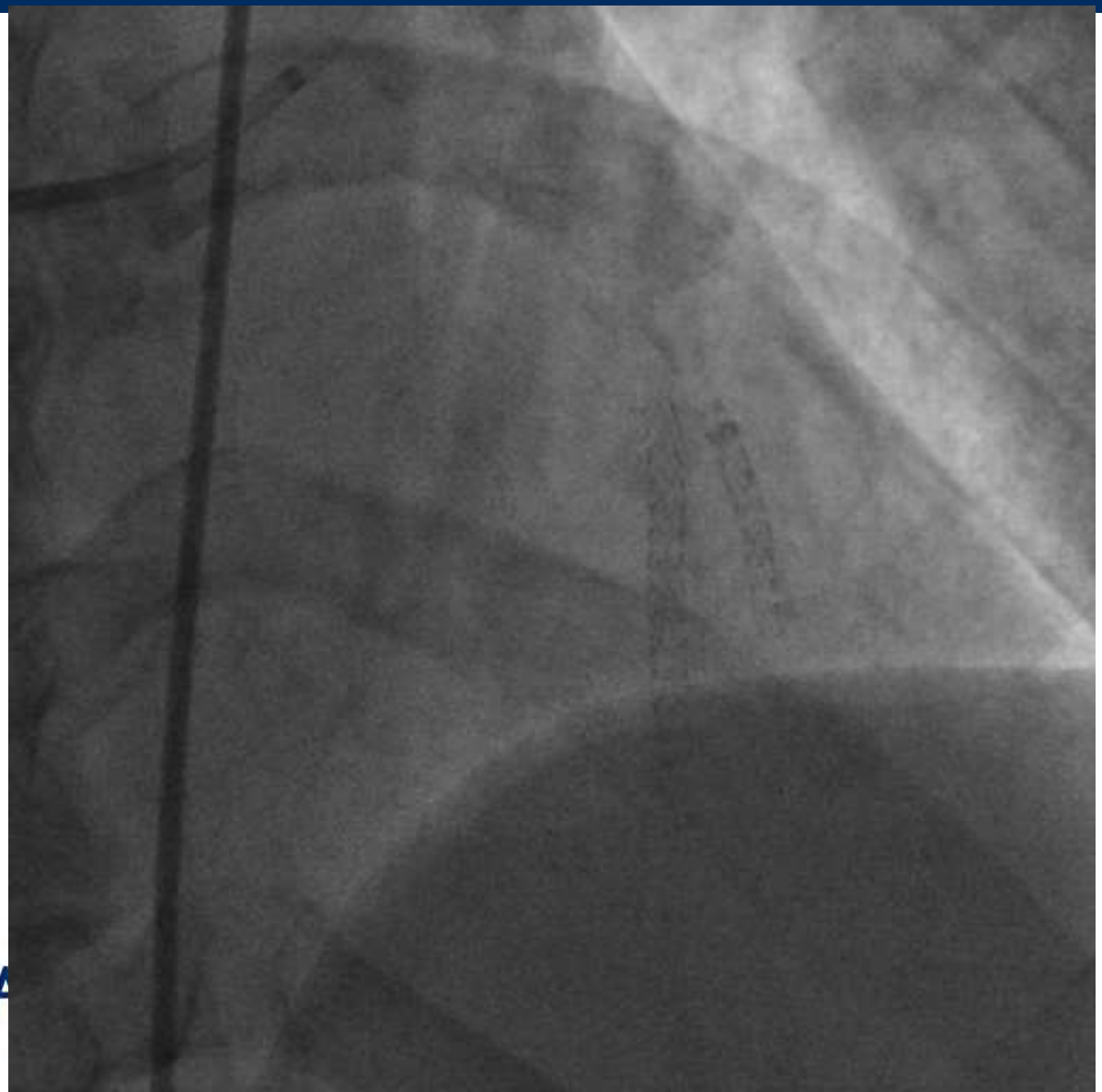
Everolimus Drug/ Fluorinated Copolymer







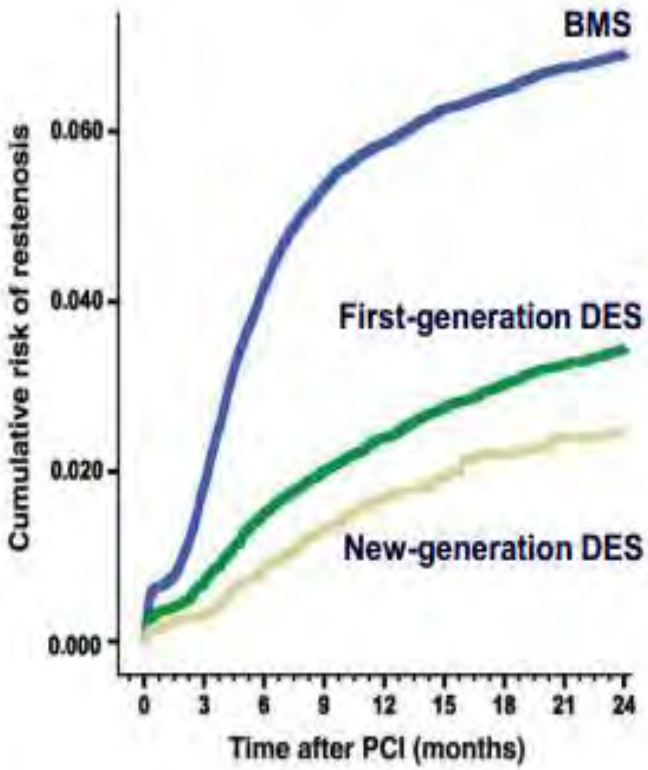
24 meses DES 1 generación en DA y Diagonal



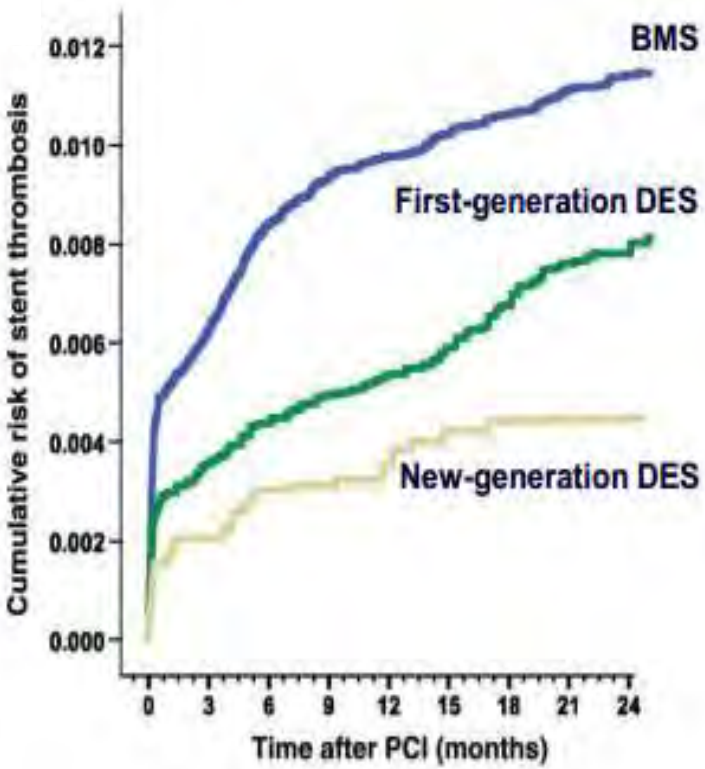
ICBA

Seguridad y eficacia de los stents
Registro SCAAR

Restenosis



Trombosis definitiva

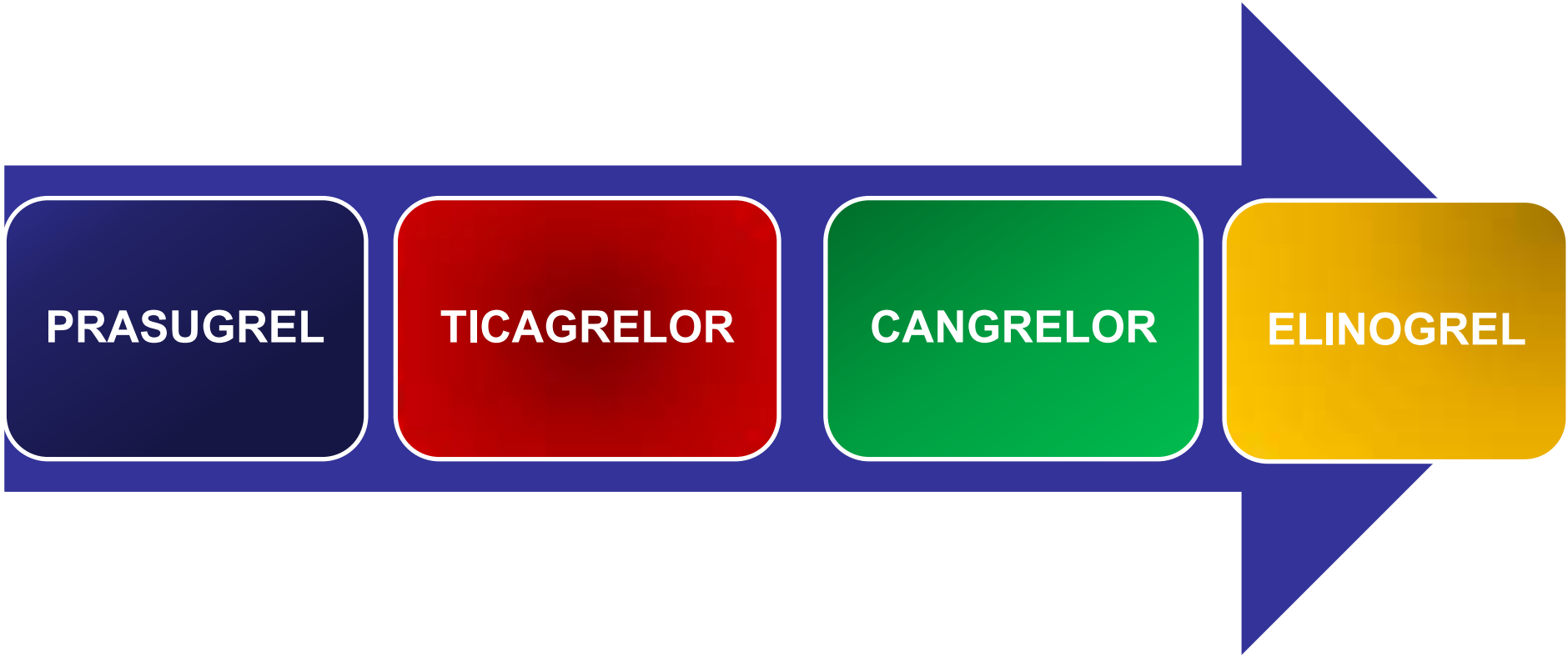


BMS (n 64631), DES 1gen (n19202), DES 2 gen (n 10551)

ICBA Instituto Cardiovascular de Buenos Aires

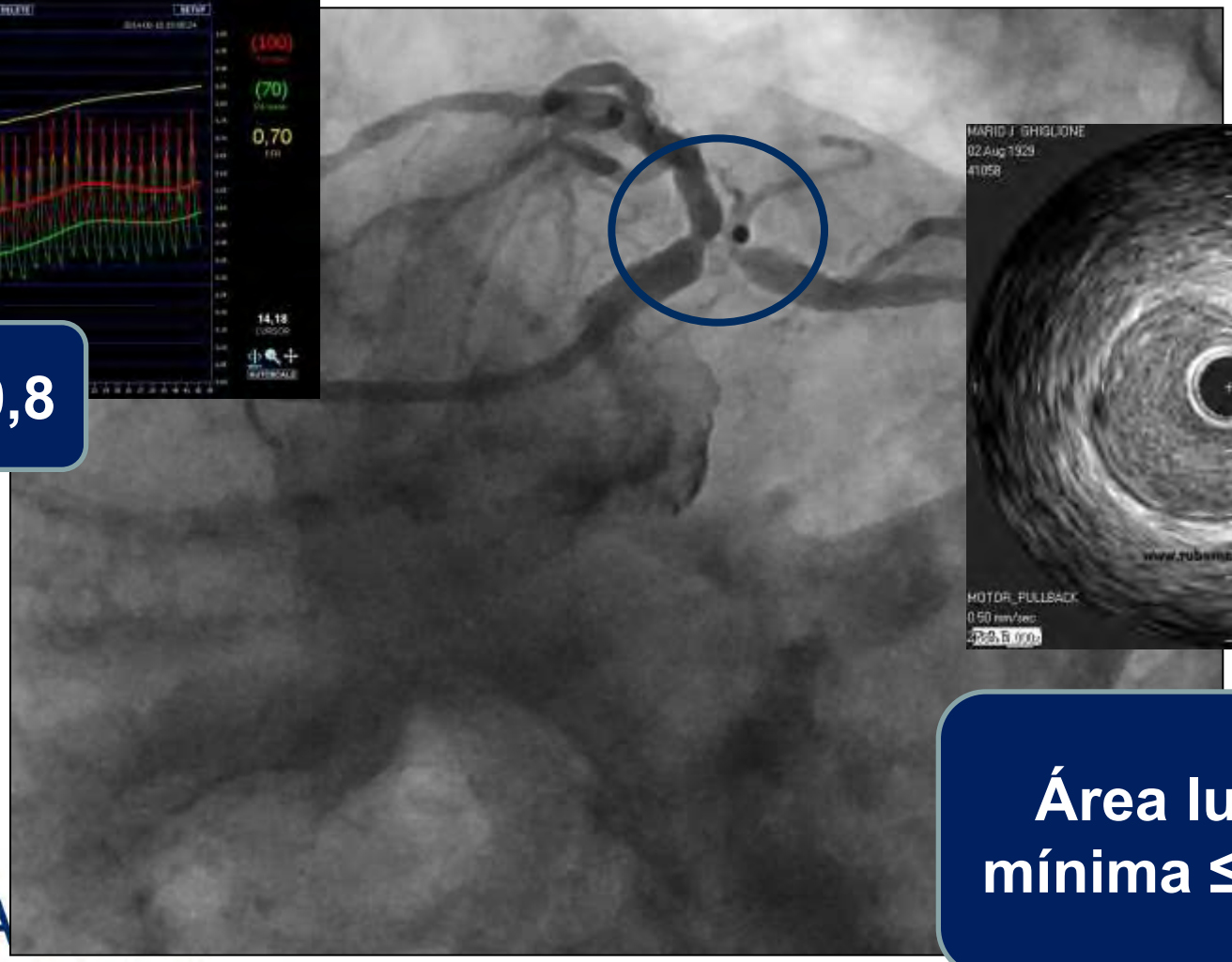
Samo G et al. EHJ 2012

NUEVOS ANTAGONISTAS DEL RECEPTOR P2Y12



Evaluación de la Enfermedad del TCI

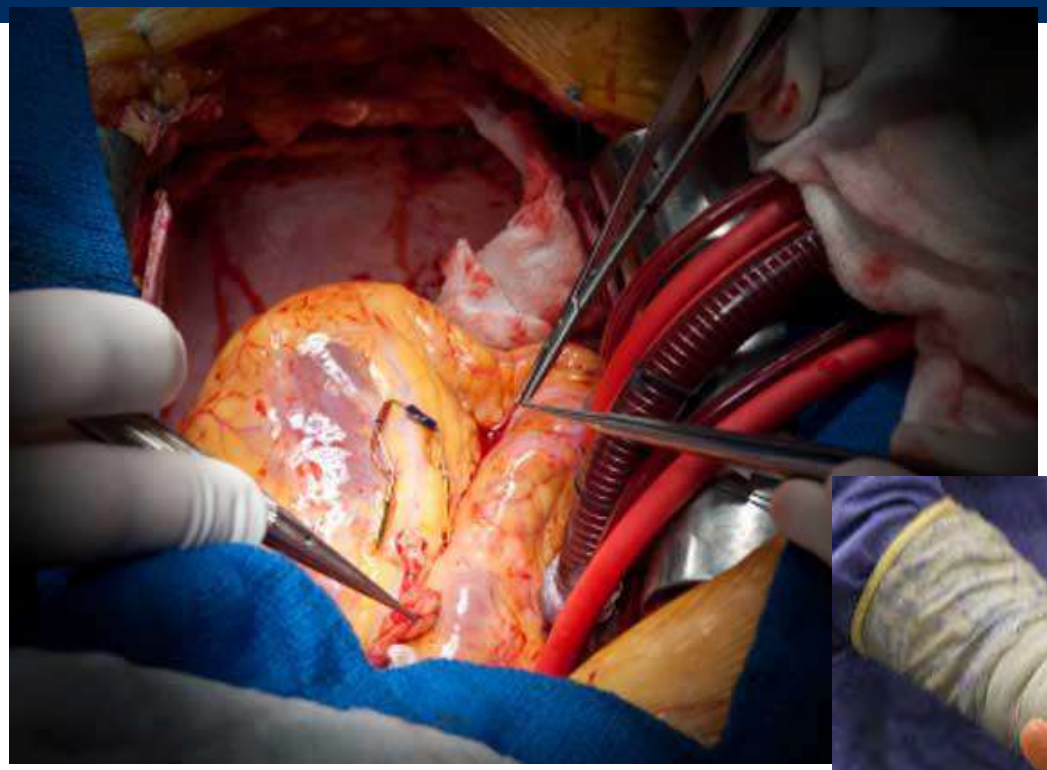
FFR ≤ 0,8



Área luminal mínima ≤ 6 mm2

ICBA

Dos Estrategias de Revascularización…



ICBA Instituto Cardiovascular de Buenos Aires

ATC (1ra Generación de DES) Vs CRM
Meta-Análisis 4 estudios: 1611 Pac

Trial	LEMANS	SYNTAX LM	Boudriot et al.	PRECOMBAT
Year	2008	2009	2010	2011
N total	105	705	201	600
Age, mean years	61	65	68	62
Male	67%	74%	75%	77%
Diabetes	18%	25%	36%	32%
Distal LM involved	58%	61%	71%	65%
+0/1/2/3 VD, %	0/9/23/68	13/20/31/36	29/31/27/14	10/17/32/41
Syntax Score, mean	25	30	24	25
Log Euroscore, mean	3.4	3.9	2.5	2.7

ICBA Instituto Cardiovascular de Buenos Aires

Capodanno et al, JACC 2011;58:1426-32

Seguimiento a 1 año

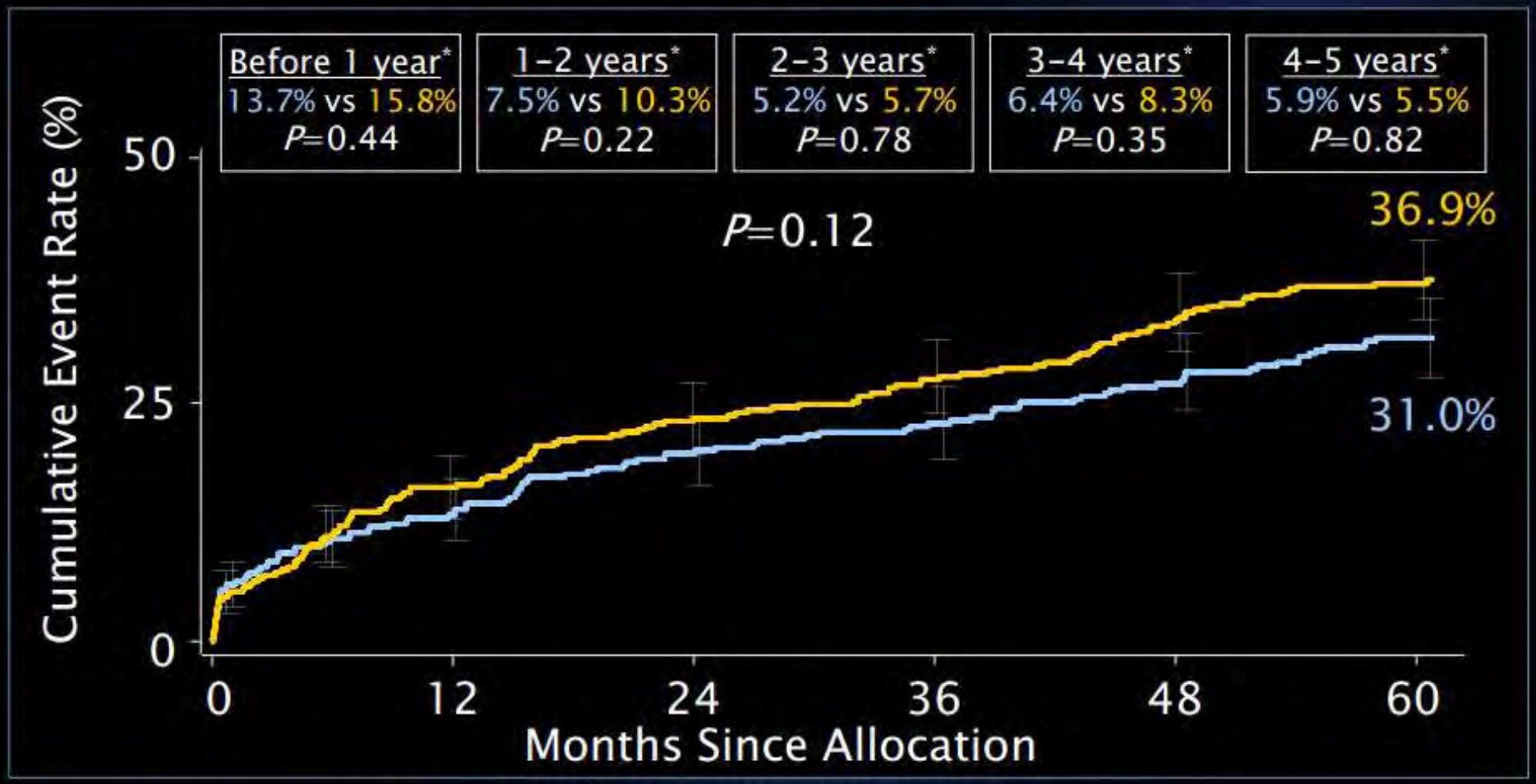
	PCI	CABG	OR (95%CI)	*p*-Value
Death	3.0% (24/807)	4.1% (32/790)	0.74 (0.43-1.28)	0.29
MI	2.8% (23/807)	2.9% (23/790)	0.98 (0.54-1.78)	0.95
Stroke	0.1% (1/707)	1.7% (12/689)	0.15 (0.03-0.67)	0.01
Death, MI, or stroke	5.3% (35/655)	6.8% (43/636)	0.77 (0.48-1.22)	0.26
Repeat Revasc	11.4% (92/807)	5.4% (43/790)	2.25 (1.54-3.28)	<0.001
MACCE	14.5% (117/807)	11.8% (93/790)	1.28 (0.95-1.72)	0.11

ICBA Instituto Cardiovascular de Buenos Aires

Capodanno et al, JACC 2011;58:1426-32

MACCE to 5 Years
Left Main Subset

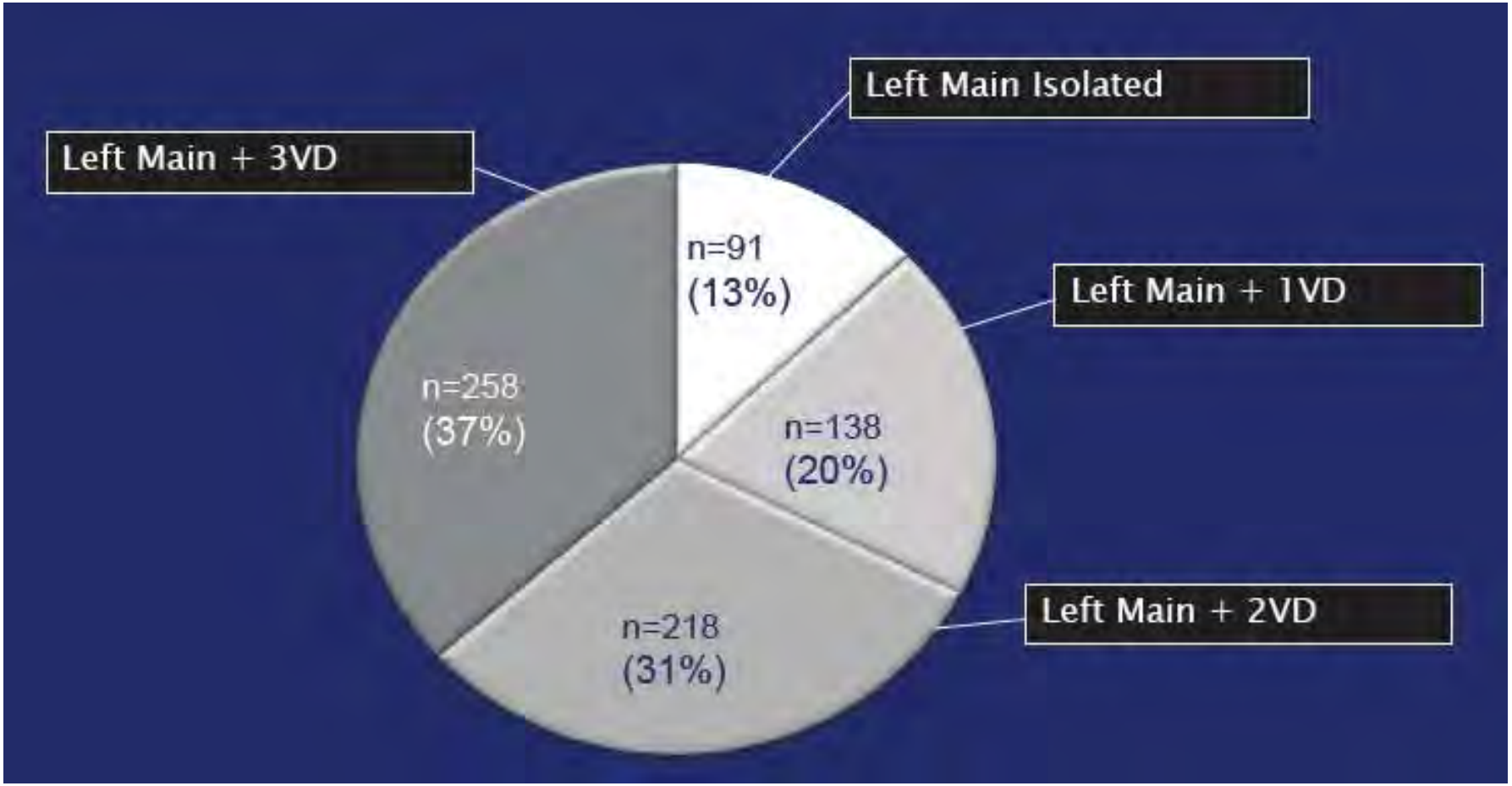
SYNTAX



Cumulative KM Event Rate ± 1.5 SE
log-rank *P* value;*Binary rates

Serruys PW et al. Lancet 2013;381:629-38

SYNTAX Trial: Heterogeneidad del grupo con enfermedad de Tronco de CI



ICBA Instituto Cardiovascular de Buenos Aires

www.syntaxscore.com

SYNTAX SCORE

Search...

Welcome to the SYNTAX Score website. The SYNTAX Score is a unique tool to score complexity of coronary artery disease. However, it is very important to use this new scoring tool correctly, hence, it is strongly recommended to complete the tutorial first.

TUTORIAL

Knowledge of definitions is vital. Please use the tutorial prior to first calculator use.

Start tutorial...

CALCULATOR

Start using the calculator when you have successfully completed the tutorial.

Start calculator...

SYNTAX Trial: Two-year outcomes

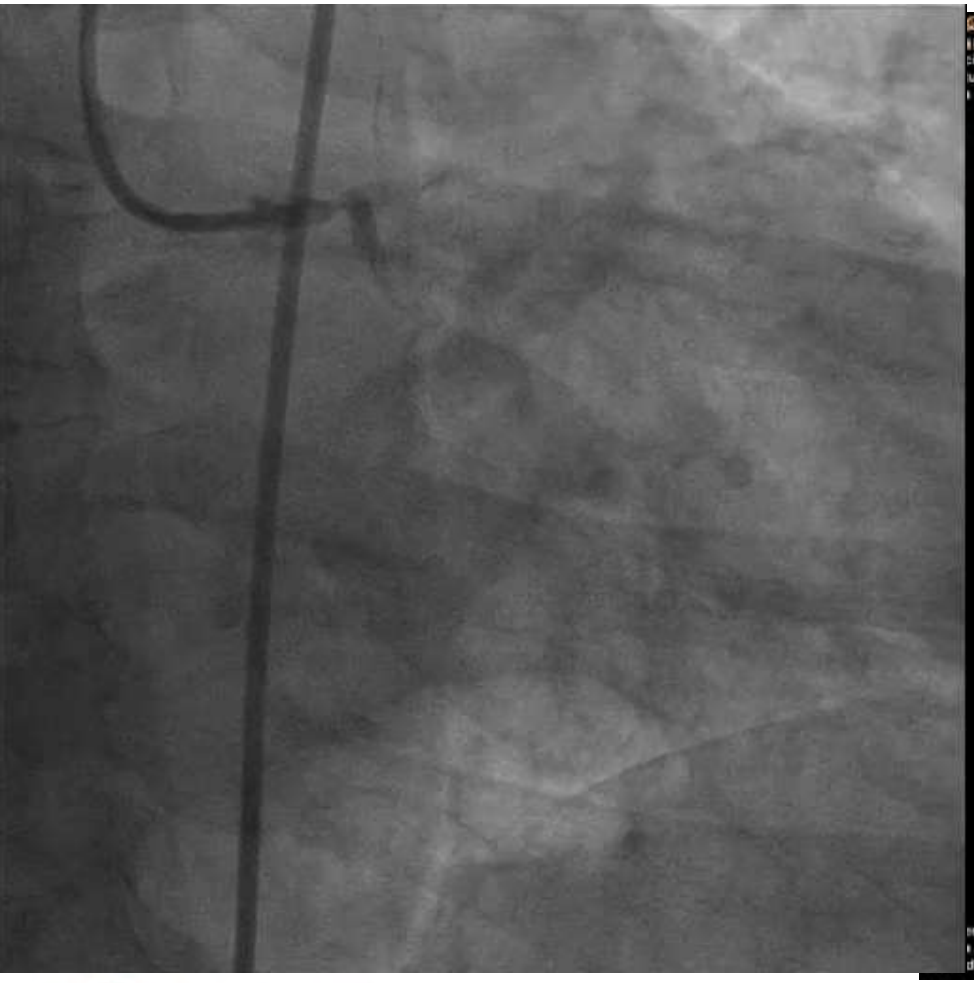
EUROPEAN SOCIETY OF CARDIOLOGY®

Pieter Kappetein, MD, PhD presented the two-year results of the SYNTAX trial at the European Society of Cardiology Meeting, Barcelona on September 2nd, 2009. SYNTAX was featured in a Clinical Trial webcast. Key findings included:

- In the SYNTAX randomized patients, 2-year MACCE rates remained significantly higher for PCI than CABG, mainly driven by higher repeat revascularization in the PCI arm.

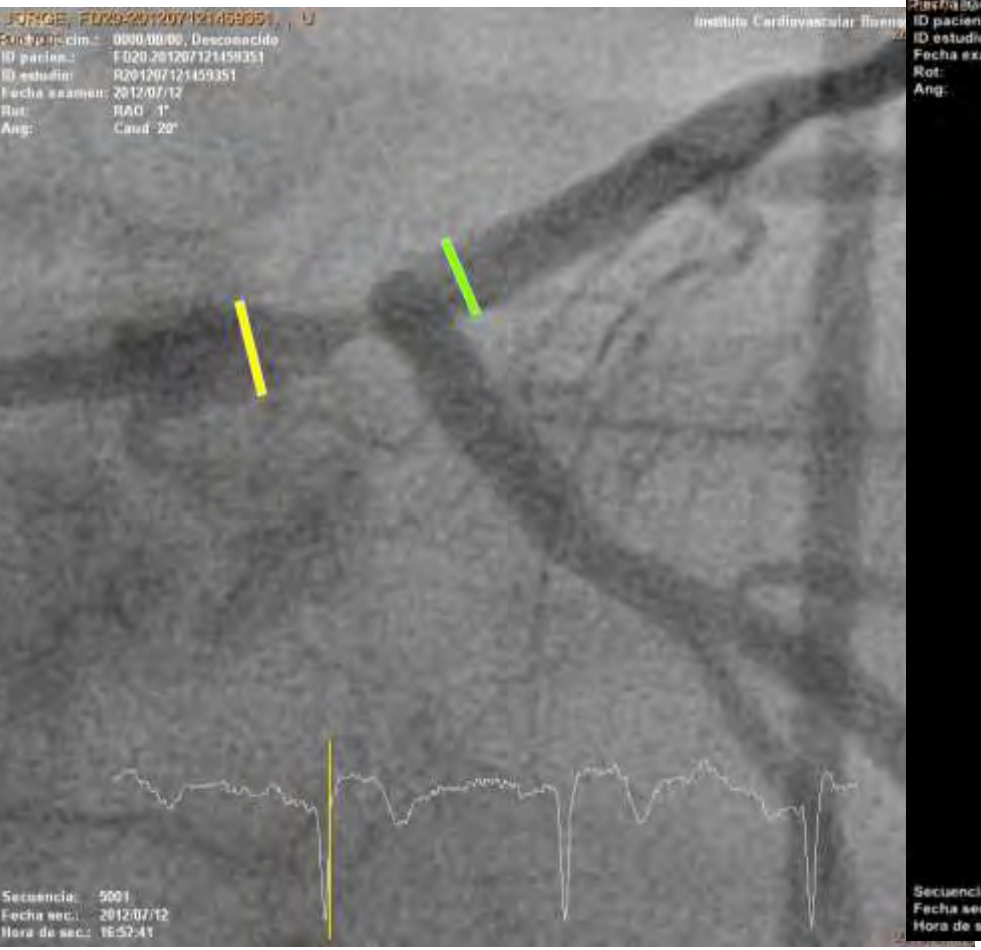
ICBA Instituto Cardiovascular de Buenos Aires

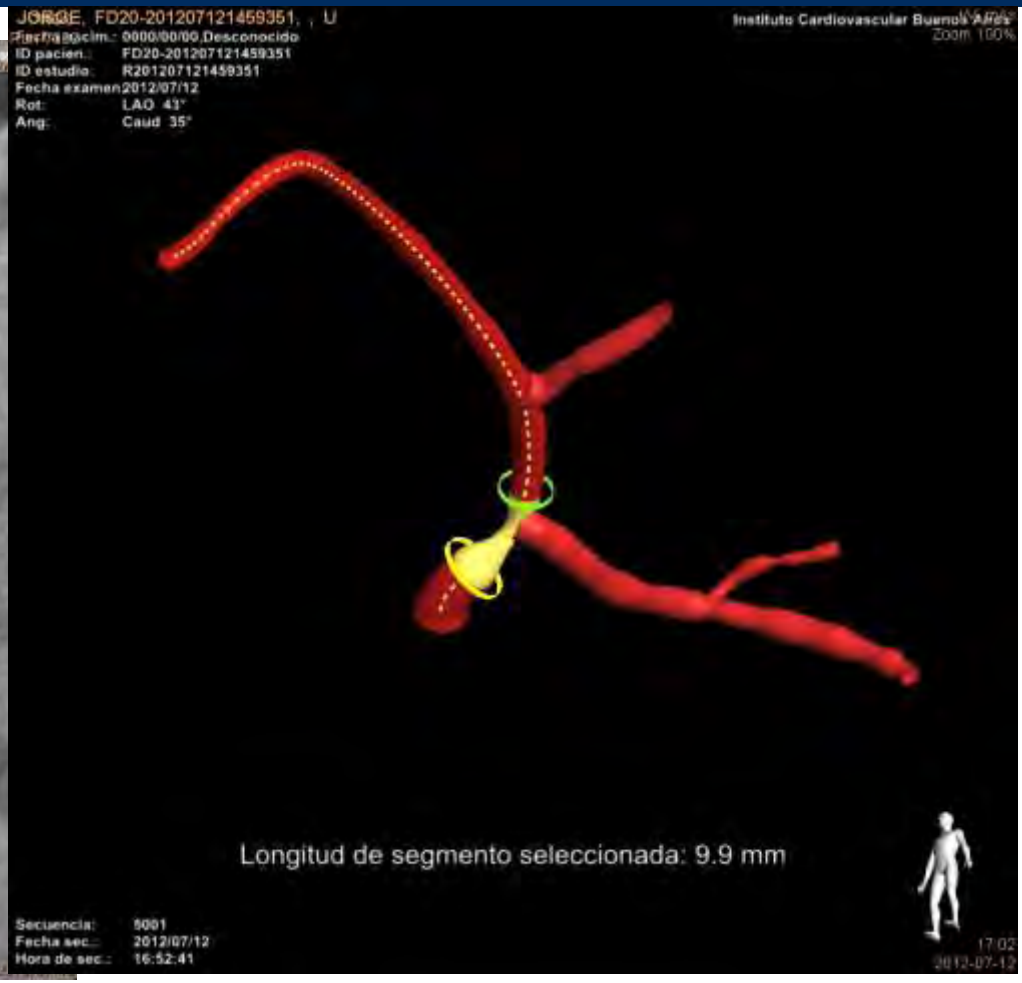
Enfermedad de Tronco de Coronaria Izquierda



ICBA Instituto Cardiovascular de Buenos Aires

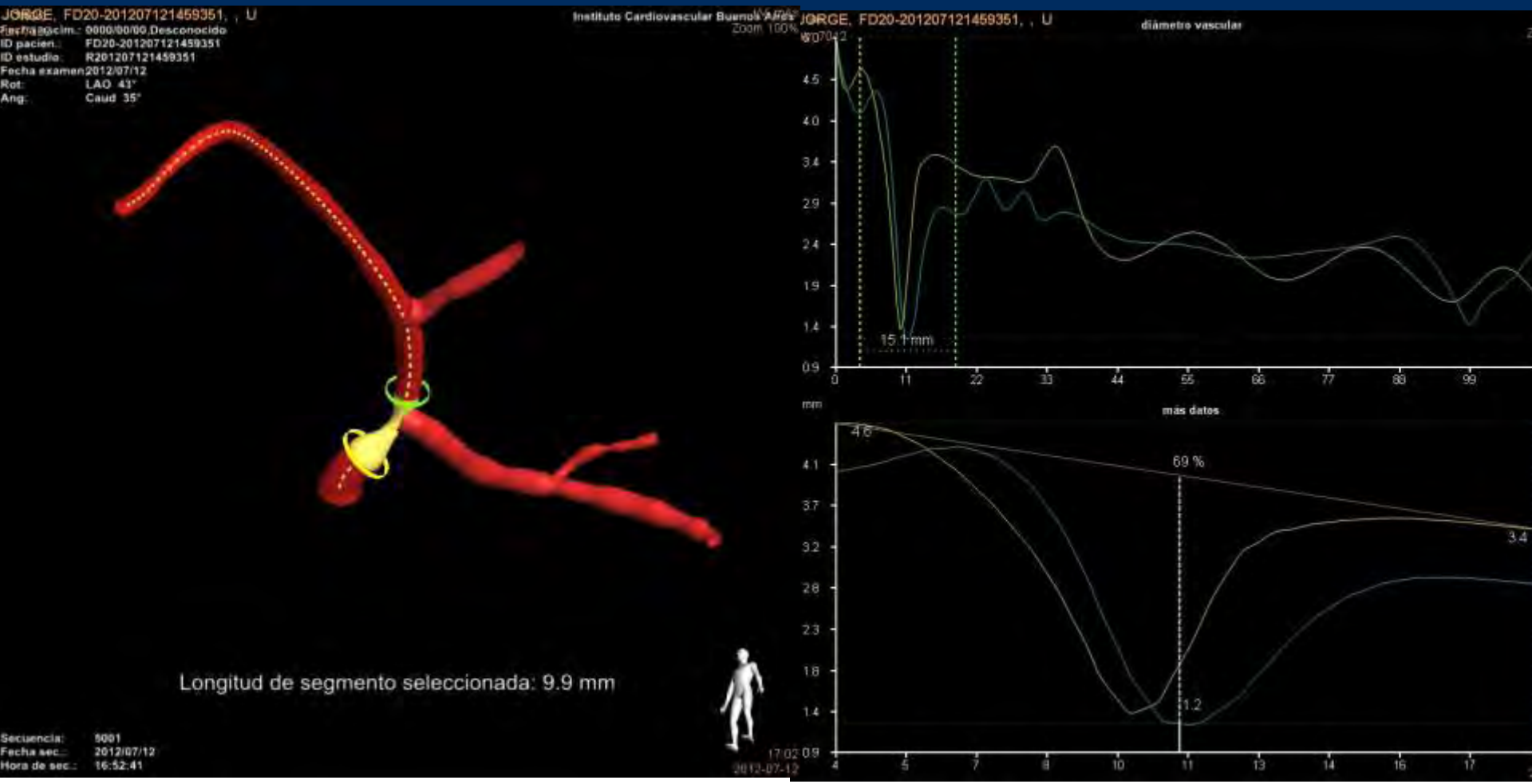
Enfermedad de Tronco de Coronaria Izquierda





ICBA Instituto Cardiovascular de Buenos Aires

Enfermedad de Tronco de Coronaria Izquierda



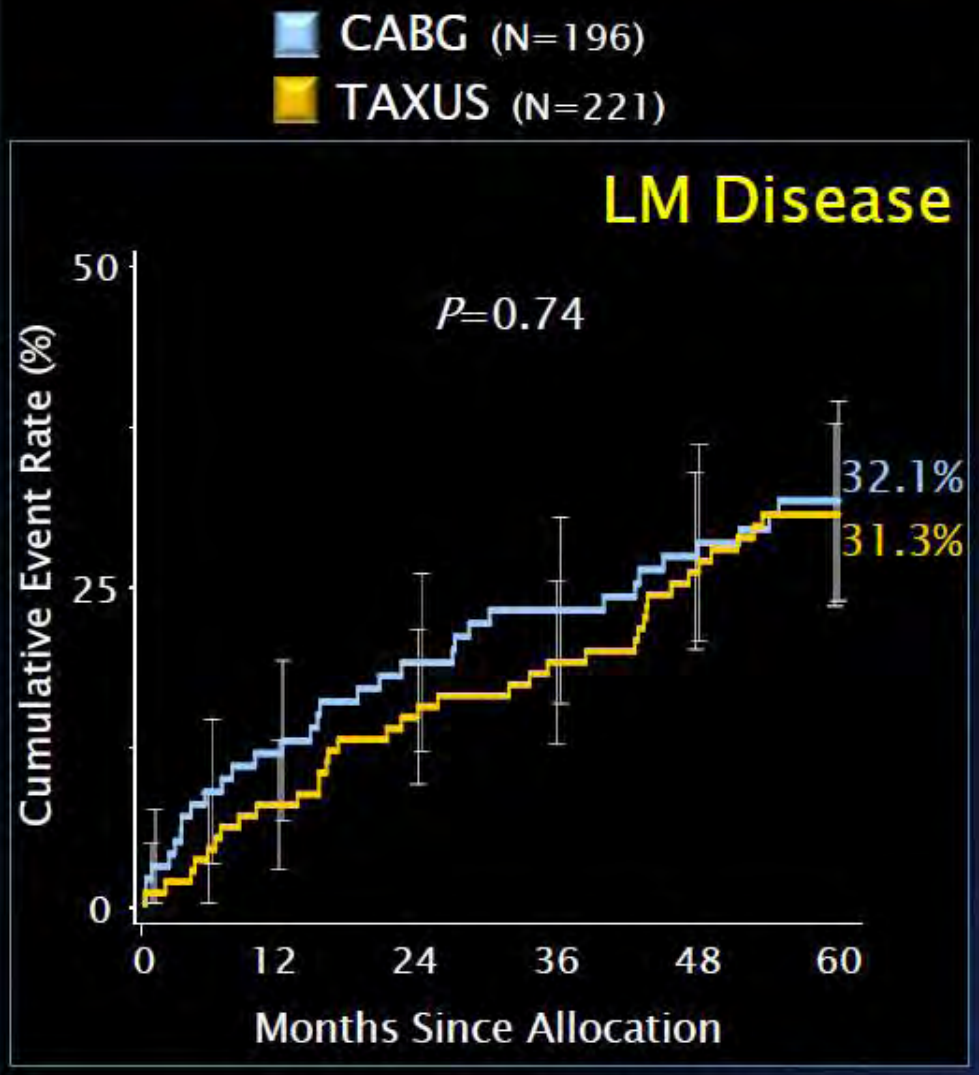
ICBA Instituto Cardiovascular de Buenos Aires

Enfermedad de Tronco de Coronaria Izquierda

ICBA

MACCE to 5 Years by SYNTAX Score Tercile *Low to Intermediate Scores (0–32)*

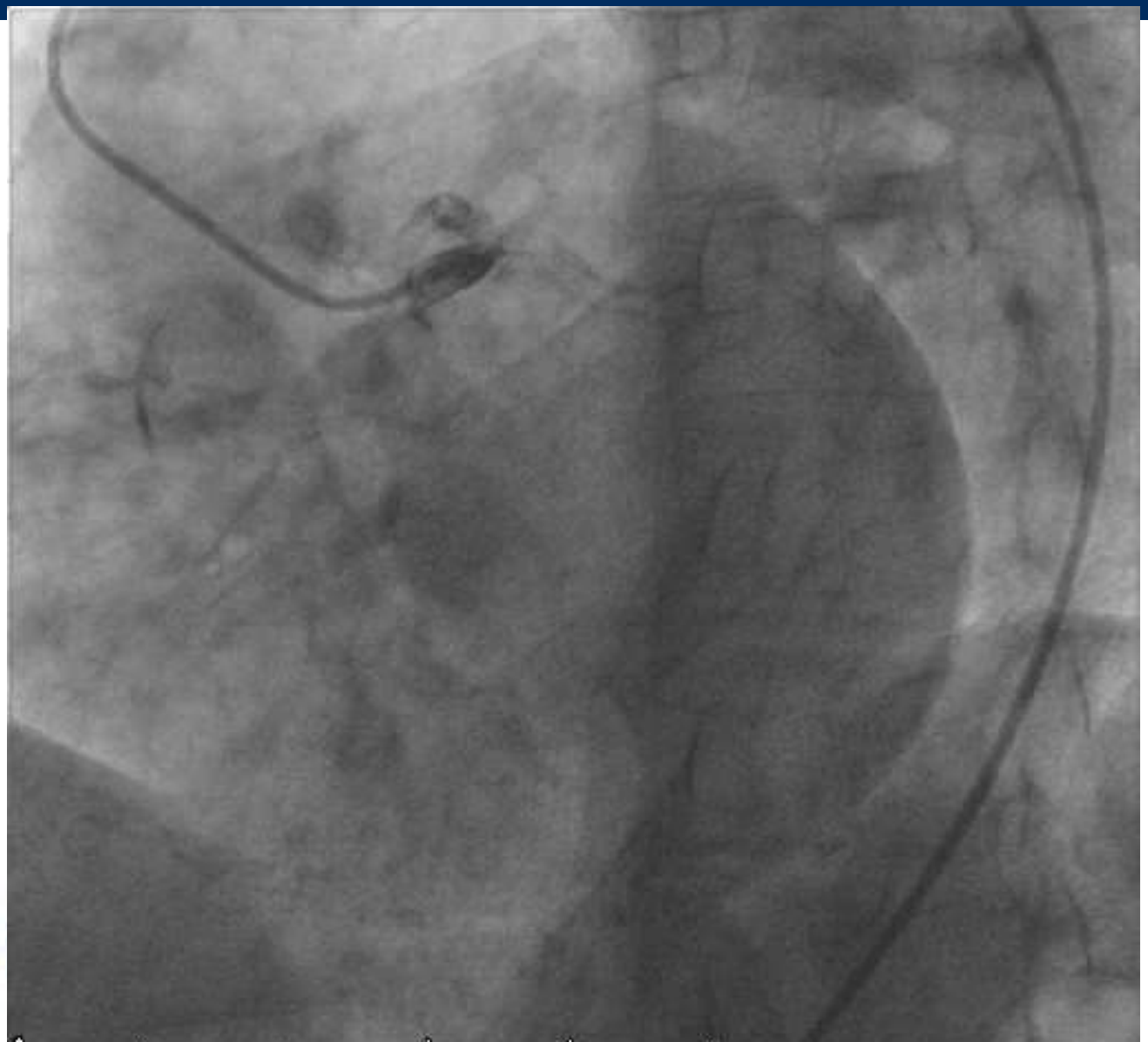
SYNTAX



	CABG	PCI	*P* value
Death	15.1%	7.9%	0.02
CVA	3.9%	1.4%	0.11
MI	3.8%	6.1%	0.33
Death, CVA or MI	19.8%	14.8%	0.16
Revasc.	18.6%	22.6%	0.36

Serruys PW et al. Lancet 2013;381:629–38

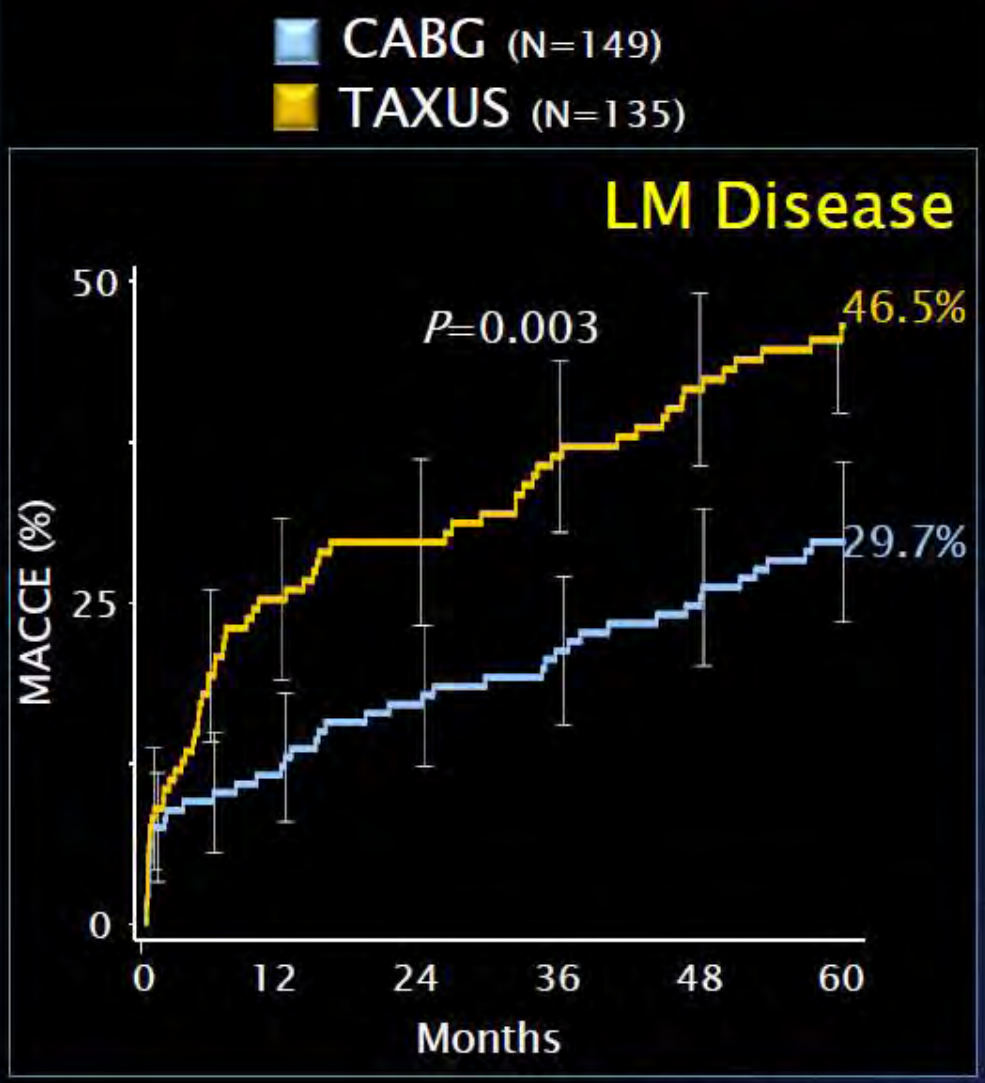
Angiografía de TCI complejo SYNTAX 46



ICBA

MACCE to 5 Years by SYNTAX Score Tercile *High Scores ≥33*

SYNTAX



	CABG	PCI	*P* value
Death	14.1%	20.9%	0.11
CVA	4.9%	1.6%	0.13
MI	6.1%	11.7%	0.13
Death, CVA or MI	22.1%	26.1%	0.40
Revasc.	11.6%	34.1%	<0.001

Serruys PW et al. Lancet 2013;381:629-38

2012 SIHD / 2011 PCI Guidelines: Left Main CAD Revascularization

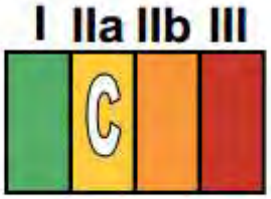
CABG to improve survival is recommended for patients with significant (≥50% diameter stenosis) left main coronary artery stenosis.

PCI to improve survival is reasonable as an alternative to CABG in selected stable patients with significant (≥50% diameter stenosis) ULMCA with **both**:

- Anatomic conditions associated with a low risk of PCI procedural complications and a high likelihood of good long-term outcome (e.g., a low SYNTAX score [≤22], ostial or trunk left main CAD)
- Clinical characteristics that predict a significantly increased risk of adverse surgical outcomes (e.g., STS-predicted risk of operative mortality 5%).

2012 SIHD / 2011 PCI Guidelines: Left Main CAD Revascularization

PCI to improve survival is reasonable in patients with UA/NSTEMI when an unprotected left main coronary artery is the culprit lesion and the patient is not a candidate for CABG.

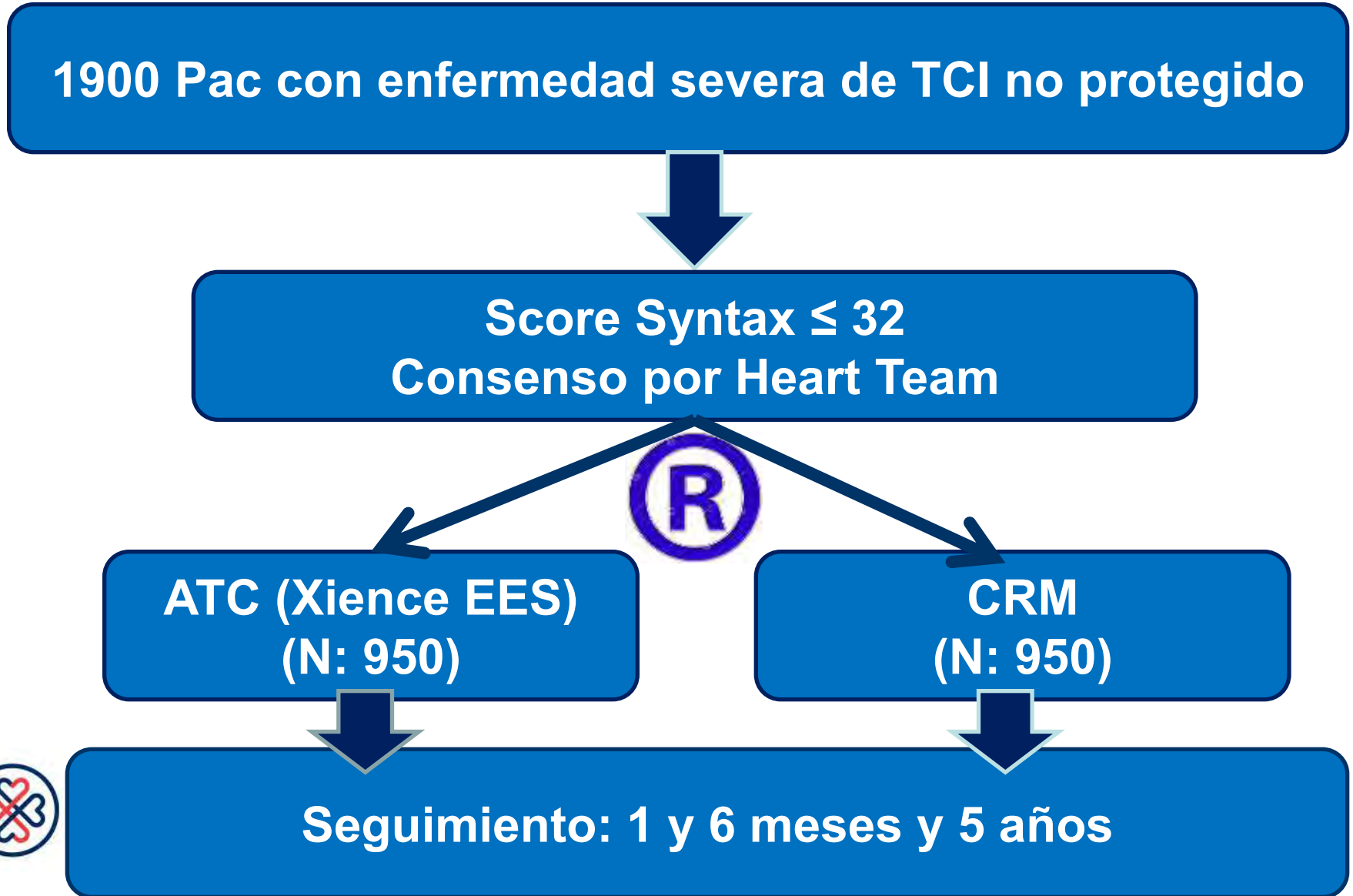


PCI to improve survival is reasonable in patients with acute STEMI when an unprotected left main coronary artery is the culprit lesion, distal coronary flow is less than TIMI grade 3, and PCI can be performed more rapidly and safely than CABG.

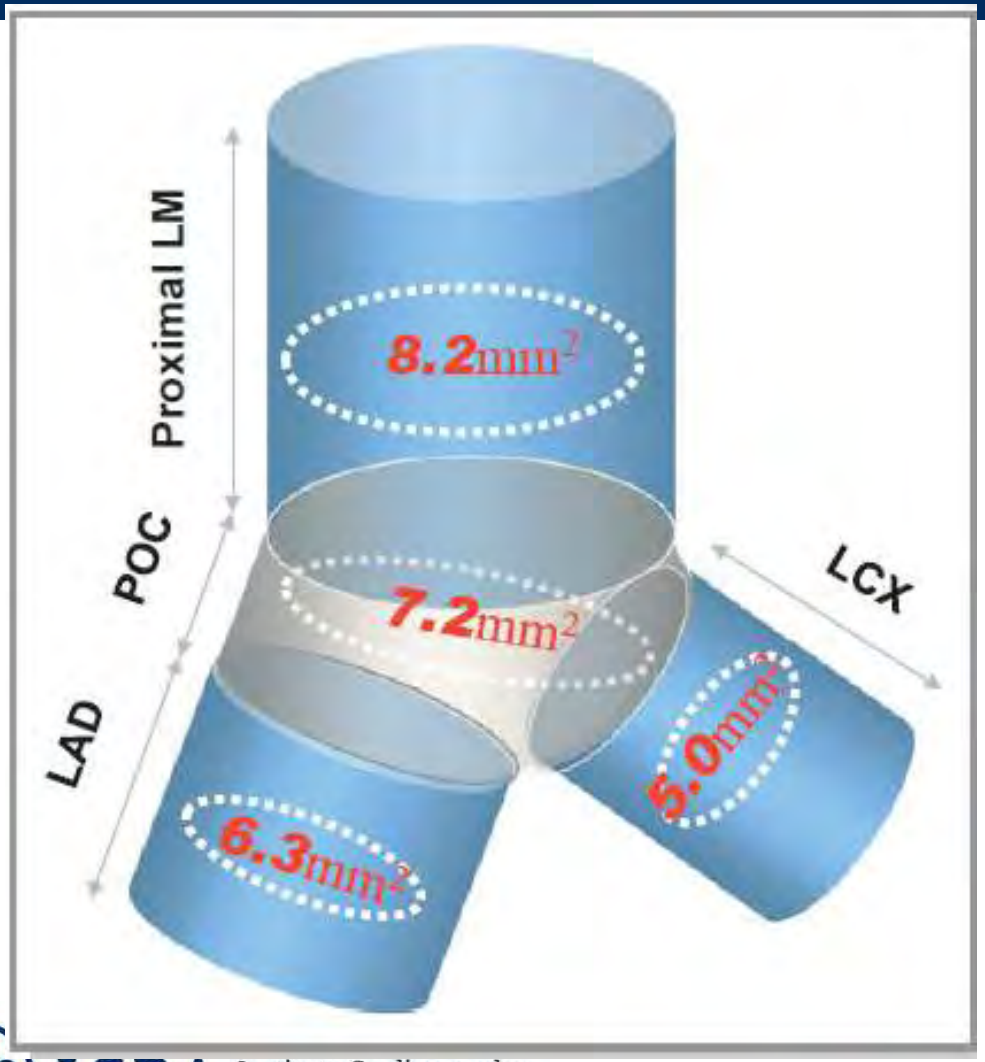
Estudios en curso…

	NOBLE	EXCEL
N de PAC, centros	1200, 26 centros de EEUU	1900, 126 centros de 17 países
DES	Biomatrix BES	Xience EES
Lesión de TCI	> 50% o FFR ≤ 0.80	≥ 70 % o ≥ 50% < 70 + FFR ≤ 0.80 o IVUS MLA ≤ 6 mm2 o test funcional con evidencia de isquemia extensa
Otros criterios anatómicos	≤ 3 lesiones no complejas (Excluye, > 25 mm de longitud, CTO, bifurcaciones con 2 stents, calcificación o tortuosidad severa)	Syntax Score ≤ 32
Endpoint Primario	Muerte, ACV, IAM, revascularización	Muerte, ACV, IAM
Seguimiento	5 años	5 años

EXCEL: Diseño



Prediction of Restenosis and MACE



3-year mortality was significantly lower for IVUS guidance compared with angiography guidance

4.7% versus 16.0%, P=0.048; hazard ratio 0.39

ICBA Instituto Cardiovascular de Buenos Aires

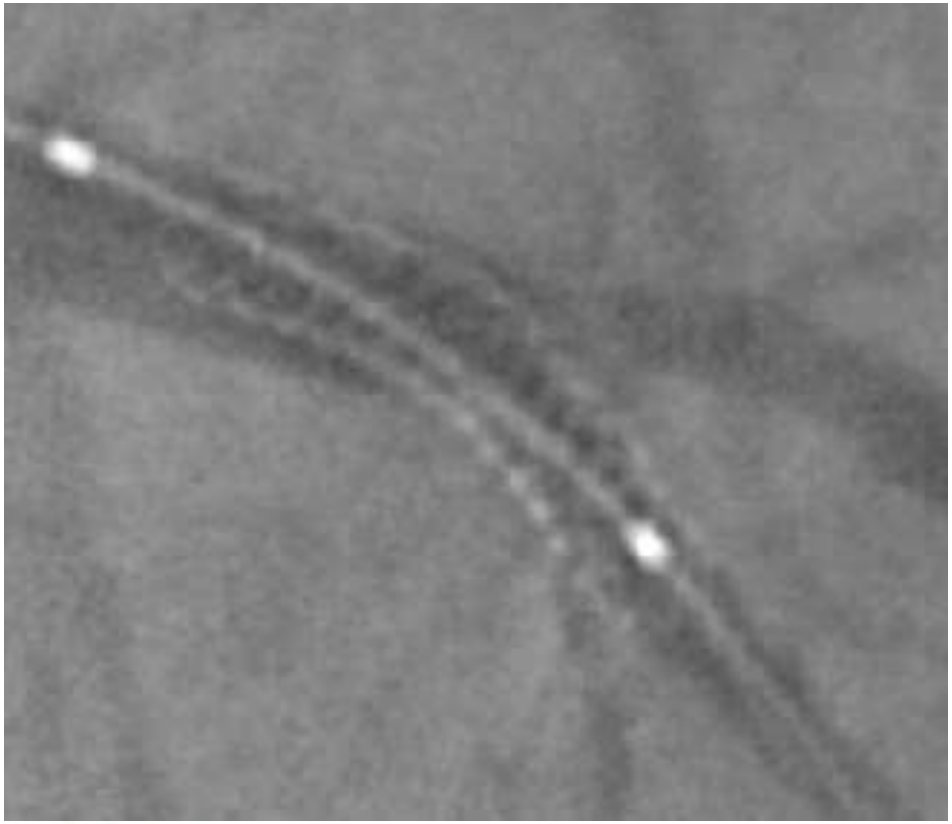
J Am Heart Assoc. 2012 Dec;1(6):e004556.

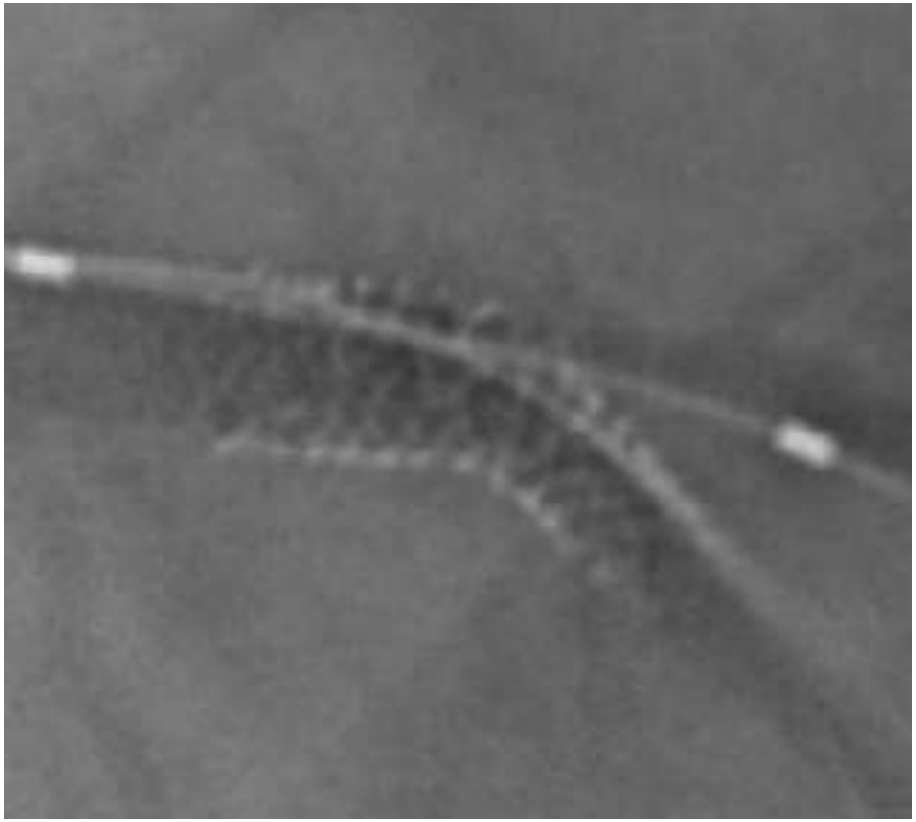
Globalization versus Tailoring

ICBA

Angioplastia en TCI simple
SYNTAX 23

Aposición del stent proximal



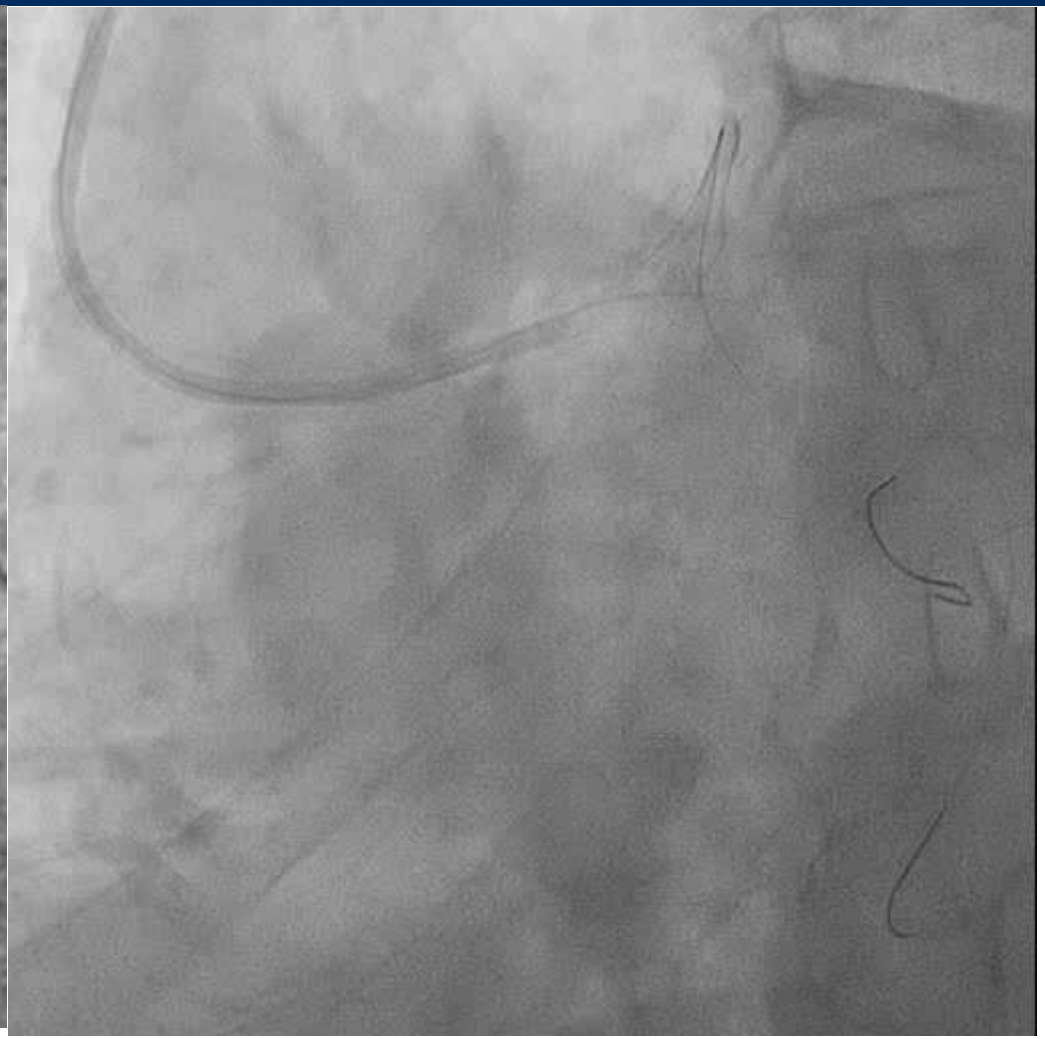


ICBA Instituto Cardiovascular de Buenos Aires

Mini-Crush versus T-Stenting: Angulación

ICBA Instituto Cardiovascular de Buenos Aires

Cullotte: StentBoost y angiografia



ICBA Instituto Cardiovascular de Buenos Aires

Angioplastia en anatomias complejas

ICBA Instituto Cardiovascular de Buenos Aires

Enfermedad severa del TCI

Se debe considerar ATC:

TCI ostial-medio + Syntax bajo o intermedio (≤ 32) + Buena FSVI

TCI distal + alto riesgo quirúrgico

Añosos

Shock cardiogénico

No DBT

STEMI

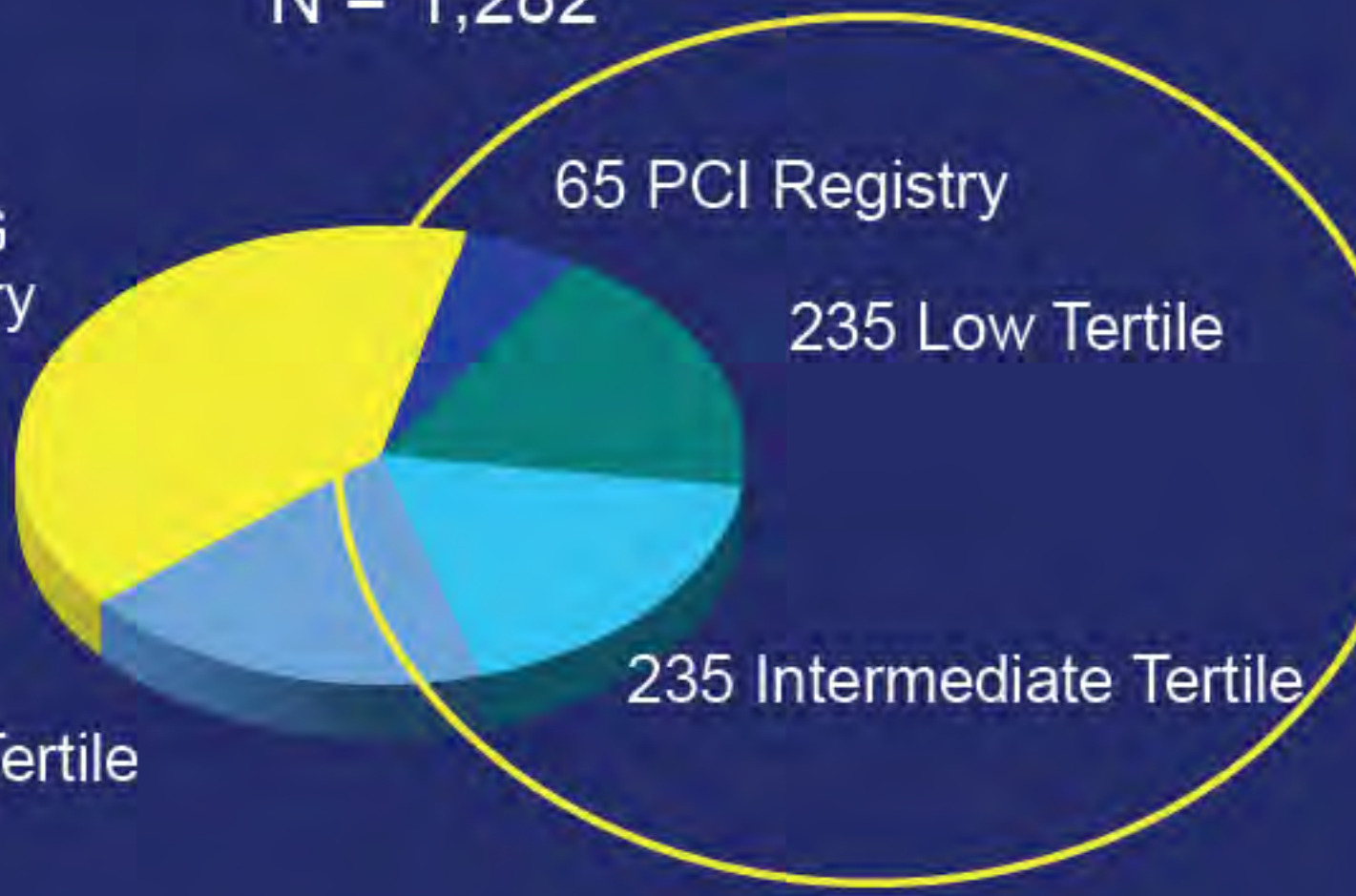
EPOC severo

Malos lechos

ICBA

SYNTAX
All Left Main Patients

N = 1,282



PCI may be applicable for 535/1282 = 42% of all LM patients

Se debe considerar CRM:

Deterioro de la FSVI

Syntax Score alto (≥ 33)

Diabéticos

STS < 5%

Enfermedad de múltiples vasos

ICBA Instituto Cardiovascular de Buenos Aires

Conclusiones

- La CRM continúa siendo el tratamiento de elección en pacientes con enfermedad de TCI (mortalidad quirurgica <3%)
- Sin embargo, la angioplastia es una alternativa para pacientes de bajo (<22)/moderado(<32) riesgo anatómico o alto riesgo quirurgico (STS >5%)
- DES de ultima generacion con técnicas adaptadas a cada morfología y presentación clínica

Avances en la ATC a Tronco de CI

Imagenología

Nuevos diseños de stents

Farmacología intervencionista

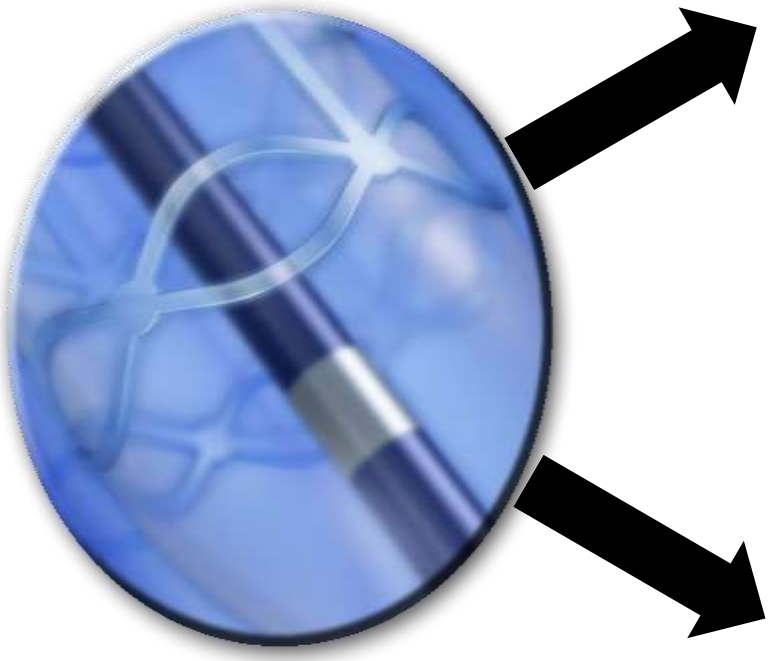
Experiencia técnica

ICBA Instituto Cardiovascular de Buenos Aires

Gracias por su atención

fcura@icba.com.ar

Stents bioabsorvibles



Plataformas Bioabsorvibles

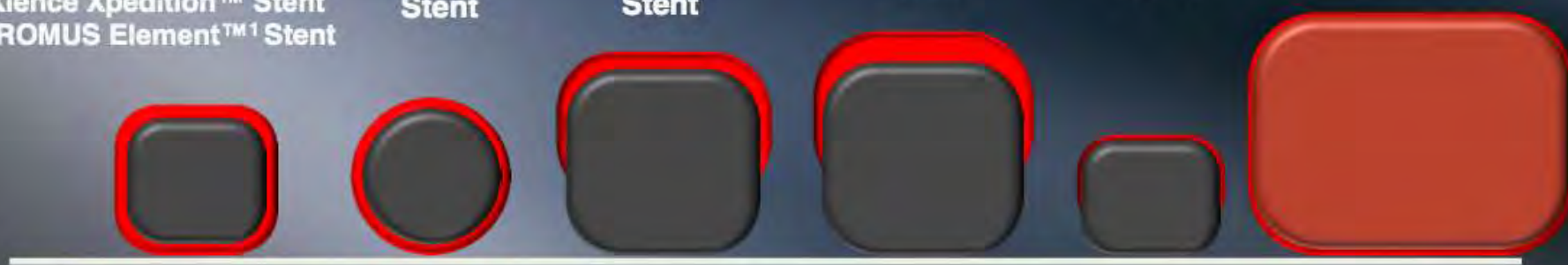
- ✓Ácido poliláctico (PLLA)
- ✓Policarbonato de tirosina
- ✓Magnesio

Polímero sintéticos Bioabsorvible

- ✓PLA, PGA, PLGA, PCL
- ✓Polliortoesteres
- ✓Polidioxanos
- ✓Policarbonatos
- ✓Polifosfacenos

ICBA Instituto Cardiovascular de Buenos Aires

	Durable Polymer Coated Stents		Bioabsorbable Polymer Coated Stents			Bioabsorbable Stent
	Xience V™ Stent Xience Prime™[1] Stent Xience Xpedition™ Stent PROMUS Element™[1] Stent	Resolute Integrity™[2] Stent	BioMatrix Flex™[3] Stent	Nobori™[4] Stent	SYNERGY[1] II Stent	ABSORB™ BVS[5]



Strut Thickness	81 μm (0.0032")	89 μm (0.0035")	120 μm (0.0047")	125 μm (0.0049")	74 μm* (0.0029")	150 μm (0.0059")
Polymer Coating Type & Thickness	Conformable 7-8μm / side	Conformable 6μm / side	Abluminal 11μm	Abluminal 20μm	Abluminal 3-4μm	Conformable 3μm / side

*Strut thickness for small vessel model is 74μm, Workhorse model is 79μm and large vessel is 81μm. Boston Scientific data on file. Representative drawings are to scale.

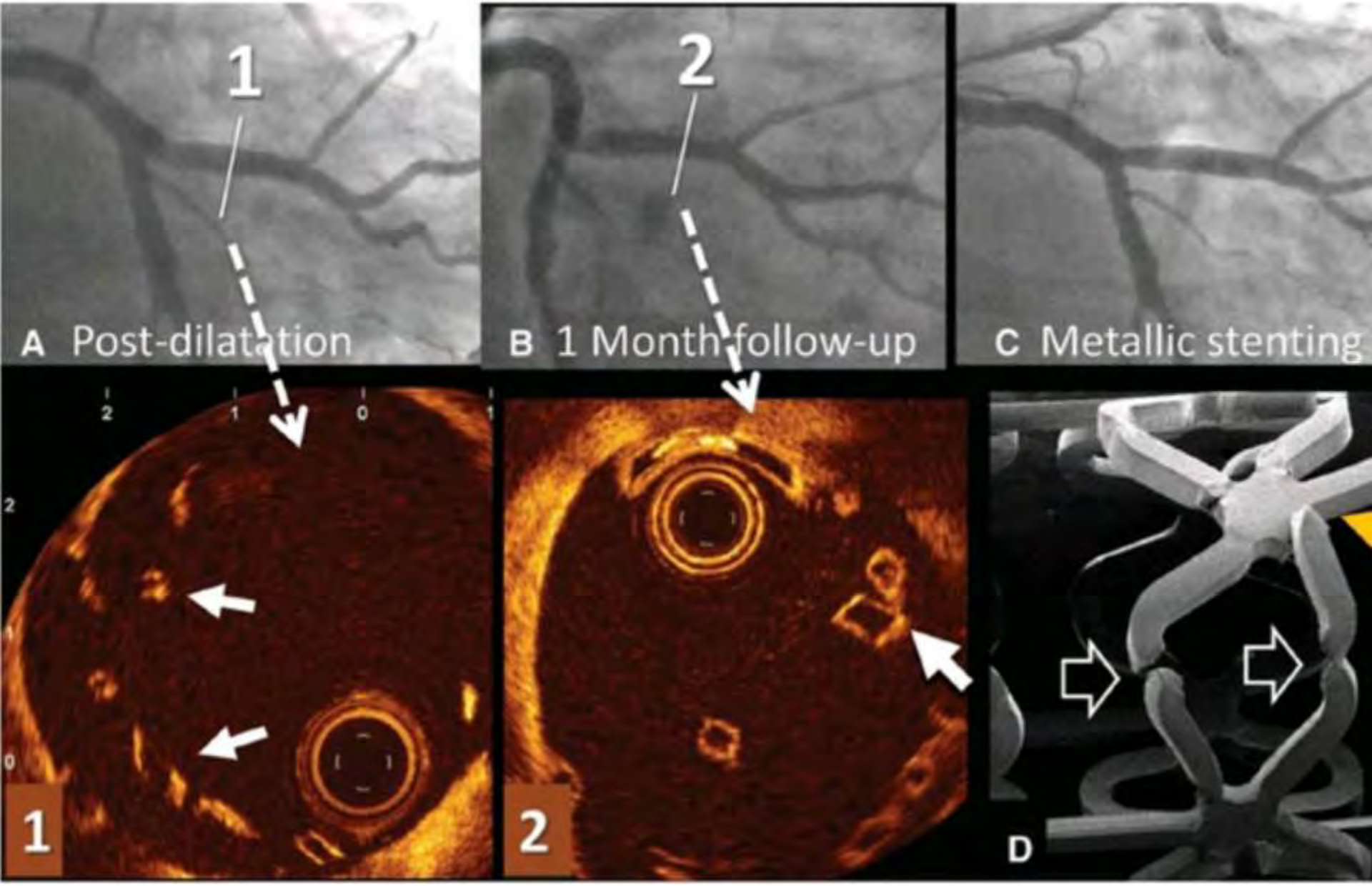
Representative drawings. [1] Wilson GW, [illegible] and Soucy NV, EuroIntervention 2010;6:630-637. [2] Resolute Integrity US dfu Rev1B, and Adapted from Martin B. Leon presented at JIM 2011. [illegible] American Heart Journal November 2011; 162:922–931 . [4] Otsuka Y, *Catheterization and Cardiovascular Interventions* 2011;78:1078–1085. [5] [illegible] 779-797. Bench test results may not necessarily be indicative of clinical performance.

This material is not intended for use in the US or Japan. Please see glossary.

Bioresorbable Polymeric Vascular Scaffolds : A Cautionary Tale

John A. Ormiston, Frederic De Vroey, Patrick W. Serruys and Mark W.I. Webste

Circ Cardiovasc Interv 2011;4;535-538;



Extensión en la indicación

Infarto agudo de miocardio

Fey < 30 %

Cl. Creatinina <60 ml/min

Restenosis

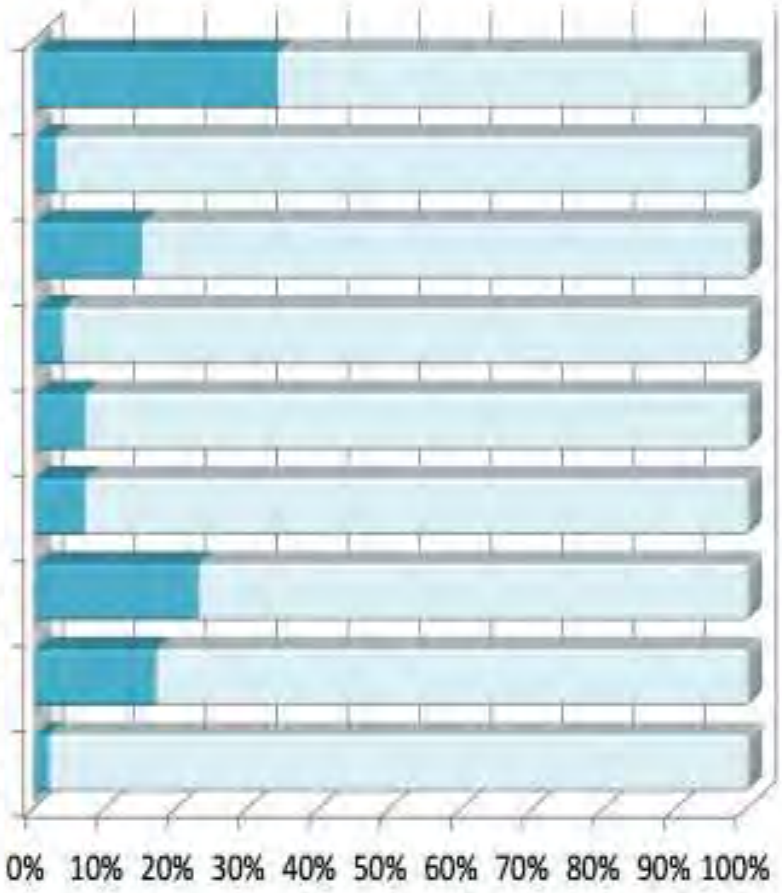
Ostiales

Oclusiones totales

Bifurcaciones

L trombótica

TCI

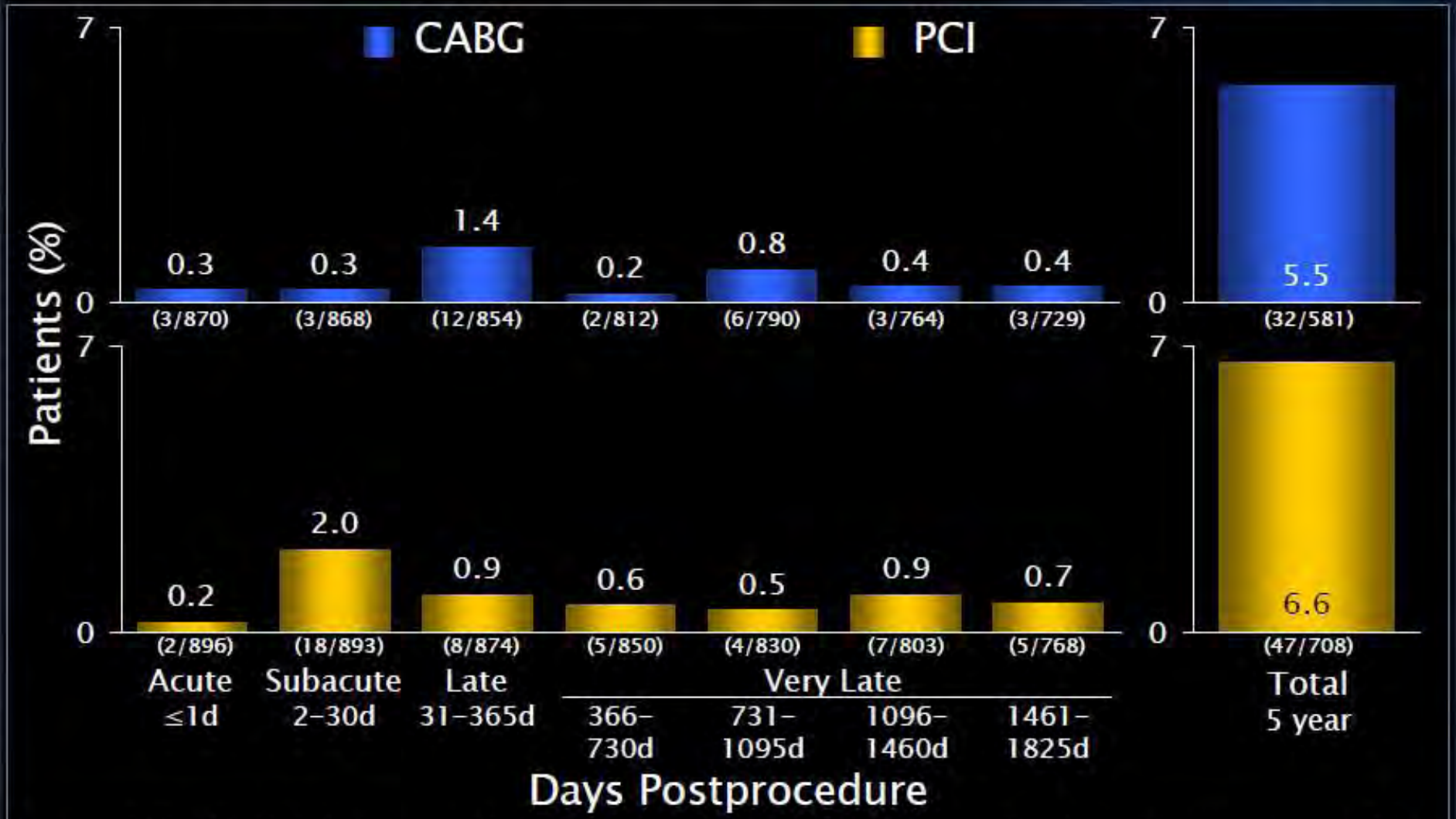


ICBA Instituto Cardiovascular de Buenos Aires

AM Heart J. 2012;164:654-63

Per Protocol Graft Occlusion or Stent Thrombosis to 5 Years *(Per Patient Binary Rates)*

SYNTAX

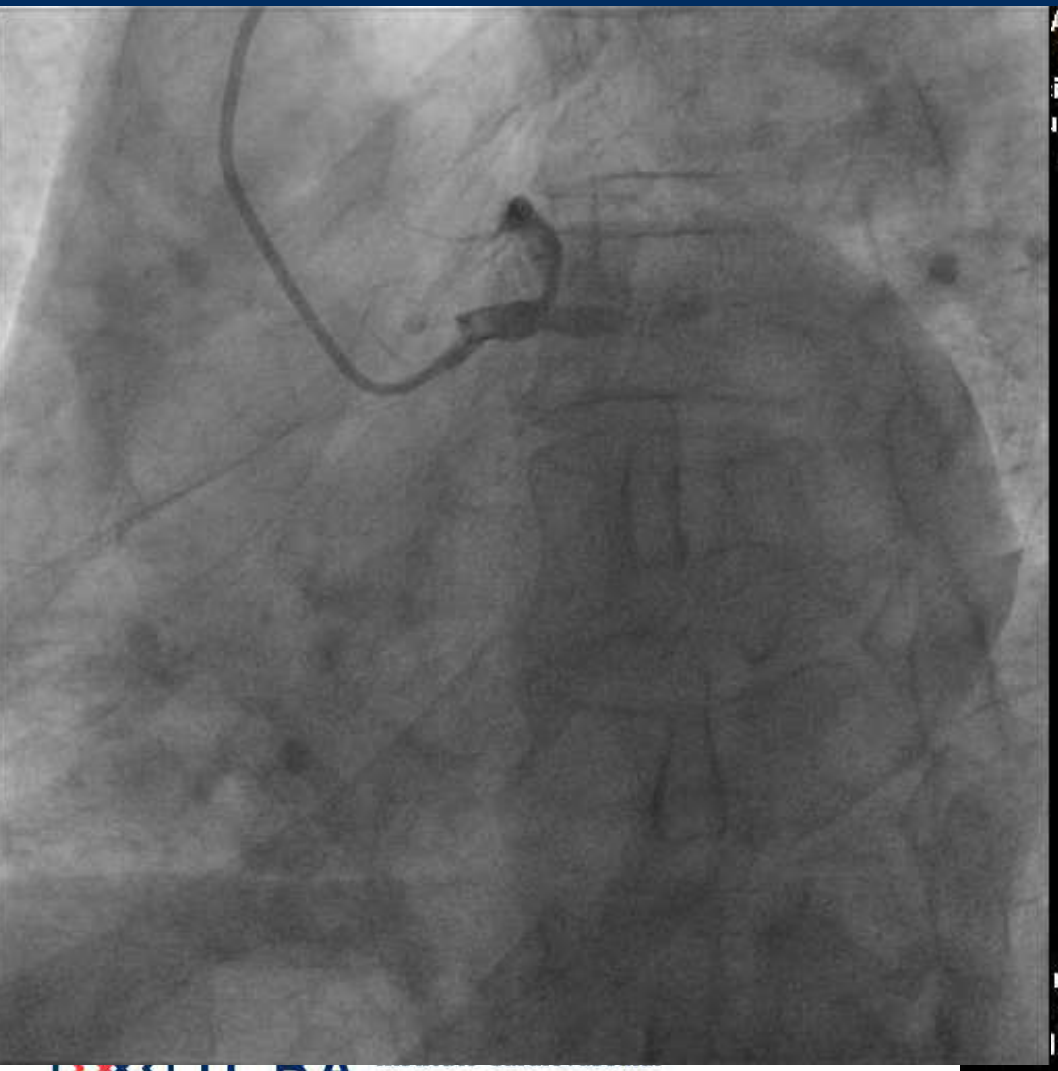


Per protocol GO and ST: clinical presentation of ACS with angiographically confirmed occlusion within/adjacent to a previously successfully treated lesion/graft during follow-up and/or Q-wave MI in the treated vessel territory within 30 d of the index procedure. Numbers are per patient, 1PCI patient had an ST 1d and 6d post-procedure; therefore, counted in the ≤1d and 2–30d intervals but only once in the total.

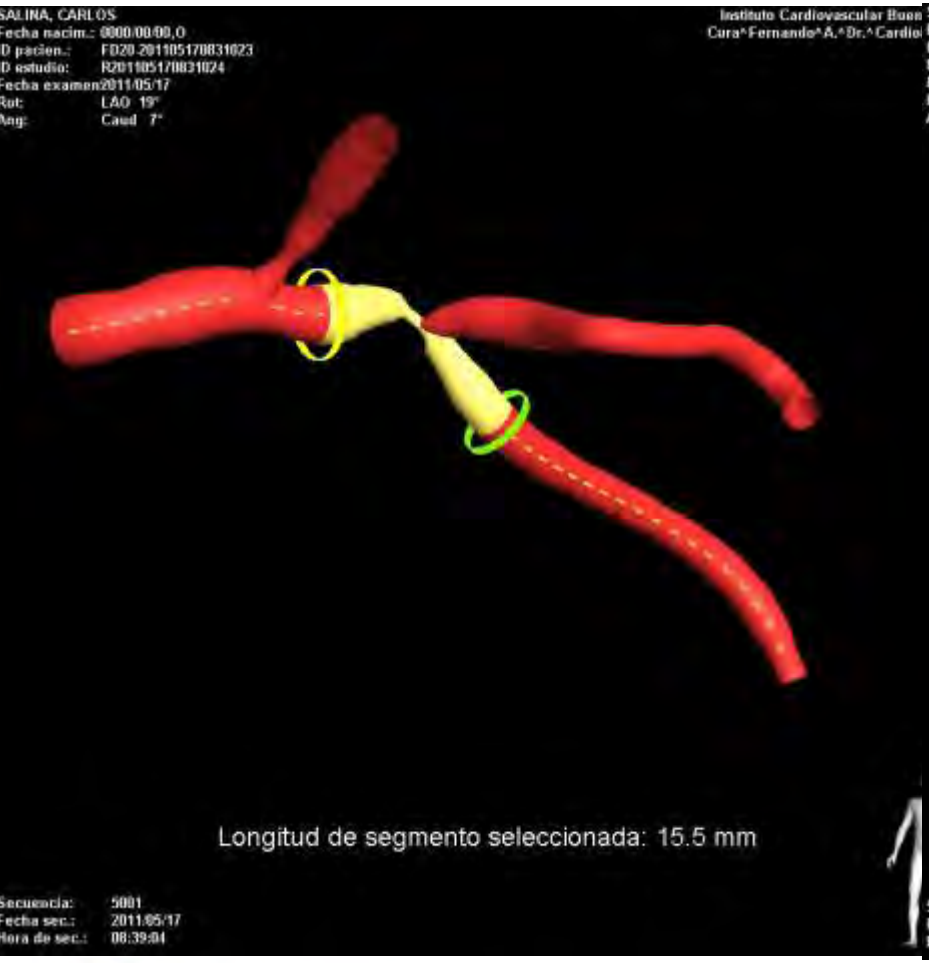
Aspectos técnicos de las bifurcaciones coronarias

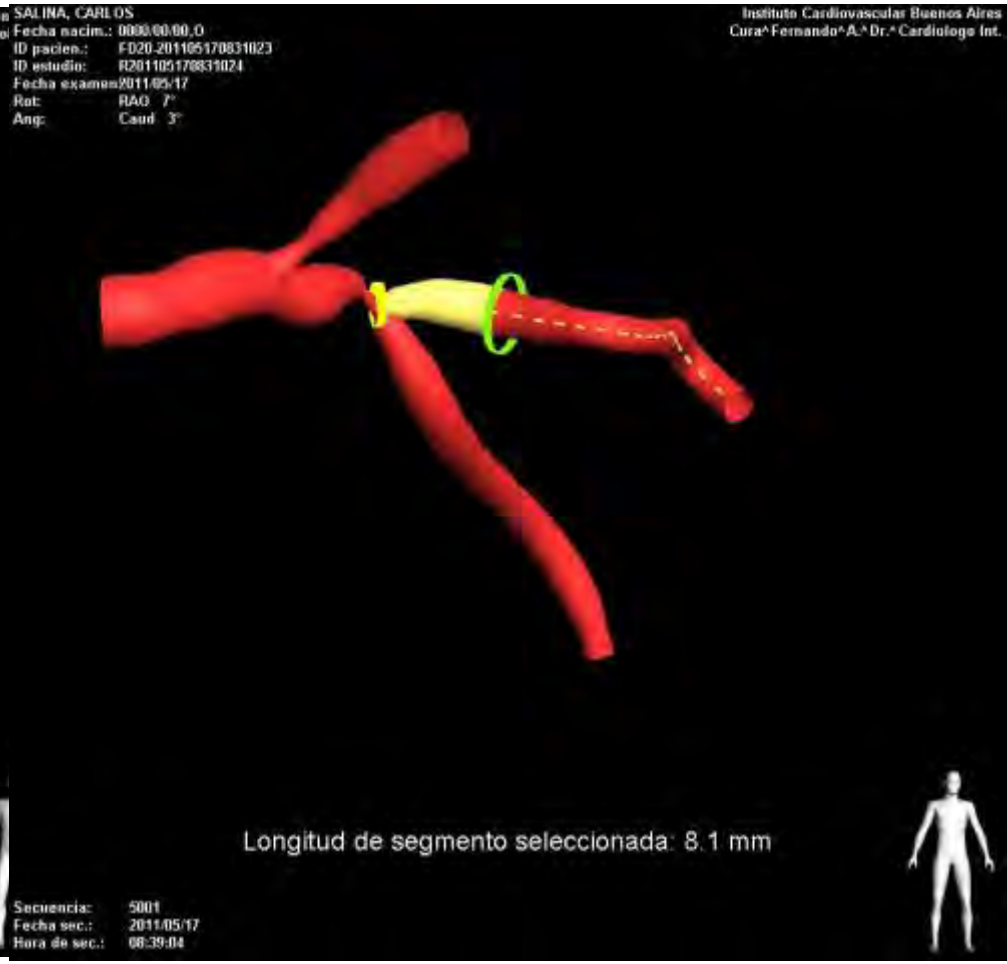
ICBA de Buenos Aires

Angiografía de la CI con reconstruccion 3D



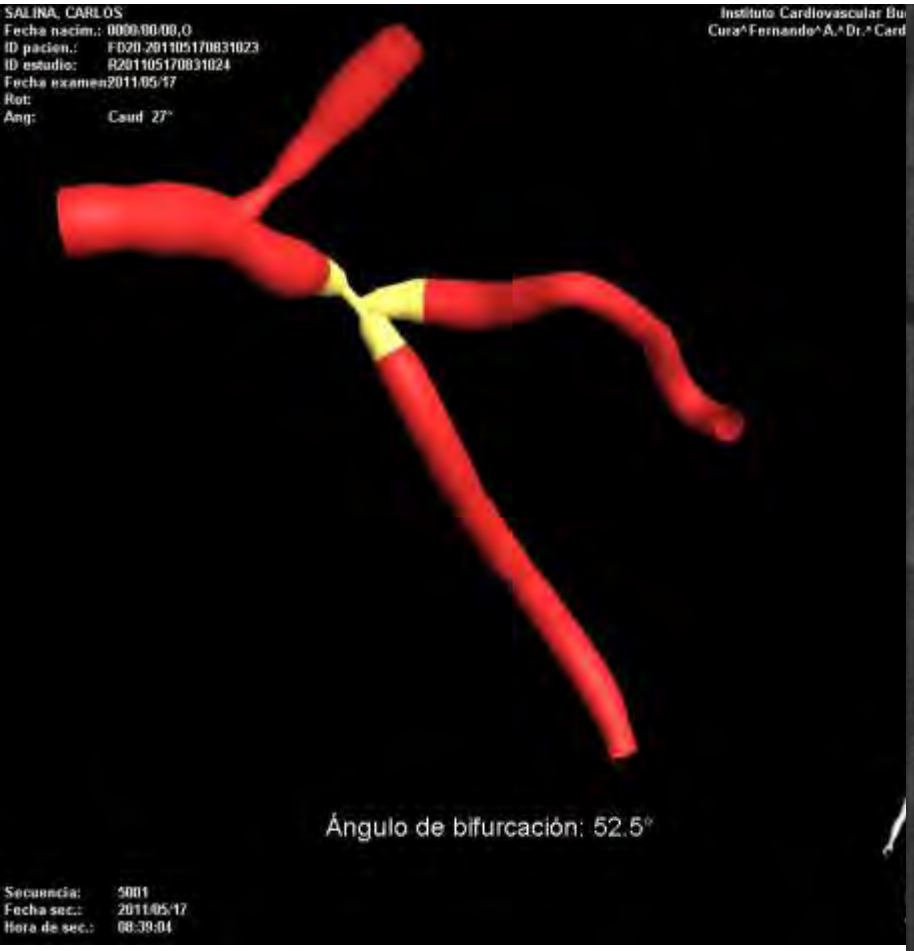
Evaluación de dimensiones con stent virtual





ICBA Instituto Cardiovascular de Buenos Aires

Tecnica “customizada”



ICBA Instituto Cardiovascular de Buenos Aires