XXVII Jornadas SOLACI -- 9º Región Andina

8 / 9 de Octubre 2015

LIMA - PERU

Miniconferencia:
Estado actual de la Intervención en bifurcaciones

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Hospital Cardiológico Costantini
Fundação Francisco Costantini
Curitiba - Brasil

Jueves 8 de Octubre 2015; 14h45-15h00

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Conflito de Interesse: Costantino R Costantini

MEDICO – CARGIOLOGO - INTERVENCIONISTA

Coronary Bifurcation

Clinical Doubts

MORTAL RISK OF INTERVENTION IS MORE

CLOSELY ASSOCIATED WITH

COMPLEX PATIENTS

THAN WITH

COMPLEX LESIONS

CLINICAL RESPONSIBILITY !!!

Complications of Interventional Cardiology - "Beyond Your Wildest Imagination"
Barry D. Rutherford, MD

Percutaneous coronary intervention for coronary bifurcation disease: consensus from the first 10 years of the European Bifurcation Club meetings

Coronary bifurcations account for 15-20% of all percutaneous coronary interventions (PCI) and remain one of the most challenging lesions in interventional cardiology in terms of procedural success rate as well as long-term cardiac events. The optimal management of bifurcation lesions is still, despite a fast growing scientific literature in the field, the subject of considerable debate, where one of the concerns is the potential increased risk of late stent thrombosis associated with treatment complexity[1].

EuroIntervention. 2006;2:149-53
EuroIntervention 2014;10:545-60

BIFURCAÇÃO
IVUS

CÁLCIO

ROTA

SEM CÁLCIO

BALÃO/BALÃO
STENT/BALÃO
STENT/STENT

VASOS <2.5mm
KISSING BALLOON
KISSING GUIA

VASOS>2.5 <3.0mm
KISSING BALLOON
STENT ?

VASO > 3.0mm
KISSING BALLOON

RAMO LATERAL
S/ LESÃO RESIDUAL
STENT/ BALÃO

RAMO LATERAL
>2.5mm COM/ LESÃO
RESIDUAL OU DISSECÇÃO
STENT/ STENT

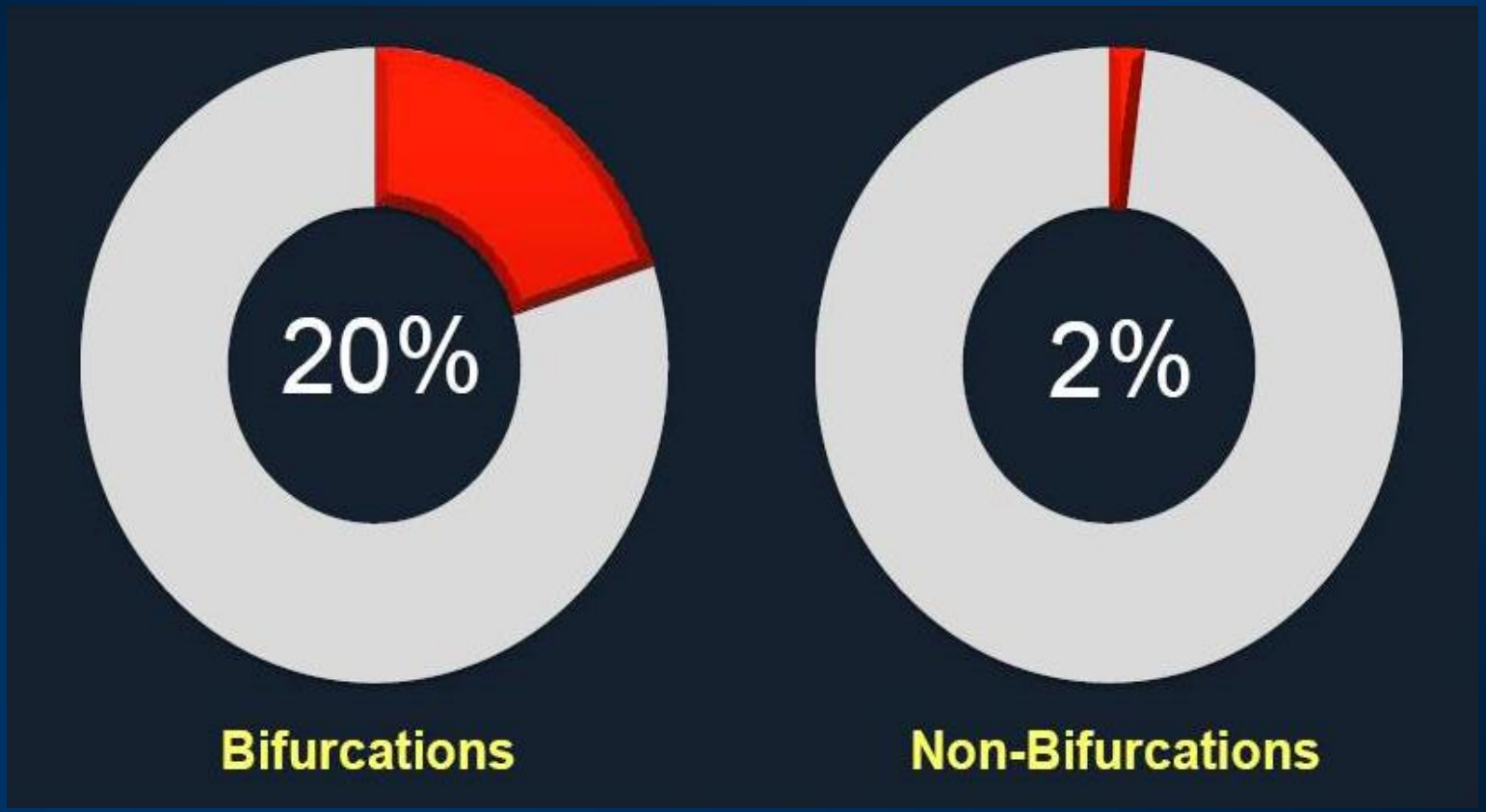
ANGULO <90⁰
CULOTTES

ANGULO RETO
"T"

CLÍNICA CARDIOLÓGYCA C. COSTANTINI

In-Hospital Mortality of Coronary Bifurcation ST

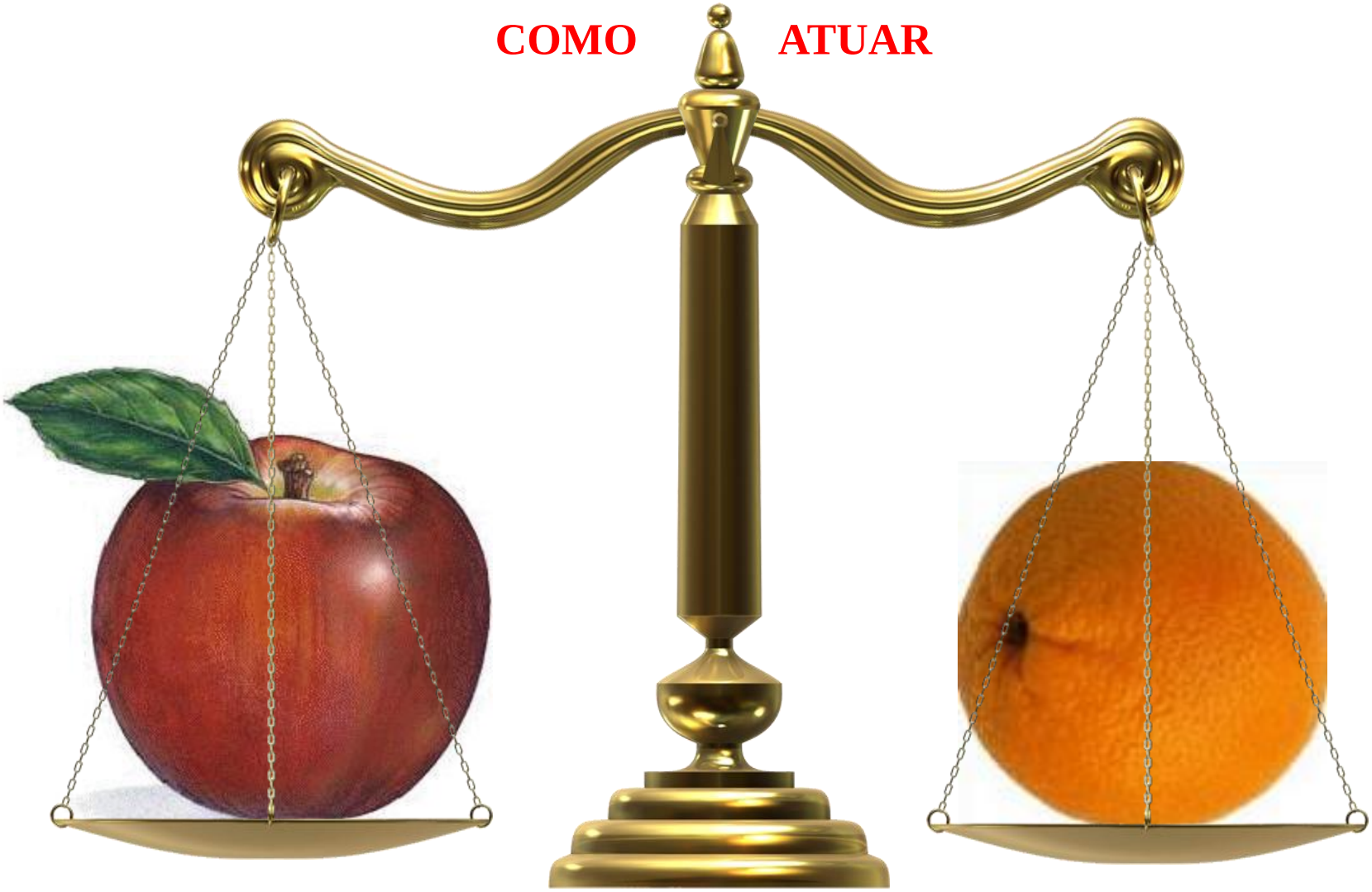
173 cases of stent thrombosis from 5 US centers between 2005 and 2010



Armstrong EJ, et al. JACC Cardiovasc Interv. 2012;5:57-63

SIDE BRANCH

COMO ATUAR



I) Importancia Anatomica

II) Localizacao e Extensao da Lesao

Lesao Ostial > 10 mm de extensao > 2.5mm de diametro

Abordagem das Bifurcações 1 vs. 2 stents

BIFURCAÇÃO

1. Colombo. Randomized study of the crush technique versus provisional side-branch stenting in true coronary bifurcations: the CACTUS Study. Circulation 2009;119(1):71-8.

2. Brar. Bifurcation stenting with drug-eluting stents: a systematic review and meta-analysis of randomised trials. EuroIntervention. 2009 Sep;5(4):475-84.

3. Zamani. Long-term risk of clinical events from stenting side-branches of coronary bifurcation lesions with drug-eluting and bare-metal stents: An observational meta-analysis. Catheter Cardiovasc Interv. 2010 Sep 7.

4. Athappan. True coronary bifurcation lesions: meta-analysis and review of literature. J Cardiovasc Med (Hagerstown). 2010 Feb;11(2):103-10.

5. Hildick-Smith. Randomized Trial of Simple Versus Complex Drug-Eluting Stenting for Bifurcation Lesions: The British Bifurcation Coronary Study: Old, New, and Evolving Strategies. Circulation 2010;121:1235-43.

6. Niccoli. Coronary bifurcation lesions: to stent one branch or both? A meta-analysis of patients treated with drug eluting stents. Int J Cardiol. 2010 Feb 18;139(1):80-91.

7. Cheng. Randomized study on T stenting and small protrusion technique versus simple stenting for patients with coronary artery bifurcation lesions and with big size side branch. Zhonghua Xin Xue Guan Bing Za Zhi. 2010 Feb;38(2):131-4.

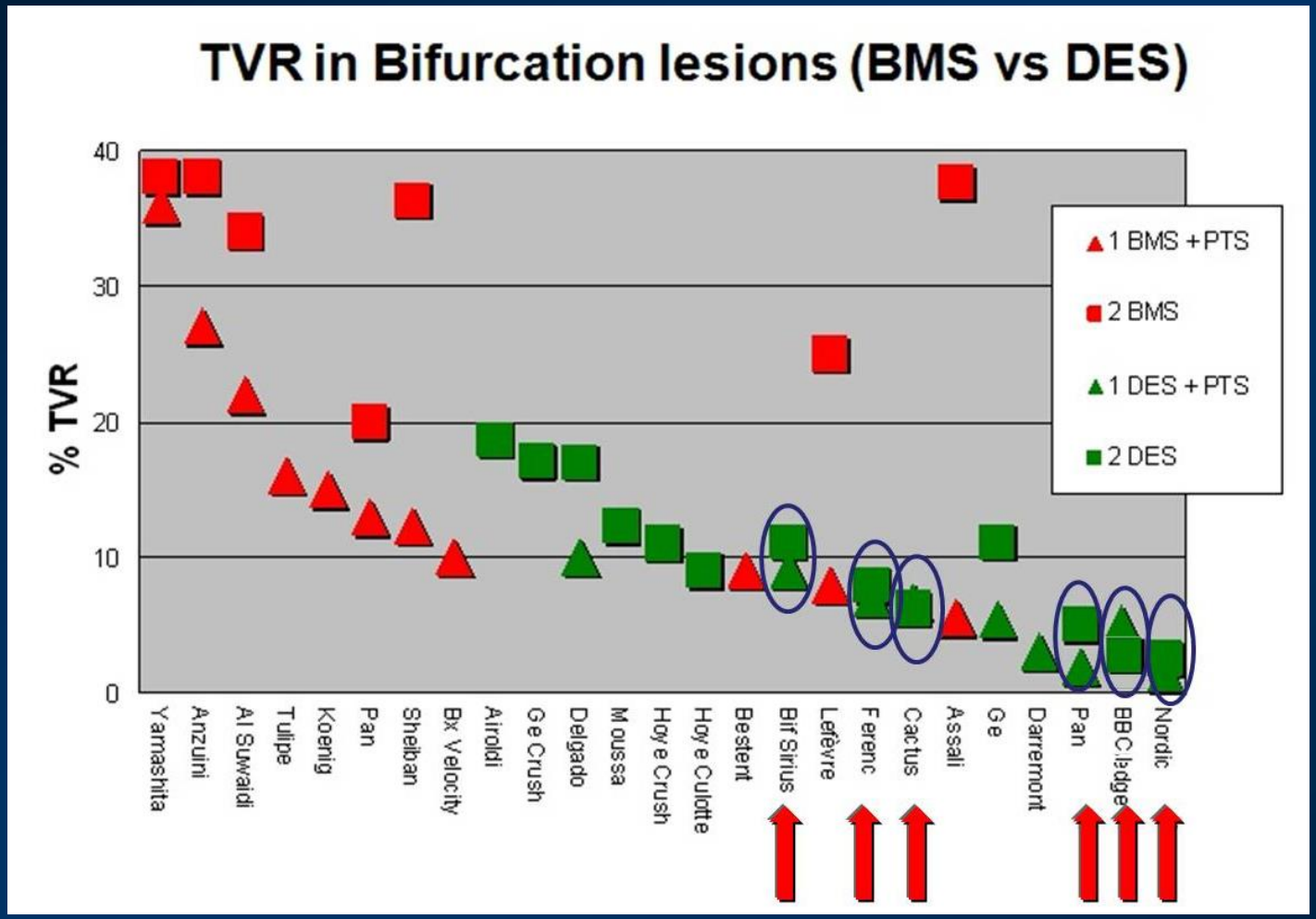
8. Chen. A Randomized Clinical Study Comparing Double Kissing Crush With Provisional Stenting for Treatment of Coronary Bifurcation Lesions Results From the DKCRUSH-II Trial. J Am Coll Cardiol. 2011 Feb 22;57(8):914-20

9. Behan. Simple or Complex Stenting for Bifurcation Coronary Lesions: A Patient-Level Pooled-Analysis of the Nordic Bifurcation Study and the British Bifurcation Coronary Study. Circ Cardiovasc Interv. 2011 Jan 4.

10. Niemelä M. Randomized Comparison of Final Kissing Balloon Dilatation Versus No Final Kissing Balloon Dilatation in Patients With Coronary Bifurcation Lesions Treated With Main Vessel Stenting The Nordic-Baltic Bifurcation Study III. Circulation 2011, 123:79-86.

11. Francesco Burzotta,. Prospective Randomized Comparison of Sirolimus- or Everolimus-Eluting Stent to Treat Bifurcated Lesions by Provisional Approach. . J Am Coll Cardiol Intv 2011;4:327–35.

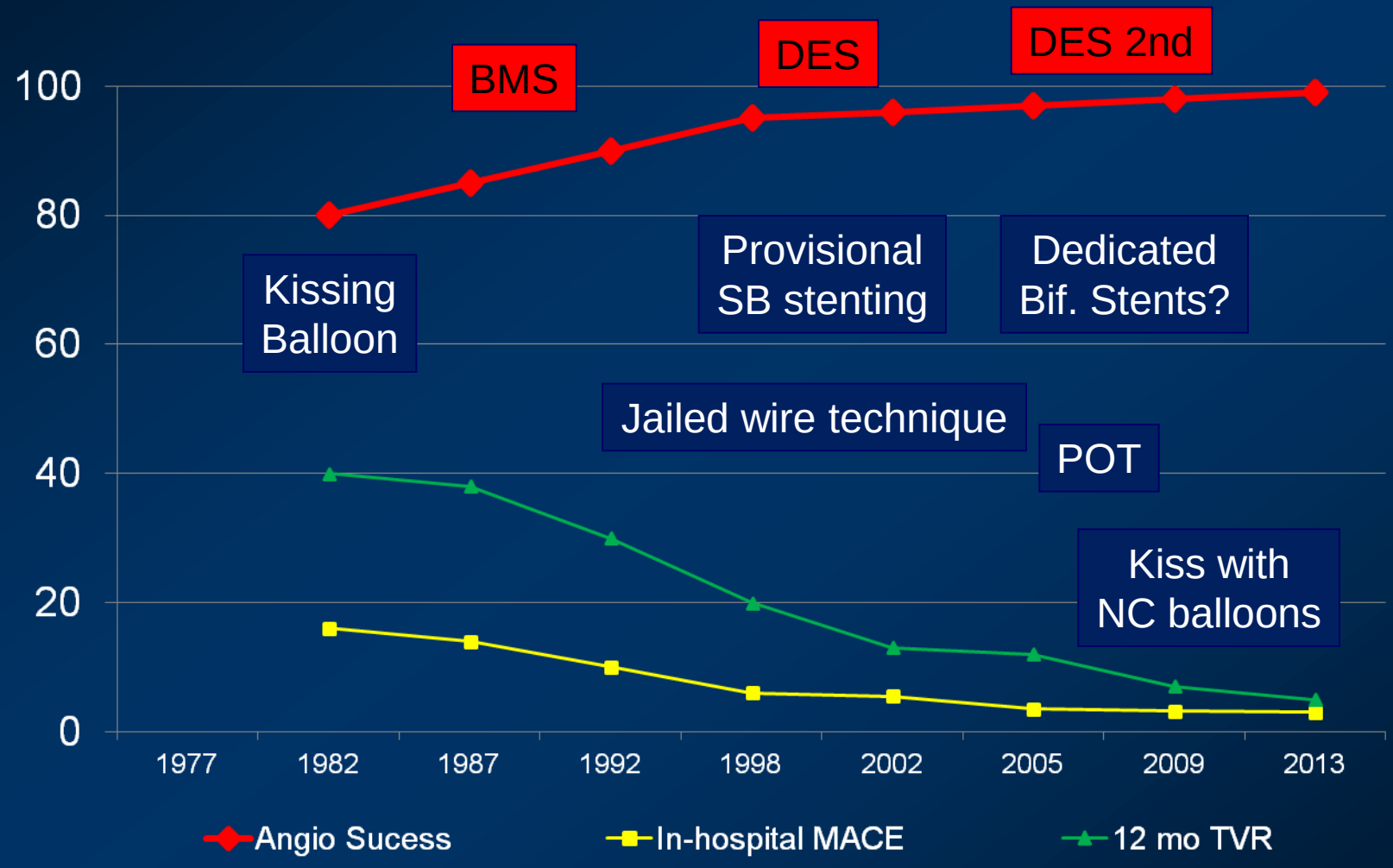
Coronary Bifurcation < 25% with IVUS



IVUS 6 studies

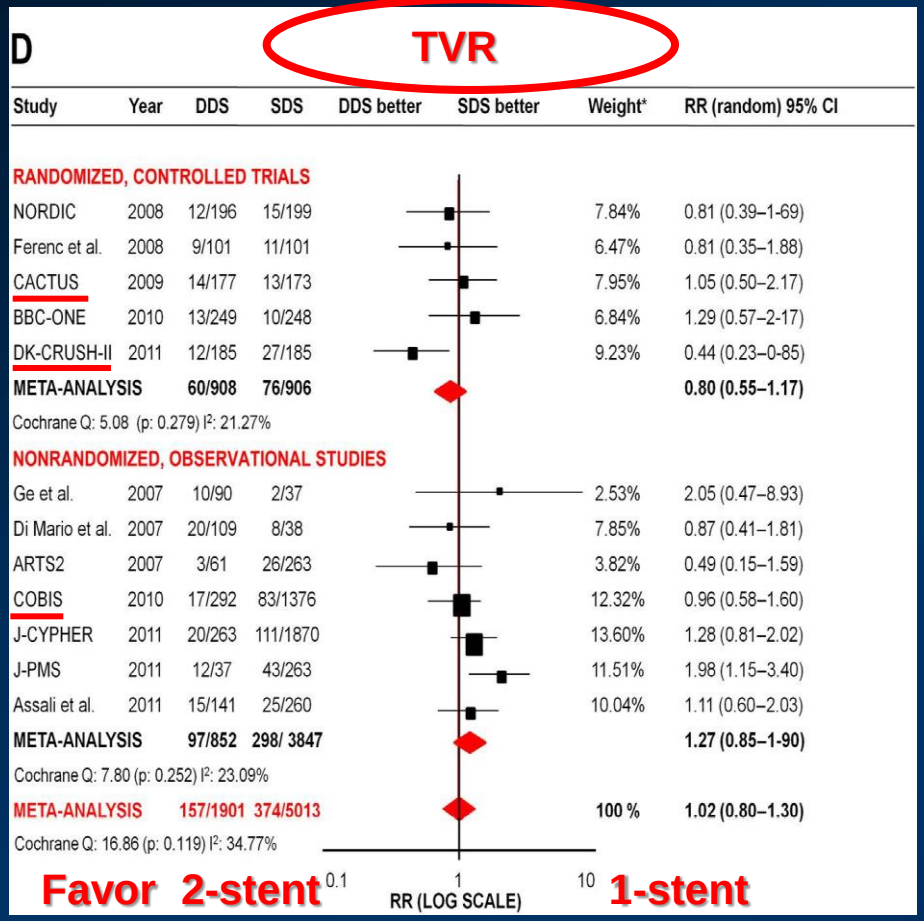
Left Main and Bifurcation Summit, New York 4-5/2009

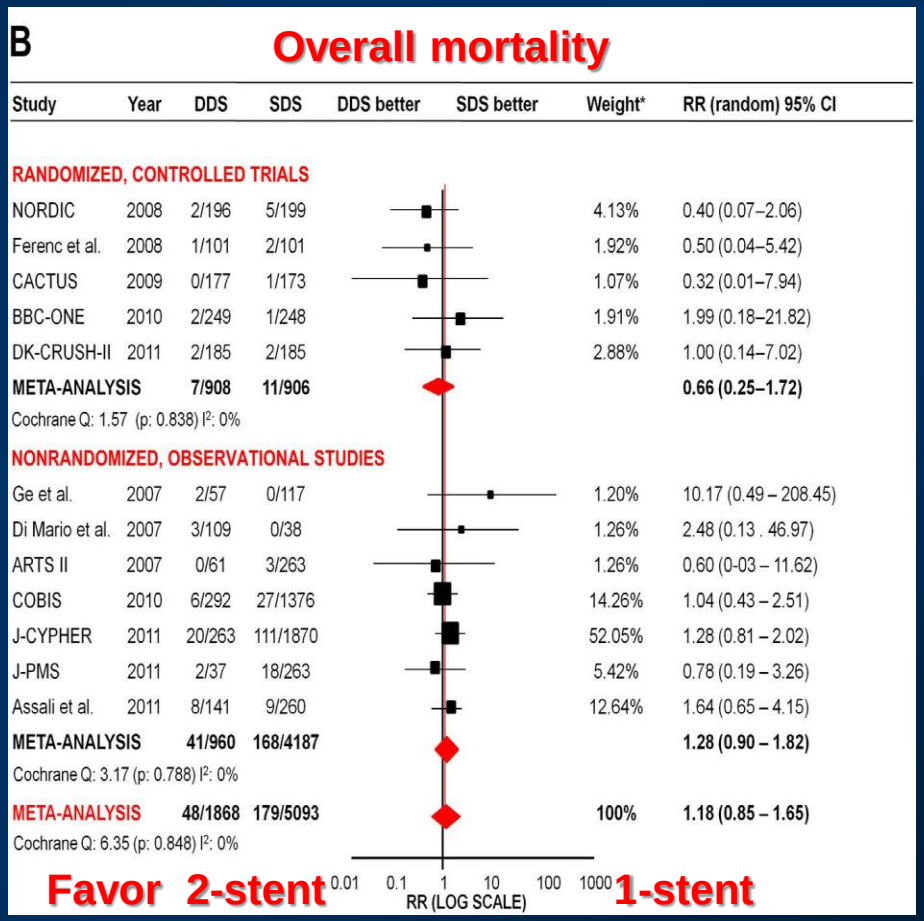
A short History of Bifurcation Treatment



Lefevre; 2014

Single-stent Vs. Two-stent (2013) Meta-analysis (6.961 pts)

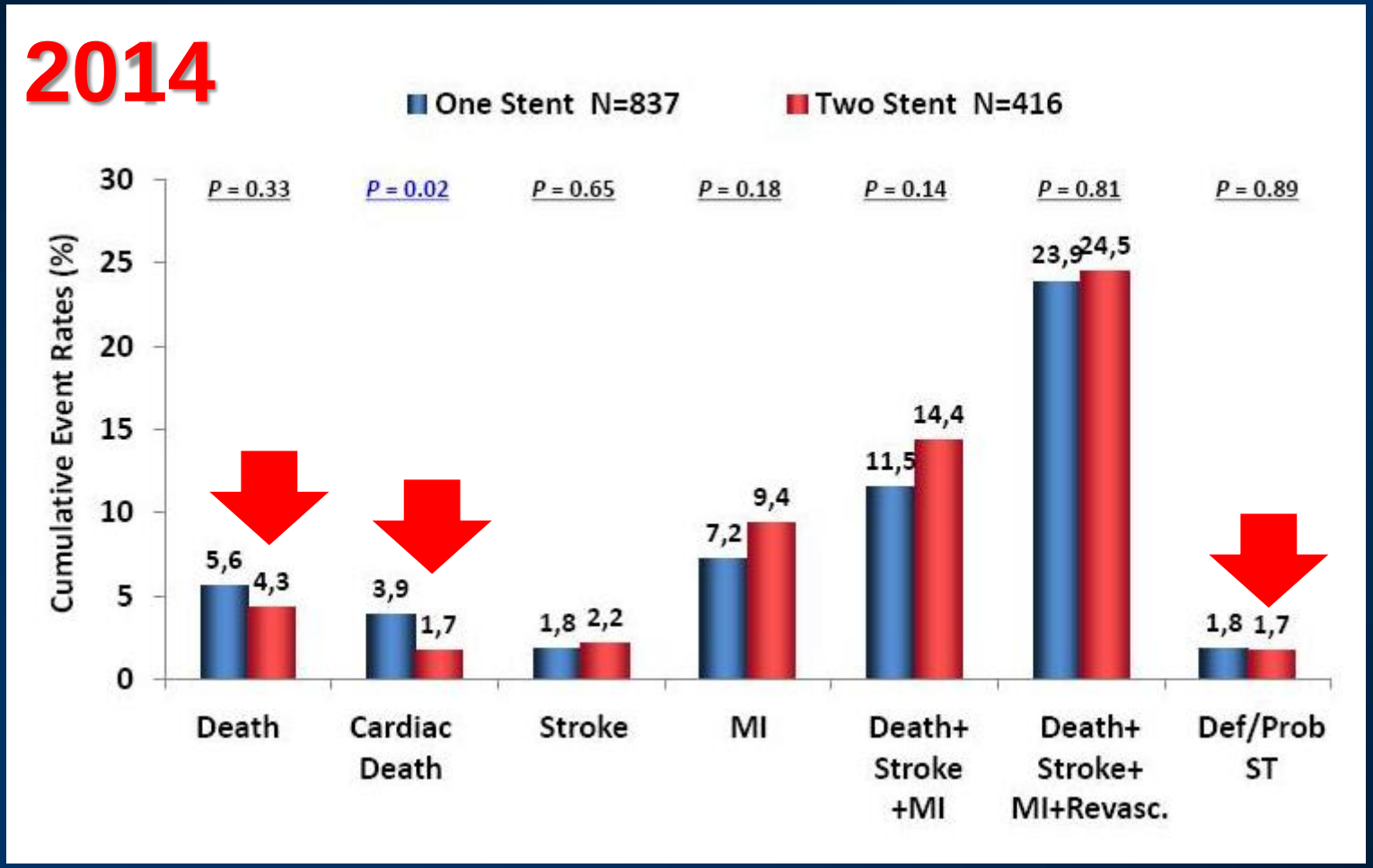




IVUS 3 studies

Zimarino M et al. J Am Coll Cardiol Intv 2013;6:687–95

Long-Term Clinical Outcomes (1- vs. 2-Stent) (Mean Follow-up of 4.4 Years)



Oral presentation Bo Xu, EURO PCR 2014

Randomized Comparison of Provisional Side Branch Stenting versus a Two-stent Strategy for treatment of True Coronary Bifurcation Lesions Involving a Large Side Branch.

2015

The Nordic-Baltic Bifurcation Study IV

Inclusion criteria

- Age≥18
- Stable angina, unstable angina pectoris, NSTEMI
- Main vessel (MV) ≥**3.0mm**
- Side branch (SB) ≥**2.75mm**
- Bifurcation stenosis involving both MV and SB*

*(≥50% diameter stenosis by visual estimation)

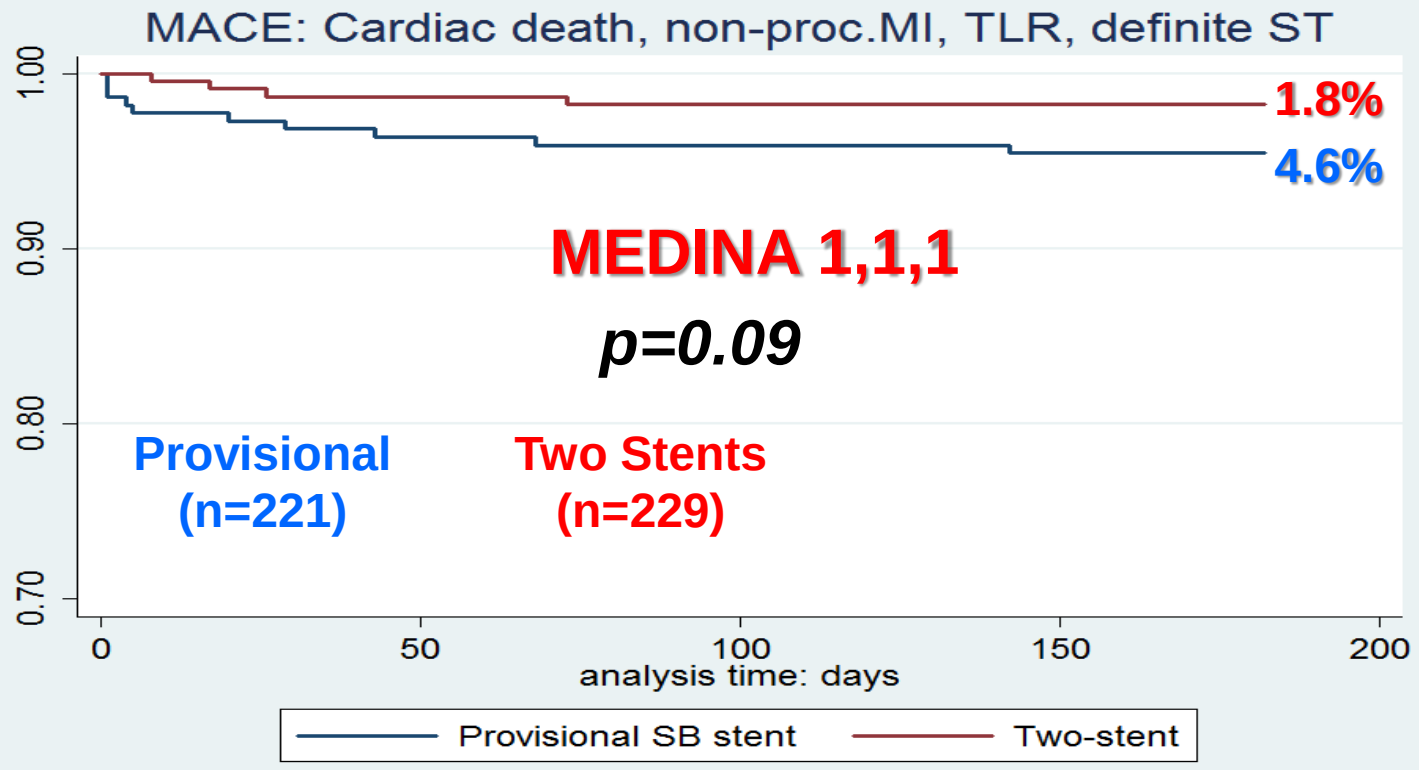
Exclusion criteria

- STEMI
- Cardiogenic shock
- Other critical illness
- Relevant allergies
- Creatinine ≥ 200 mmol/L

EURO PCR 2015; By: I. Kumsars

Randomized Comparison of Provisional Side Branch Stenting versus a Two-stent Strategy for treatment of True Coronary Bifurcation Lesions Involving a Large Side Branch. 2015

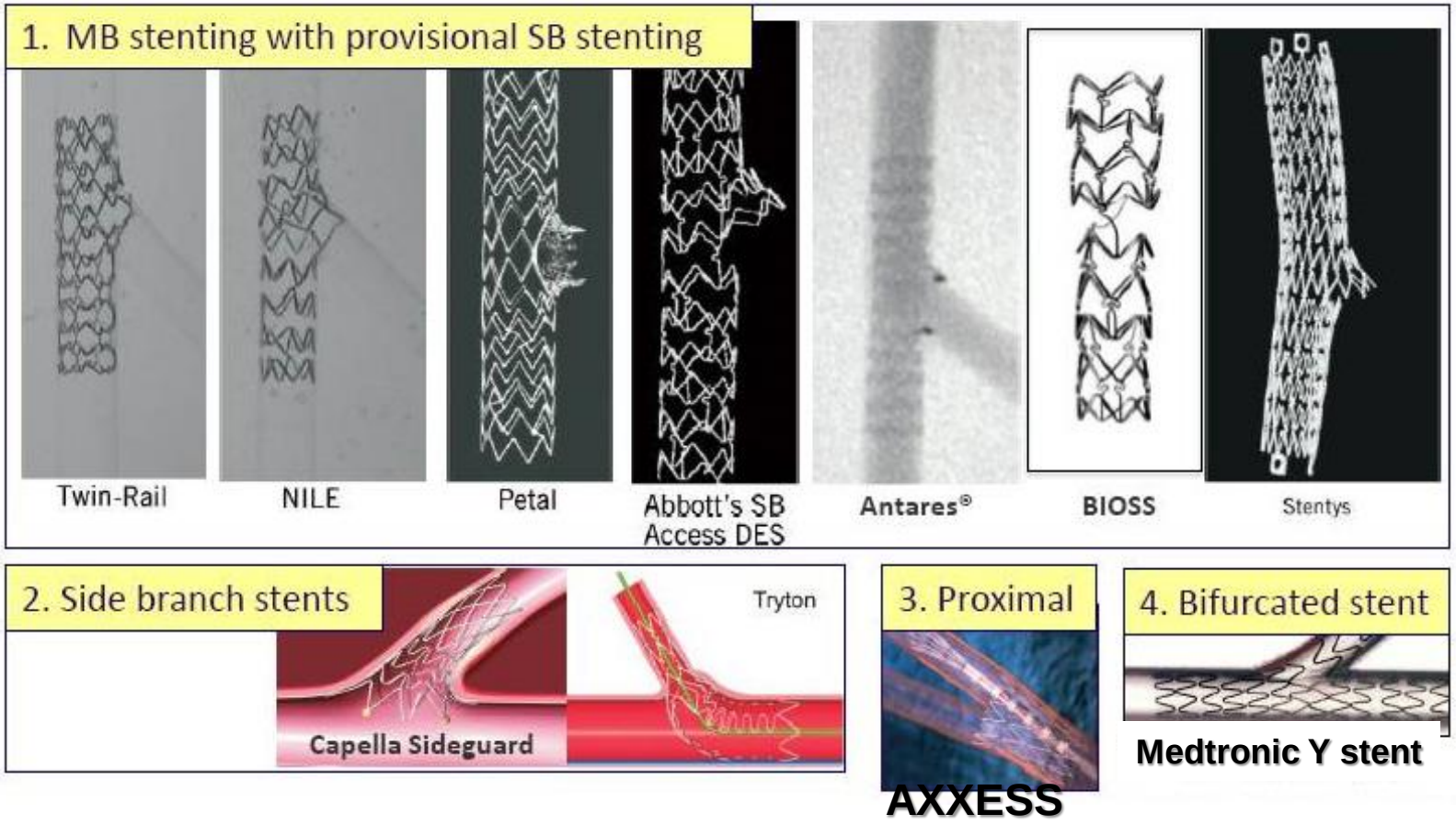
The Nordic-Baltic Bifurcation Study IV



EURO PCR 2015; By: I. Kumsars

Dispostivos Dedicados

Classification of Dedicated Bifurcation Devices



Summary of the Main Characteristics and Trial Results of Currently Available Dedicated Bifurcation Stents

Stent Type (Company) (Ref. #)	Device Profile	Stent Material	Drug Coating	SB Protection	Ostial SB Coverage	Study Name*	No. of Patients (Follow-Up, Months)	Additional Stenting, % MB/SB	MACE, %	Death, %	MI, %	TLR, %
Balloon-expandable stents												
Antares† (TriReme Medical) (148)	6-F	SS	—	+	+	FIM (TOP study)	39 (1)	NA	5.9	0.0	5.1	2.9
Invatec Twin-Rail (Invatec) (149)	6-F	SS	—	+	+/−	FIM (DESIRE)	15 (7)	17/23	14.3	0.0	0.0	14.3
Multi-Link Frontier† (Abbott Vascular) (150)	7-F	SS	—	+	+/−	Registry	105 (6)	40/43	17.1	0.0	3.8	13.3
Nile Croco† (Minvasys) (151)	6-F	CoCr	—	+	+/−	Registry	93 (6)	NA	12.0	2.0	0.0	9.4
Nile Pax† (Minvasys) (152)	6-F	CoCr	Abluminal Paclitaxel	+	+/−	FIM	102 (30)	—/27	1.0	1.0	1.0	0.0
Petal (Boston Scientific) (153,154)	7-F	PtCr	Paclitaxel	+	+	FIM (Petal Trial)	28 (12)	28/25	14.8	0.0	3.7	7.4
SideKick (Y-Med) (155)	5-F	CoCr	—	+	+/−	FIM	17 (2–3)	40‡	5.8	0.0	5.8	0.0
SLK-View† (Advanced Stent Tech) (156)	8-F	SS	—	+	−	Registry	81 (4)	14/25	31.0	1.3	2.5	21.3
Tryton† (Tryton Medical) (157)	6-F	CoCr	—	NA	++	FIM (Tryton I)	30 (6)	39/—	9.9	3.3	6.6	6.6
Self-expanding stents												
Axxess (Devax) (32,55)	7-F	Nitinol	Abluminal Biolimus A9	+	−	Registry (DIVERGE)	302 (9)	64.7‡	7.7	0.7	4.3	4.3
Sideguard† (Cappella) (158,159)	6-F	Nitinol	—	NA	++	FIM (Sideguard I & II)	93 (12)	NA	12.0	1.2	3.6	7.2
Stentys† (Stentys) (160,161)	7-F	Nitinol	Paclitaxel	−	+/−	FIM (OPEN I)	40 (3¶, 6#)	9/13	5.1	0.0	2.5	2.5

J Am Coll Cardiol. 2010 Aug 31;56(10 Suppl):S43-78

Dedicated bifurcation stent study in Left Main intervention

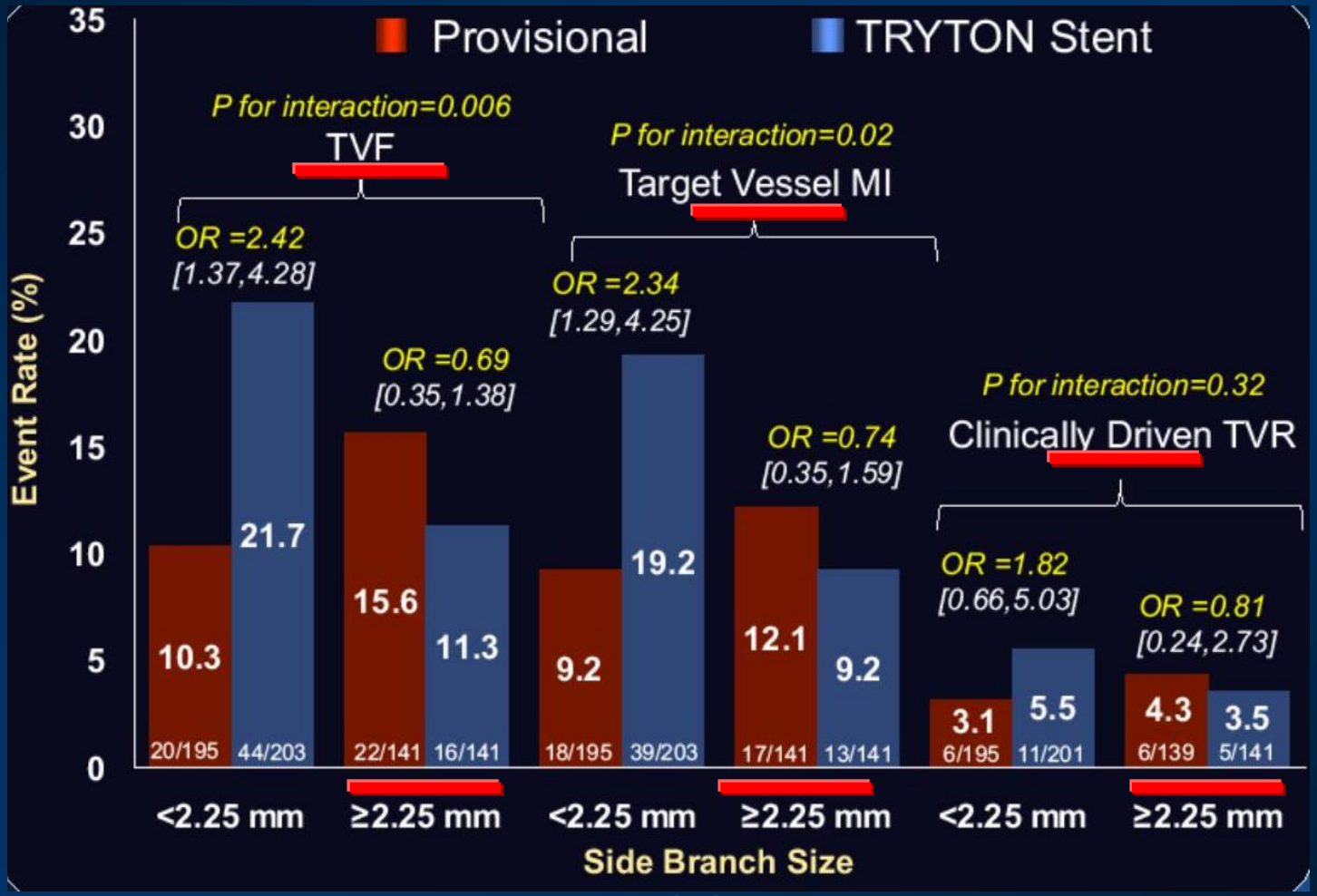
	AXXESS PLUS[1] N = 31	BiOSS Expert[2] N= 54	Tryton[3] N=52
Device description	BES, self expanding nitinol stent	PES, Balloon expandable 316L stainless steel	BMS, Balloon expandable Cobalt-Chromium
Patient setting	Stable CAD	NSTE-ACS or stable	All comers
Endpoint	Safety and efficacy endpoint	Cumulative rate of death, MI, TLR	Acute gain in 3 segment Major adverse cardiac events
Follow-up	**12 month**	**12 month**	**6 month**
SYNTAX score	NA	21.5±6.5	20±8
Medina class 1,1,1 (%)	41%	39%	63%
Main vessel diameter (mm)	3.91±0.34	4.15±0.32	3.4±0.4
MV diameter stenosis (%)	61.2±20.2	56±26	51±17
Final kissing, (%)	NA	66.7%	94%
Adverse events, (%)	MACE 19.4 % ISA 23.8% postprocedure but no late acquired ISA	Cumulative rate 9.3%	MACE 22%
Stent thrombosis, (%)	0	0	0
TLR/TVR, (%)	TLR 9.1%	TLR 9.3%	TVR 12%
Myocardial infarction,(%)	9.7%	0	10%
Death, (%)	0	0	0

1. HosegawaT, et al. Catheter CardiovascInterv2009;73:34-41
2. BilJ, et al. J Intervcardiol2014;27:242-51
3. MagroM, et al. Eurointervention2013;8:1259-69

A Randomized Trial of a Dedicated Bifurcation Stent Versus Provisional Stenting in the Treatment of Coronary Bifurcation Lesions

2015

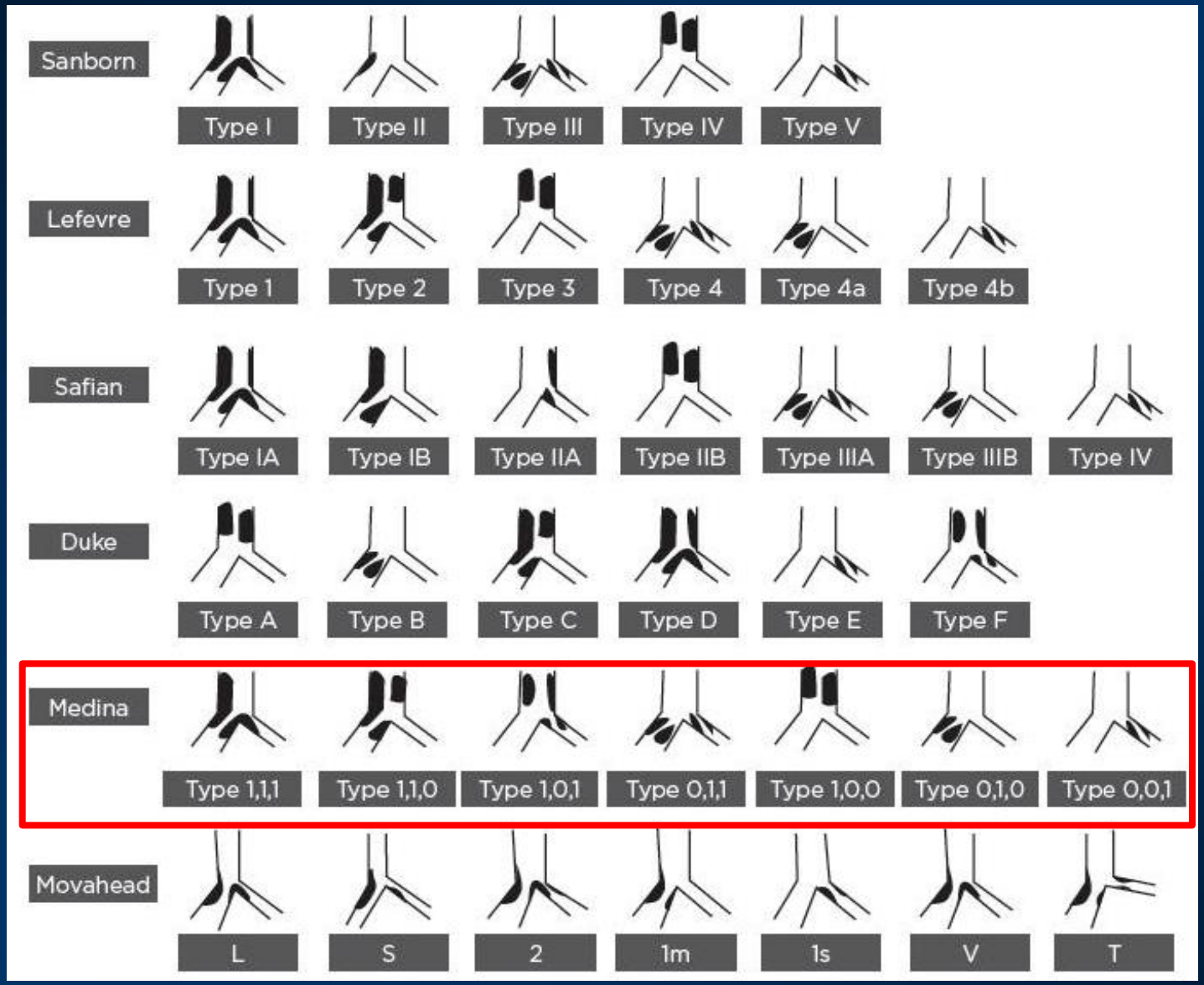
F/U at 9 mo



Généreux, P. et al. J Am Coll Cardiol. 2015; 65(6):533–43

Métodos Adjuntos

Published classification of coronary bifurcation lesions.



EMJ Int Cardiol. 2014;1:62-72

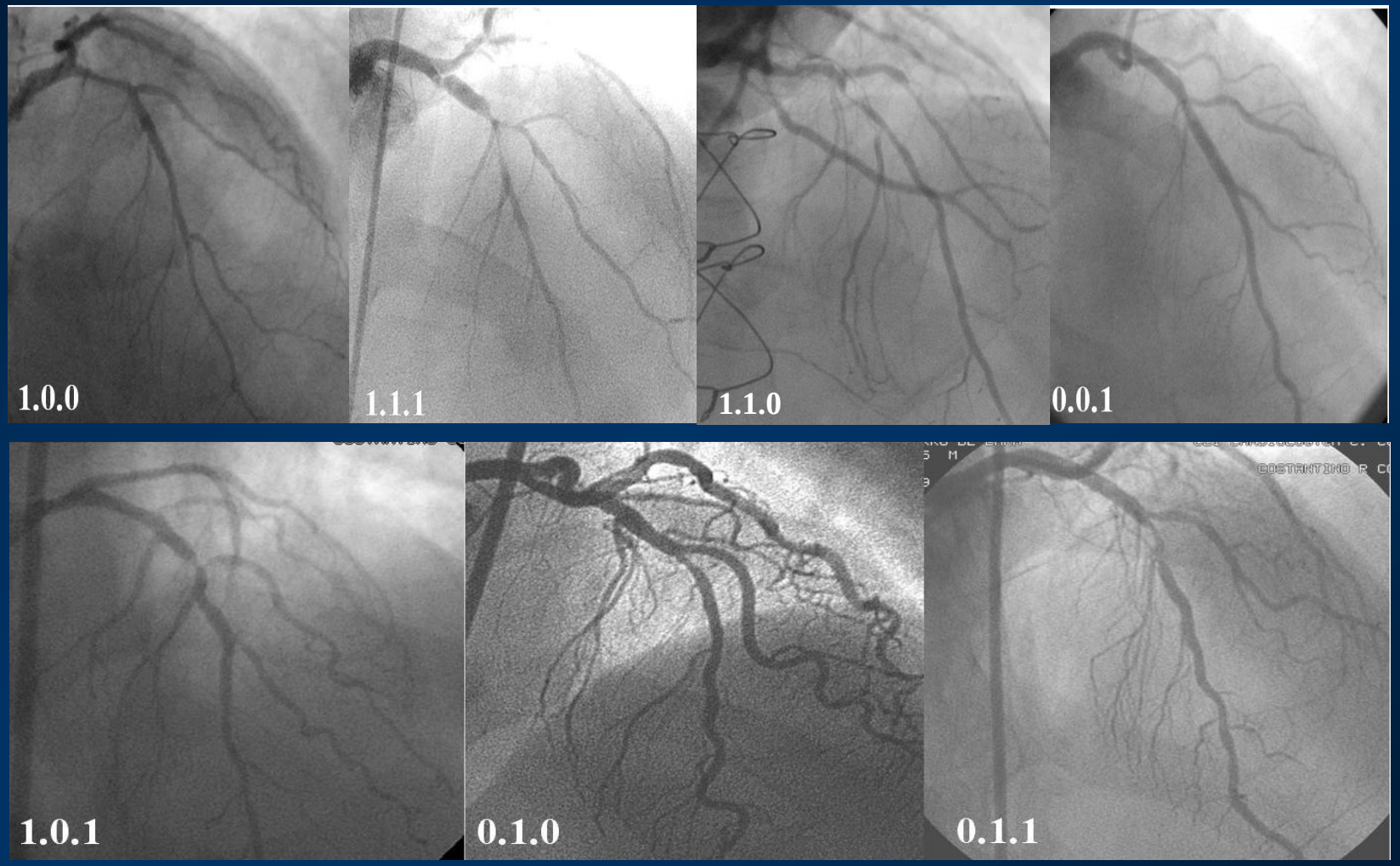
Estratégia baseada em Classificação de Medina

ber of bifurcation components affected. Based on the Medina classification , coronary bifurcation lesions that do not involve the SB origin include type {1,0,0}, {1,1,0} and {0,1,0} lesions.

Approaching these lesions with provisional stenting has shown to be effective

Rev Esp Cardiol. 2006;59:183
Circulation. 2009;119:71-8

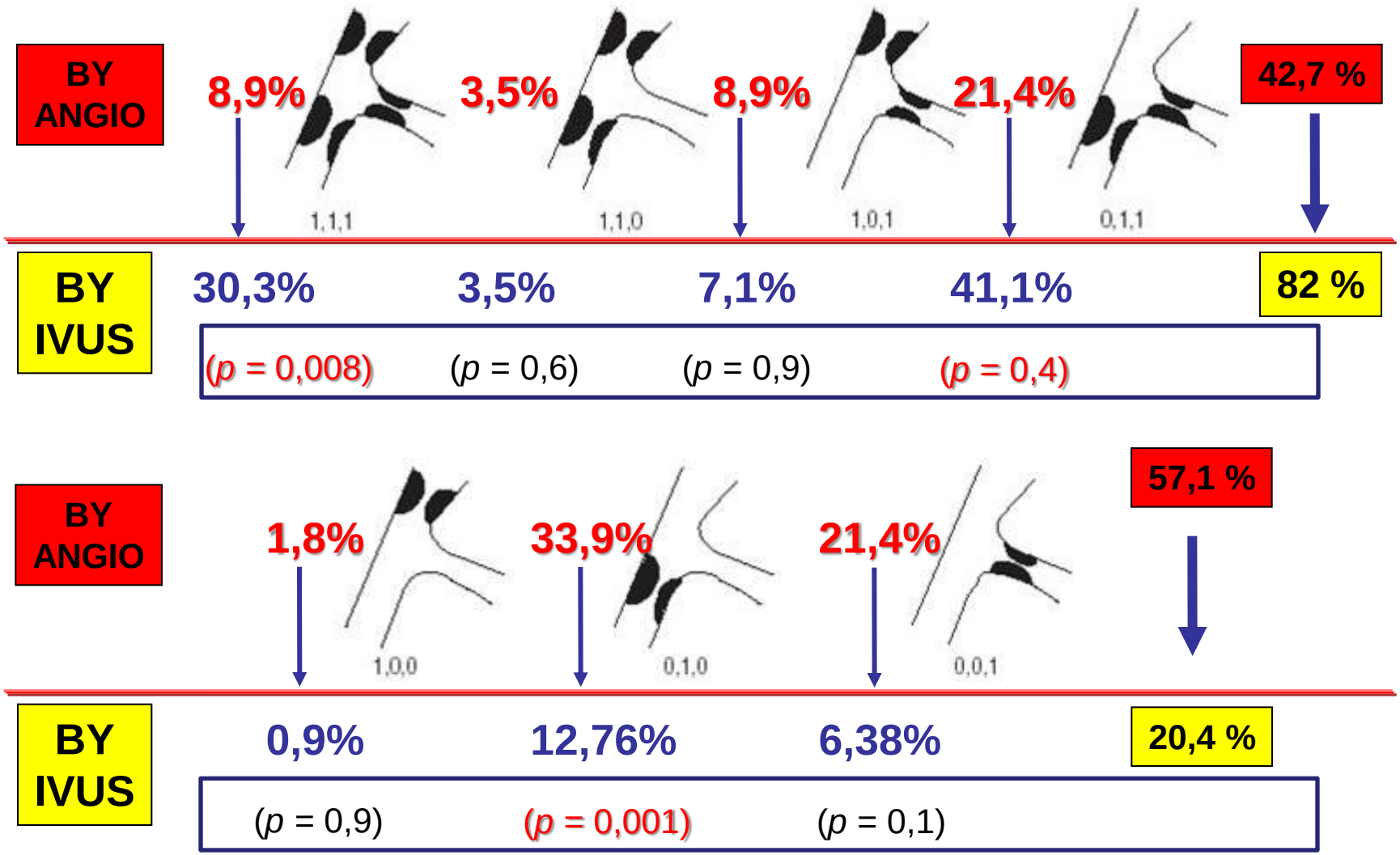
First Point: All Bifurcations are Equal ??? Not !.....



Images: Hospital Costantini

56 Bifurcation Treated Lesions Were Assessed By IVUS pre Intervention in Both Branches

MEDINA Classification (Angiography Vs. IVUS Evaluation)

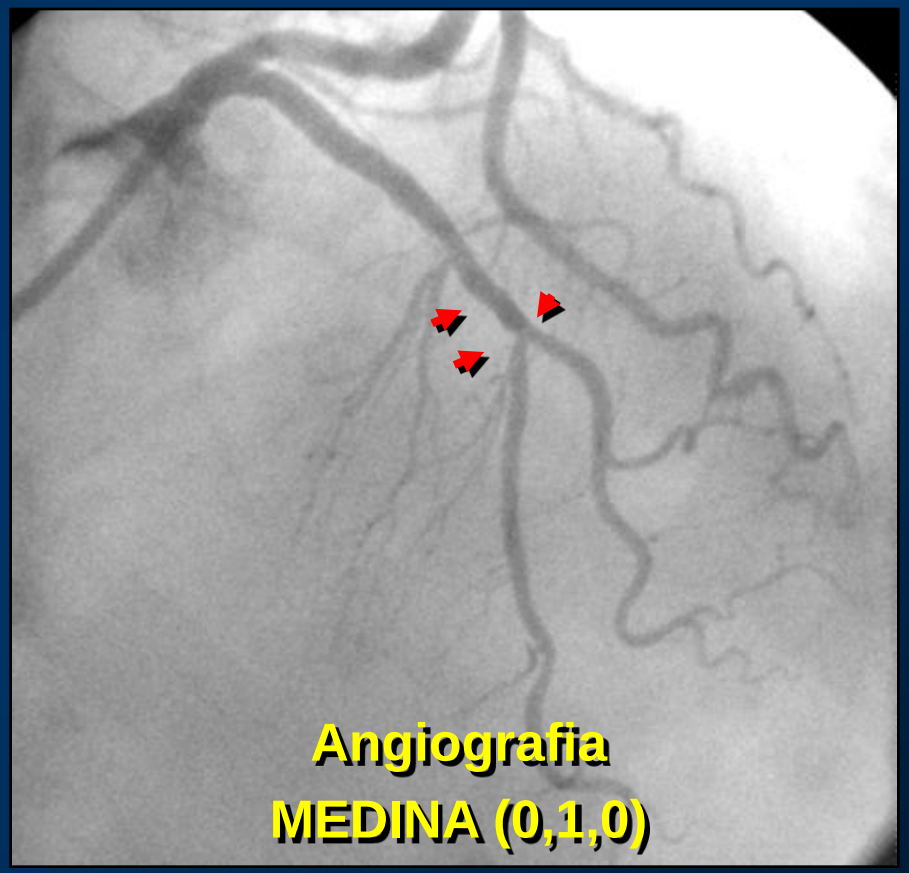


Costantini et.al Solaci 2011

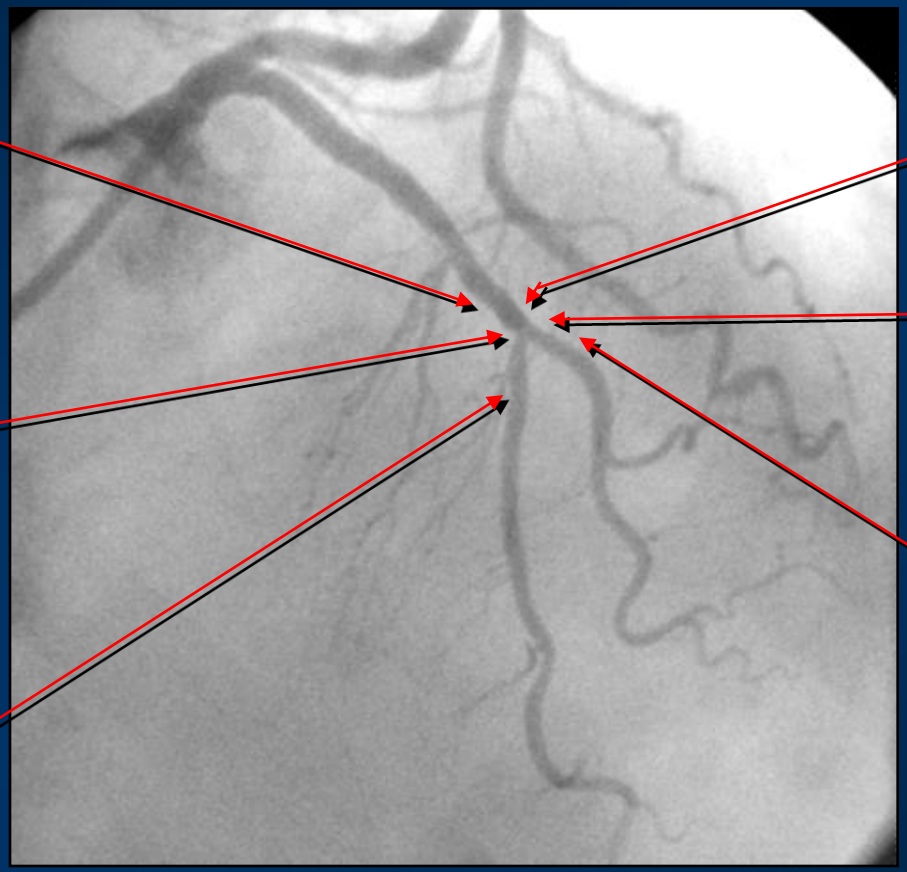
Caso 1

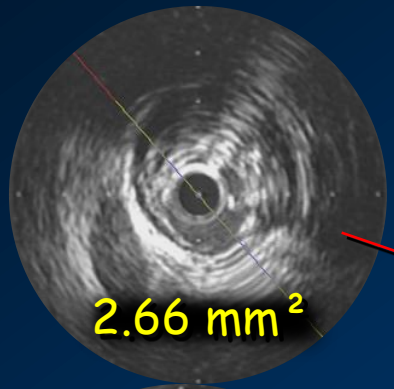
- **R.G.C, 78 anos femenino, angina instável, dispnéia aos mínimos esforços, cintilo positiva com isquemia antero septal;**

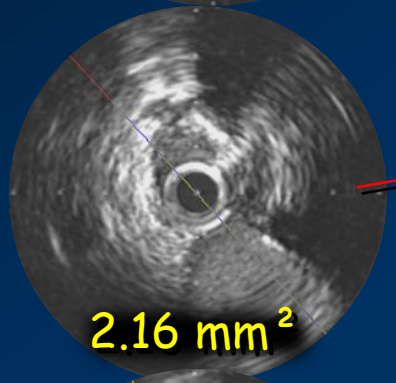
- **HAS**
- **Diabetes**
- **Dislipidemia**
- **Obesidade**
- **LVEF= 75 %**

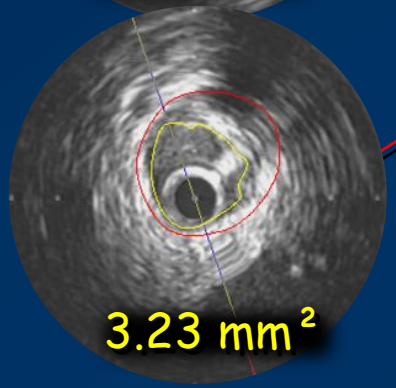


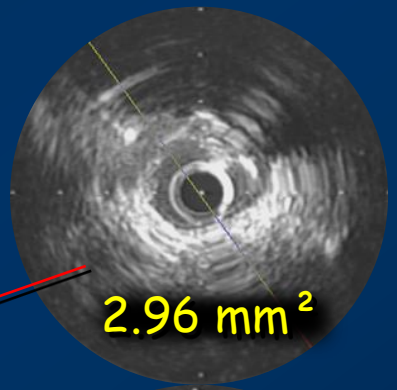
Angiografia Medina (0,1,0)
IVUS Medina (1,1,1)

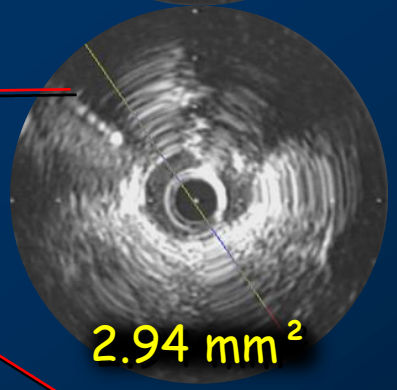


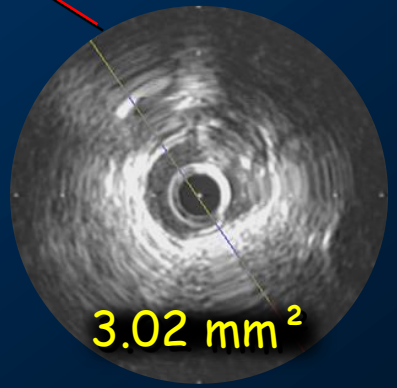




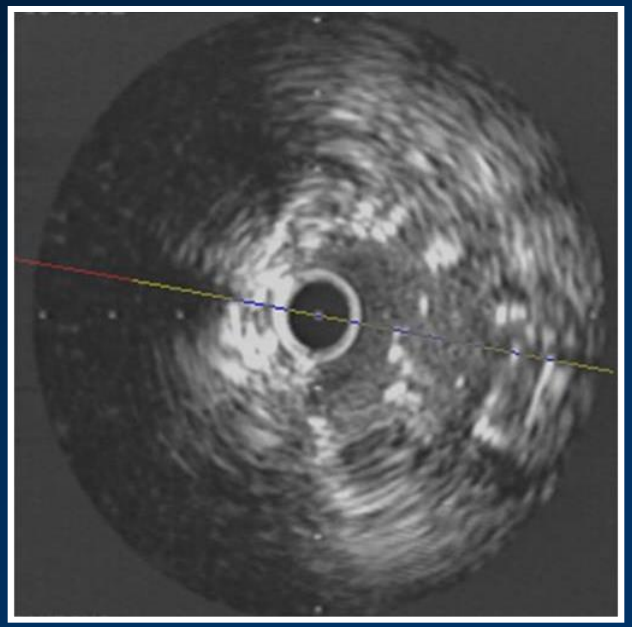


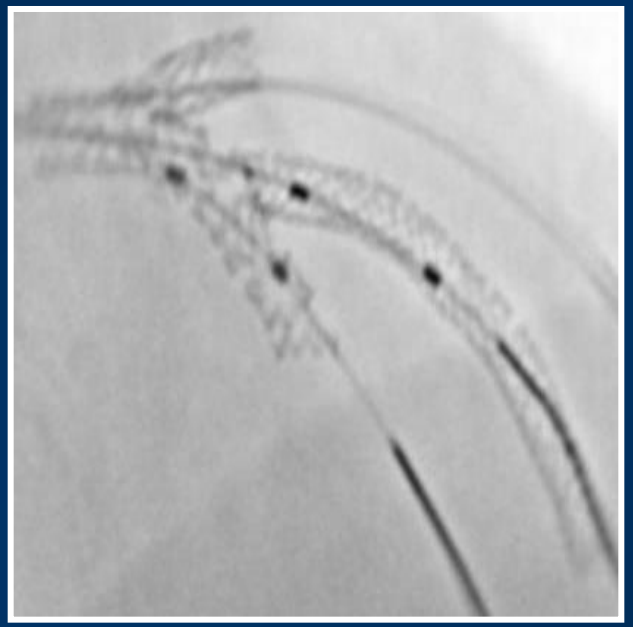


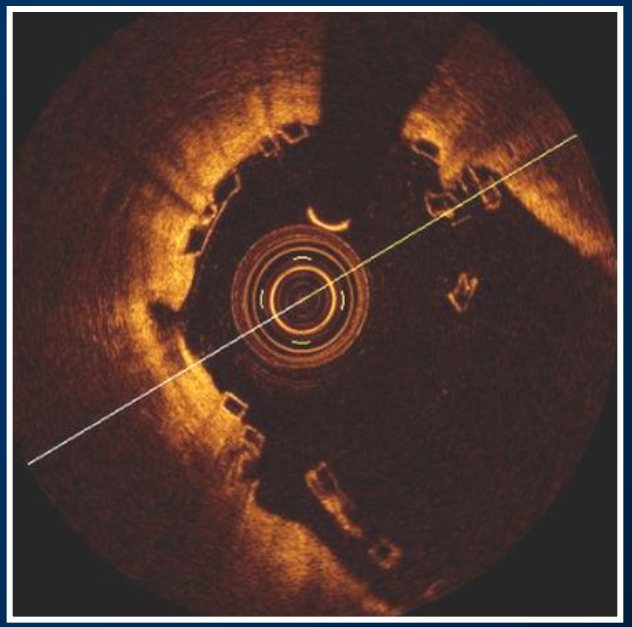




IVUS, Stent Boost & OCT



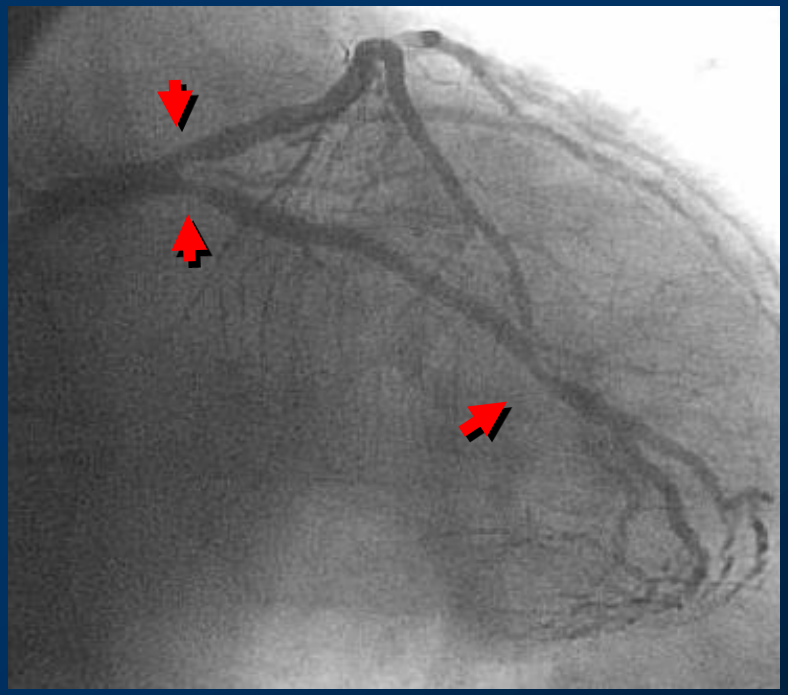




Images: Hospital Costantini

Apresentação clínica

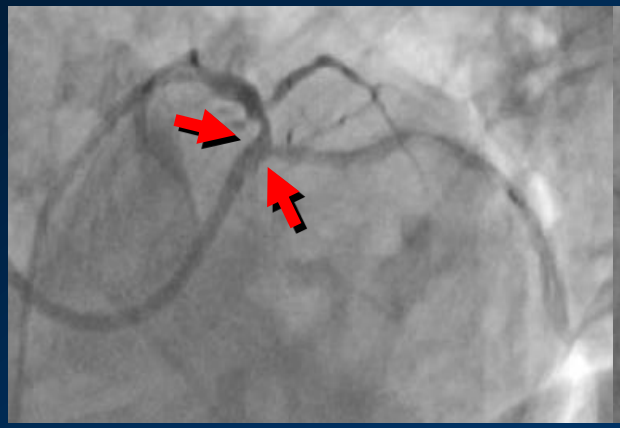
- M.C.J, 71 anos masculino, ATC prévia 2005 (CX) e 2011 (TC>DA e CX),
- 2014 (Reestenose / CX ÓSTIO ?)
- 2015 novos sintomas (Angina estável) – novo cat
- Nova reestenose (DA/CX) ---------- Indicação cirúrgica
- Cintilo Normal e teste com taquicardia supraventricular sustentada com aberrância de condução à partir do 7° minuto do esforço.

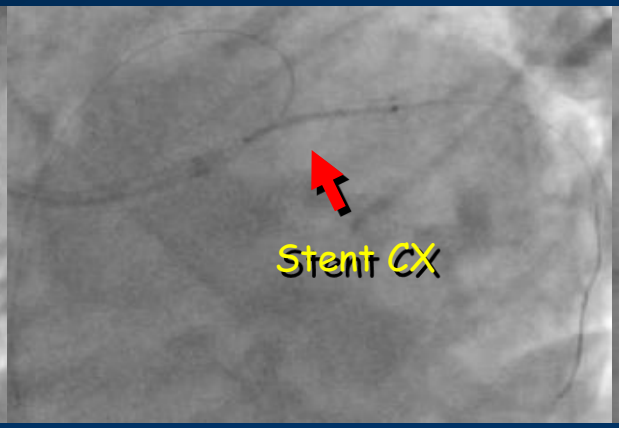


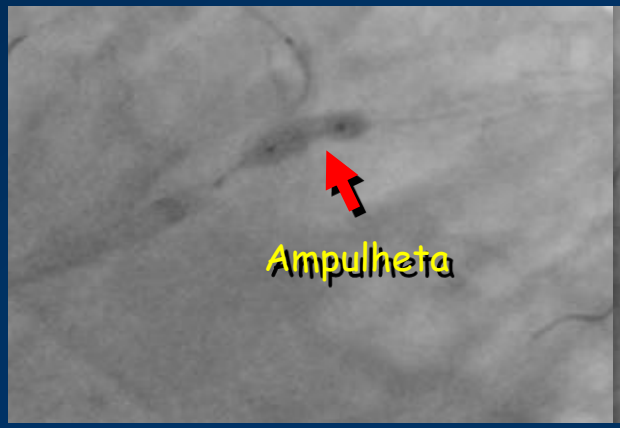
- HAS
- Dislipidemia
- Stress
- Diabetes

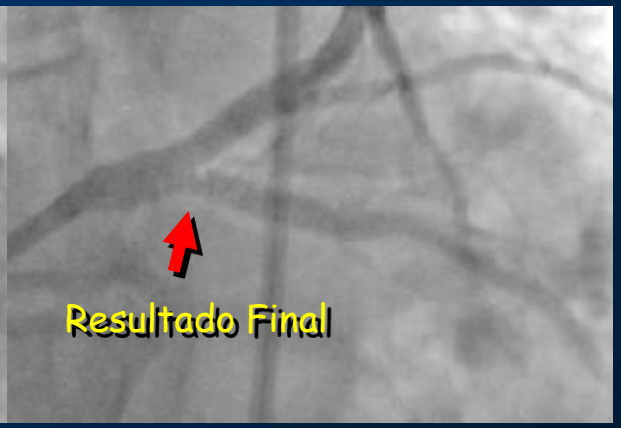
2011
Oque vc Faria ?

Angioplastia TCESQ
Envolvendo Bifurcação DA/CX
Guiada por angiografia (Outro serviço em 2011)

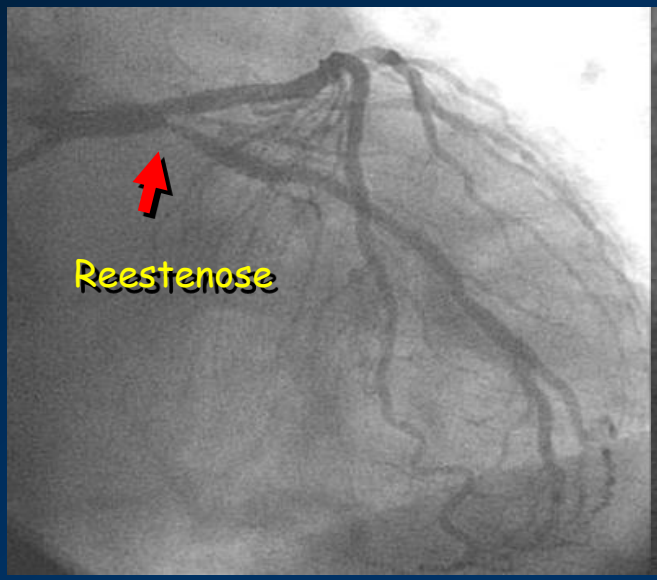


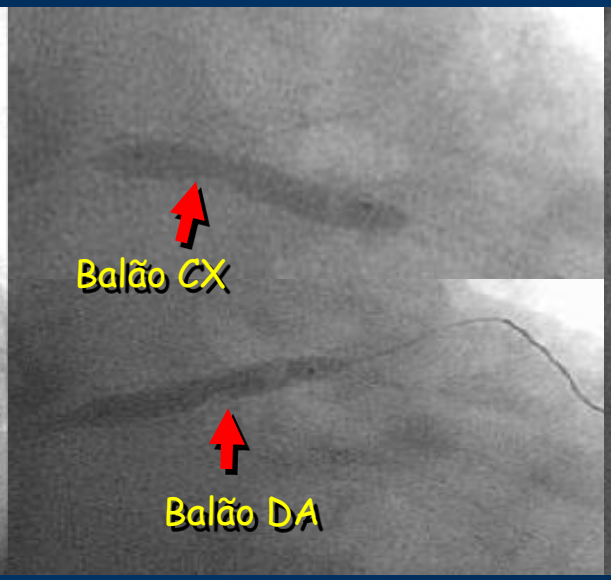


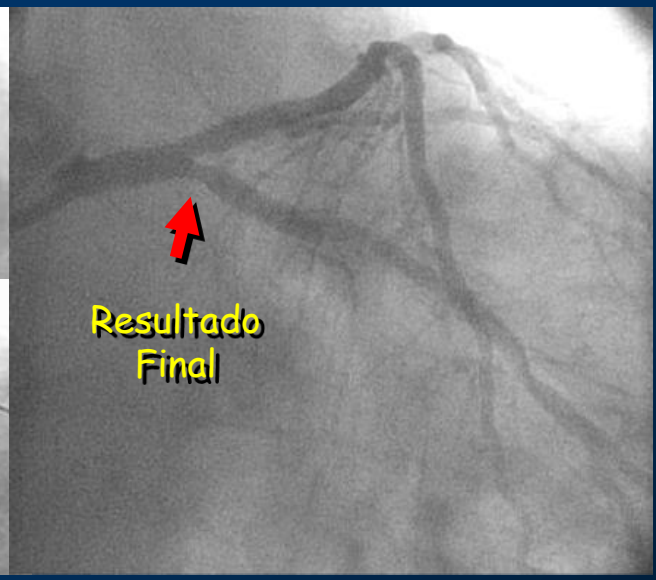




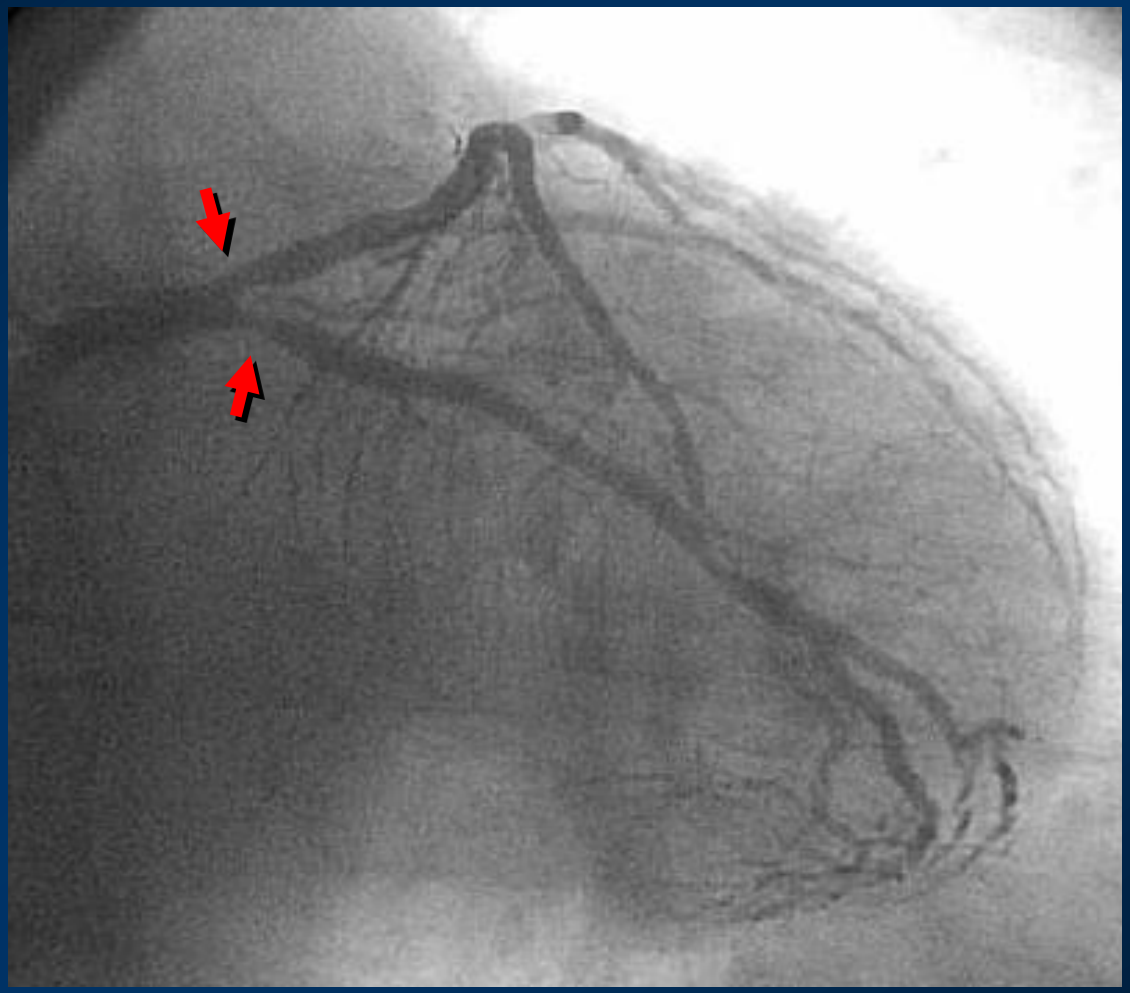
Nova Angioplastia
2014 Outro serviço



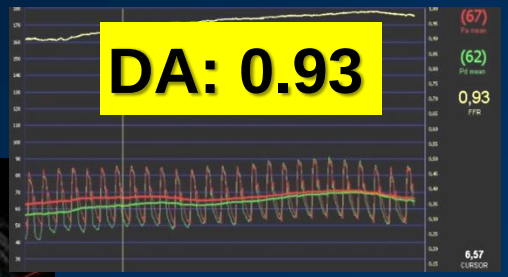


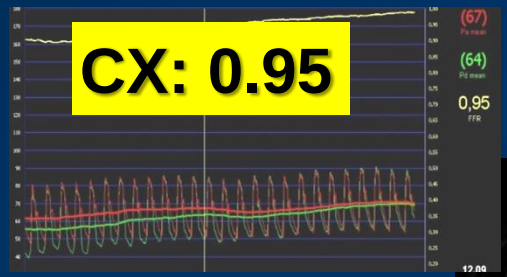


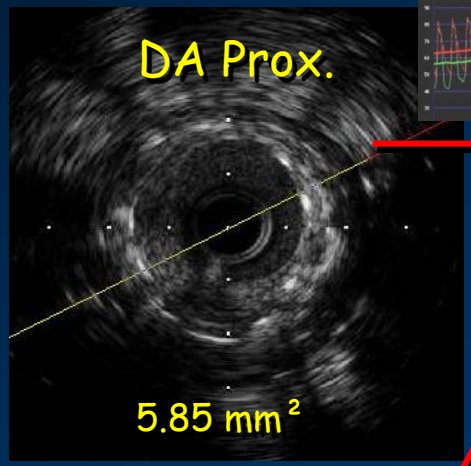
2015
Indicação Cirurgica

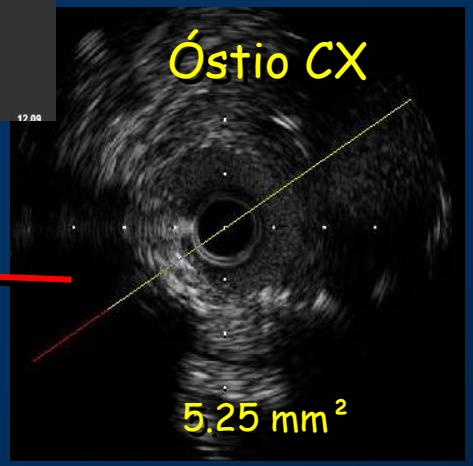


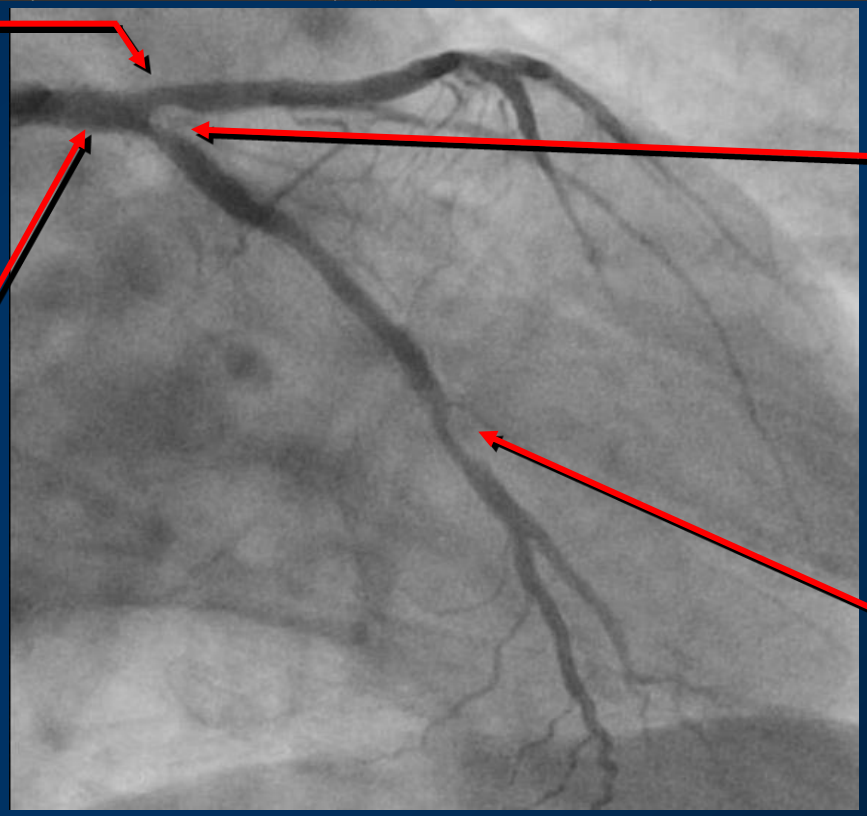
2015
Indicação Cirurgica ????

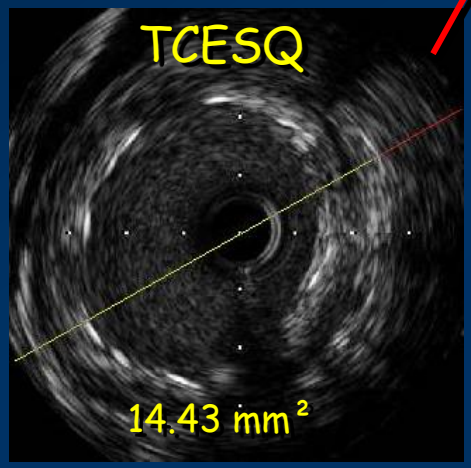


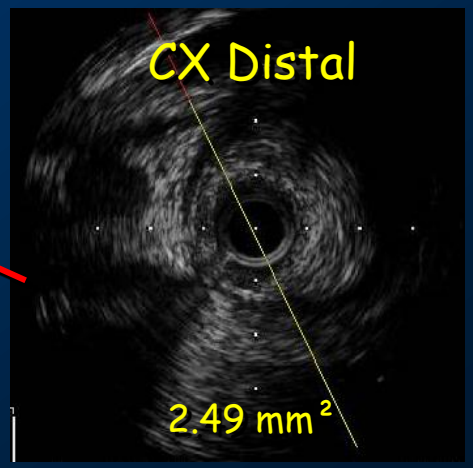




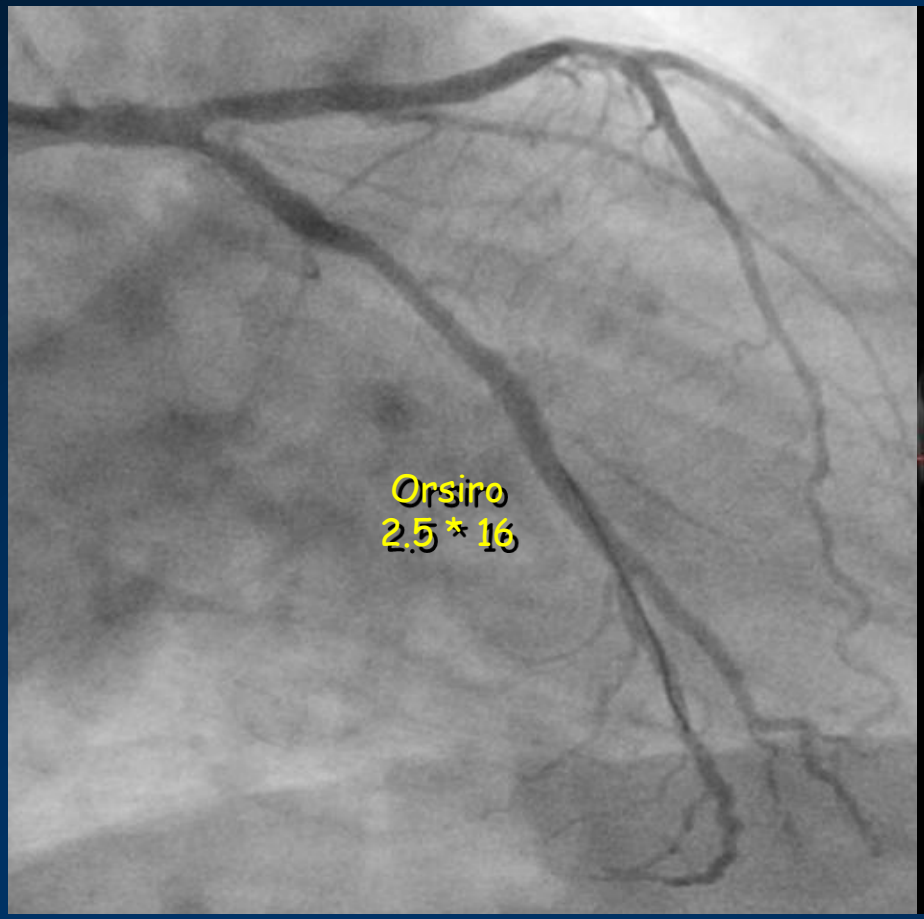


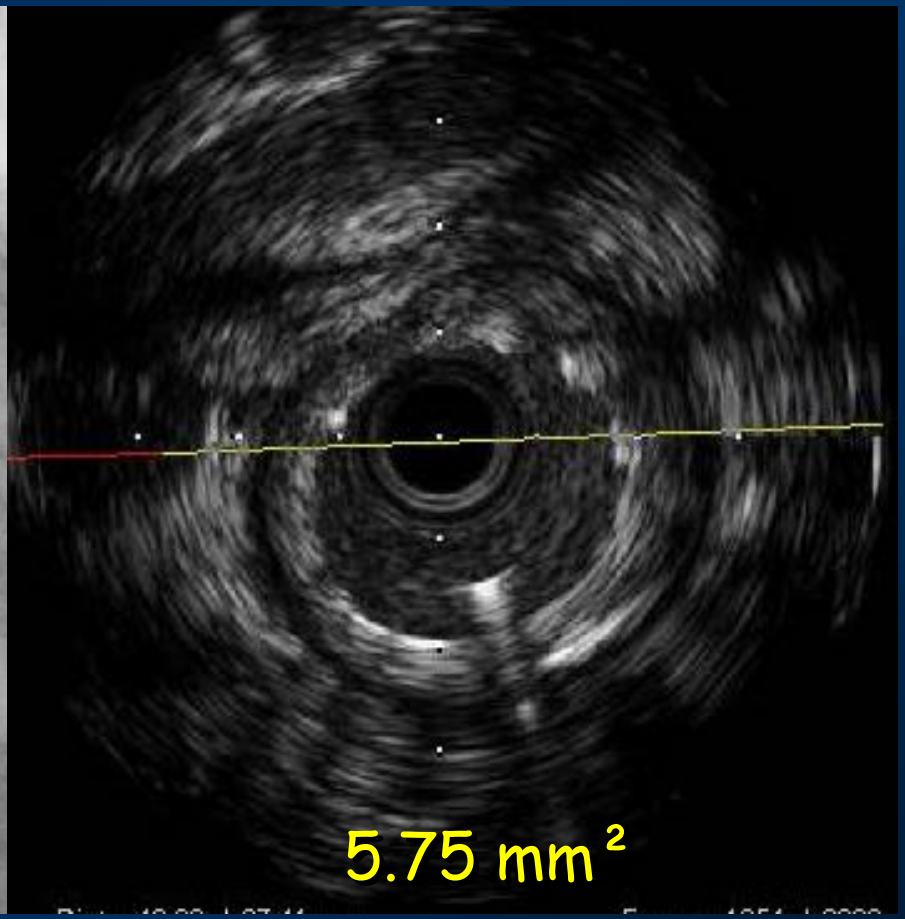




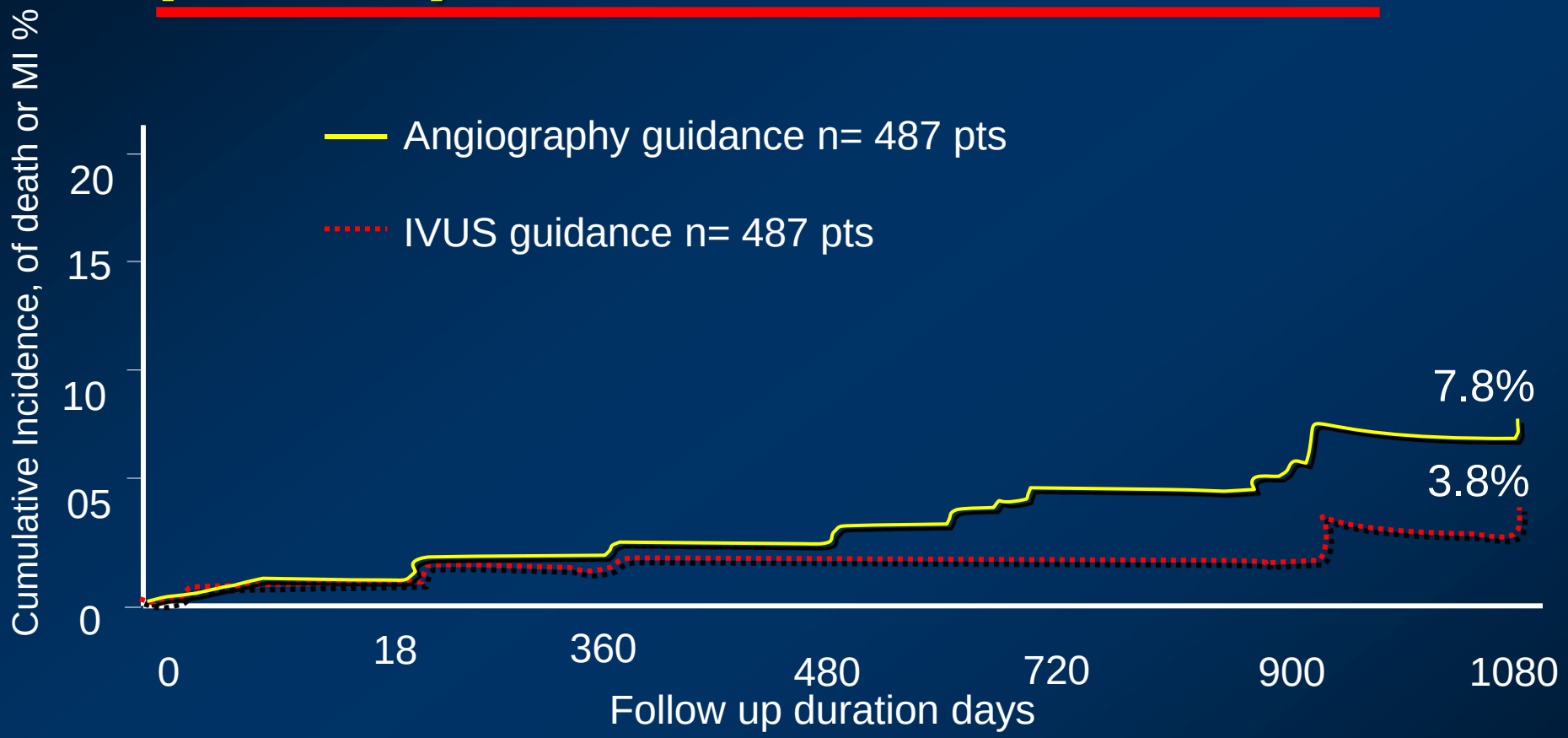


ATC CX Distal





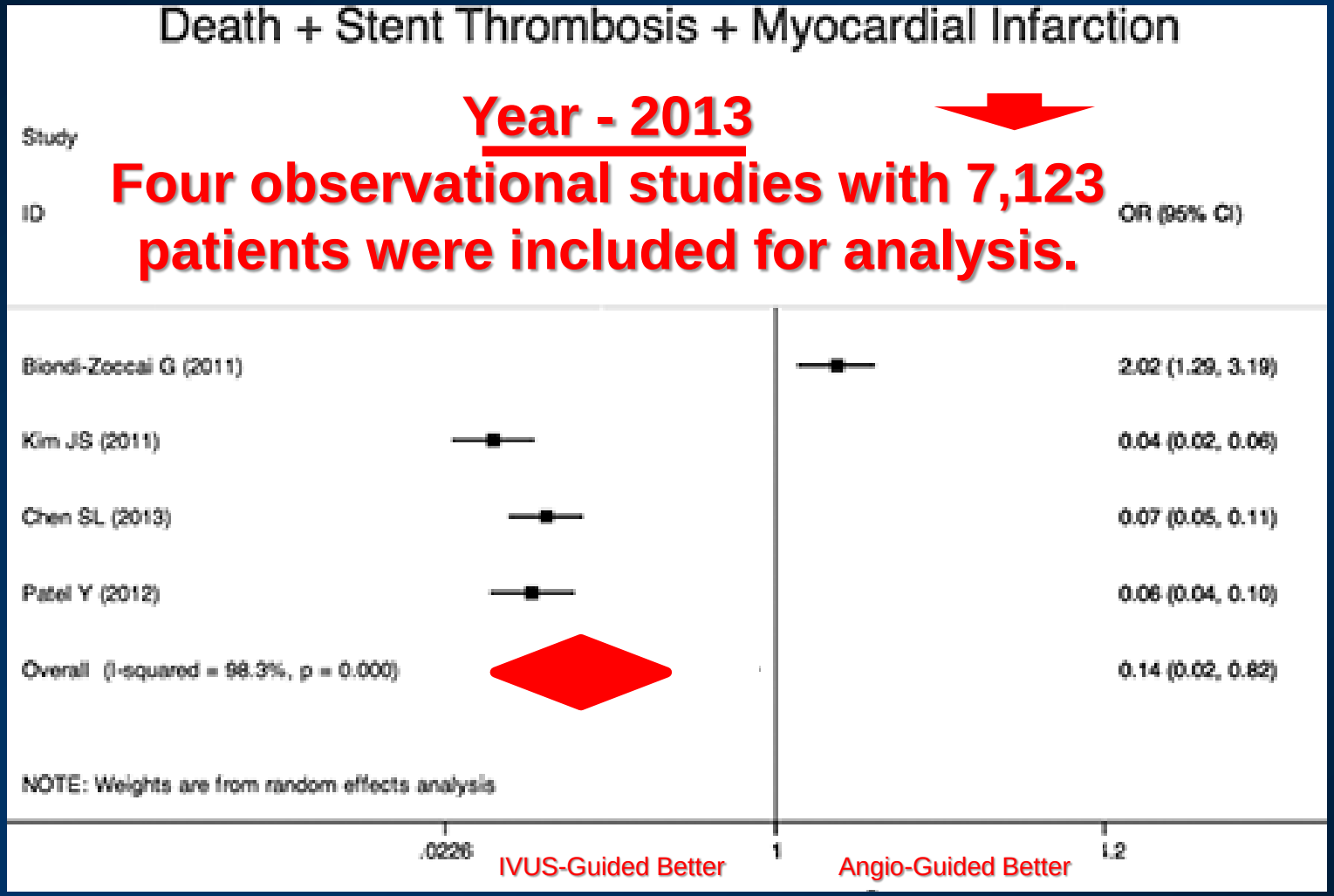
Impact of IVUS in bifurcation lesions, (COBIS) – 2011 – IVUS 2 vessels



IVUS guidance during DES implantation at bifurcation lesions may be helpful to improve long-term clinical outcomes by reducing the occurrence of death or MI.

AHJ 2011, 161, 180~187

Meta-Analysis of Long Term Outcomes of IVUS Vs. Angiographic-Guided PCI of Bifurcation Lesions



Patel VG; Circulation. 2013; 128: A14804

Meta-Analysis of Long Term Outcomes of IVUS Vs. Angiographic-Guided PCI of Bifurcation Lesions

Component Outcomes
Composite of Death, Stent Thrombosis, MI

	IVUS n = 1757	Angio n = 5366	Odds Ratio	p Value
Death	3.4	12.0	0.137	<0.001
Stent thrombosis	0.7	5.2	0.519	0.034
MI	2.7	4.3	0.434	0.051
TLR	8.6	12.3	0.649	0.212

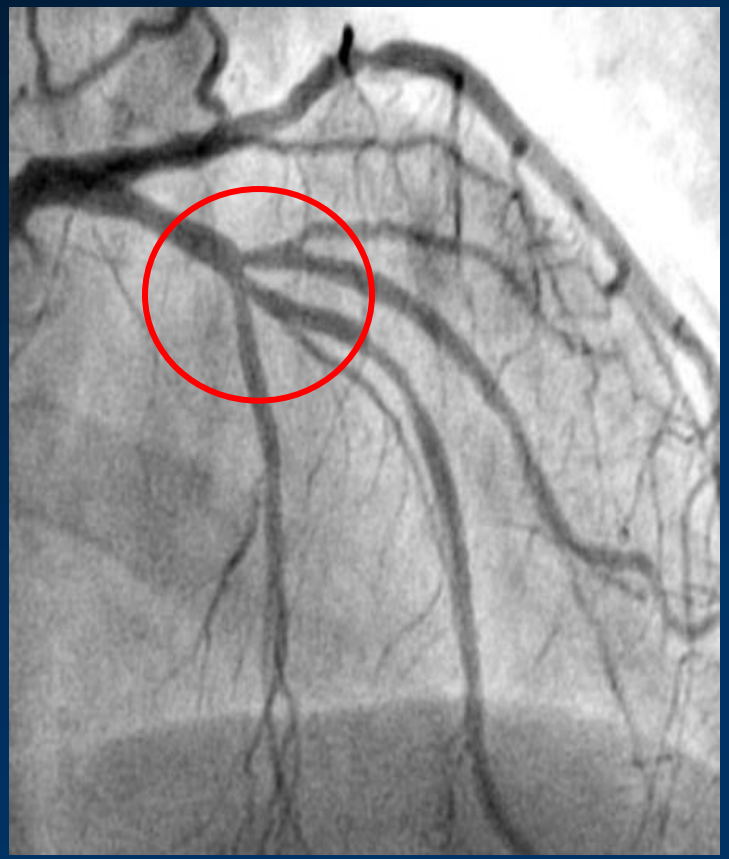
Patel VG; Circulation. 2013; 128: A14804

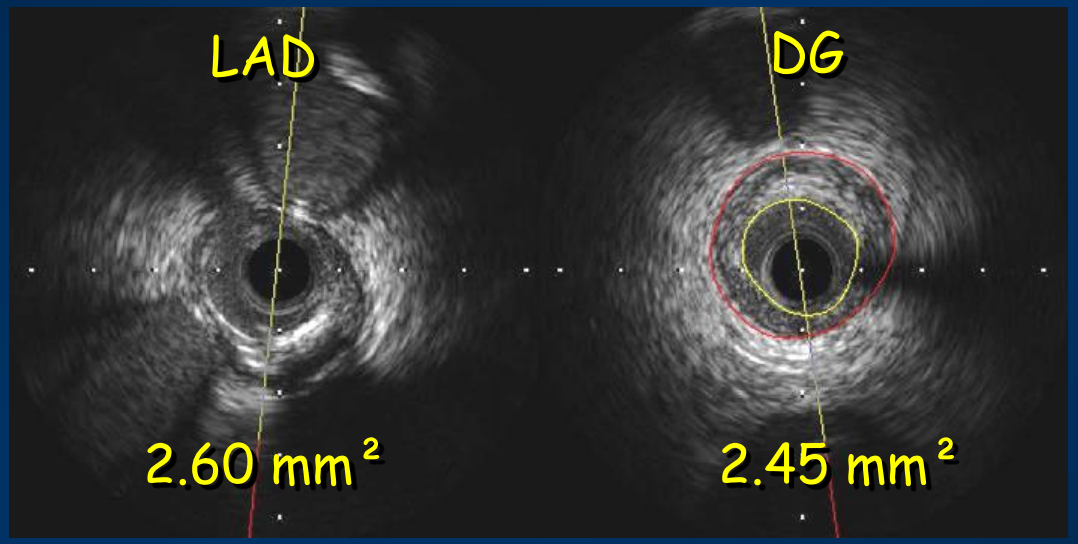
Clinical Presentation

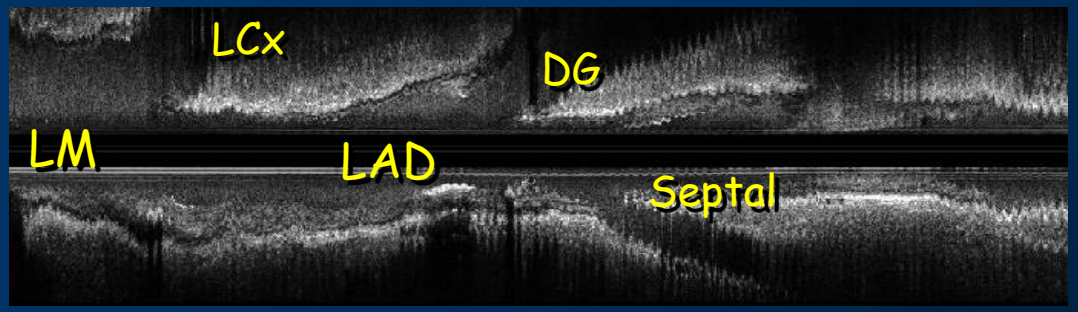
- A.P.V, 66 years old female, unstable angina positive tallium test mid-basal lateral & antero-lateral wall.

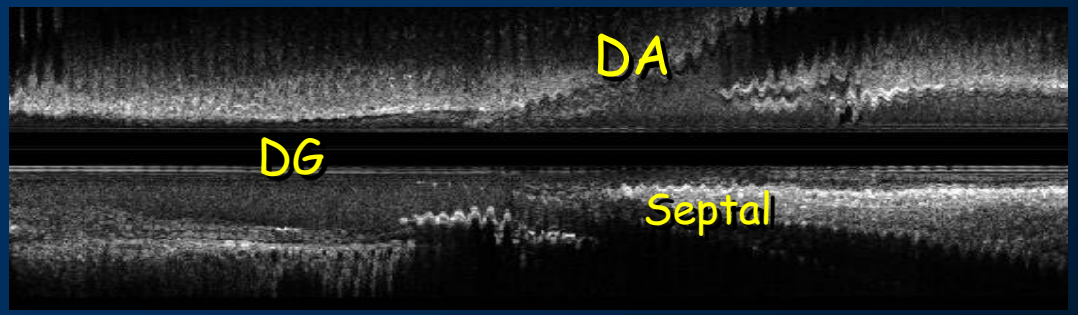
- Hypertension
- Hyperlipidemia
- Diabetes
- Sedentary
- LVEF= 72%

IVUS Approach

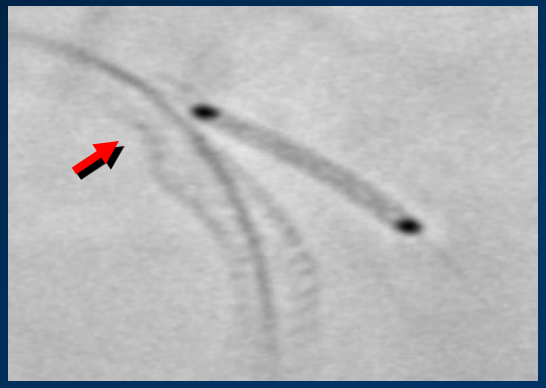


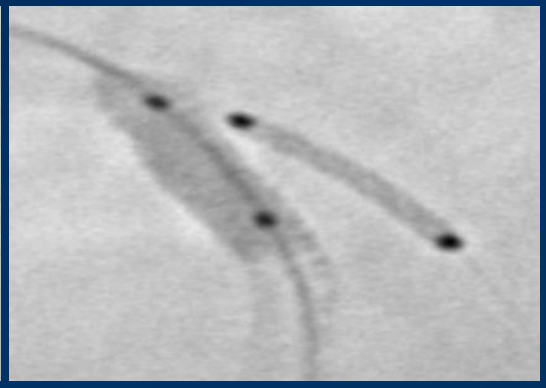


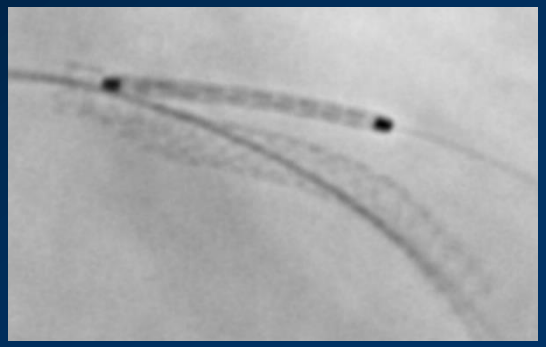


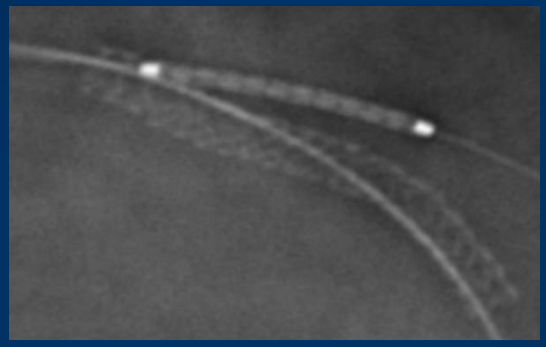


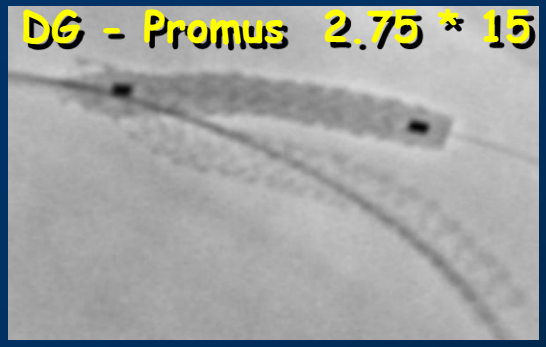

LAD
Promus 2.75 * 28

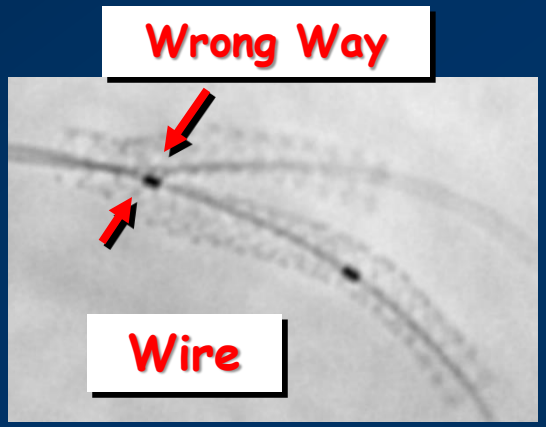


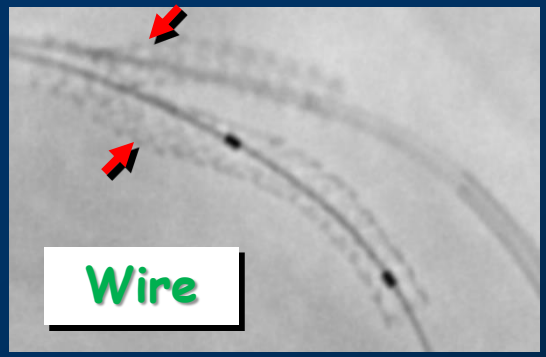


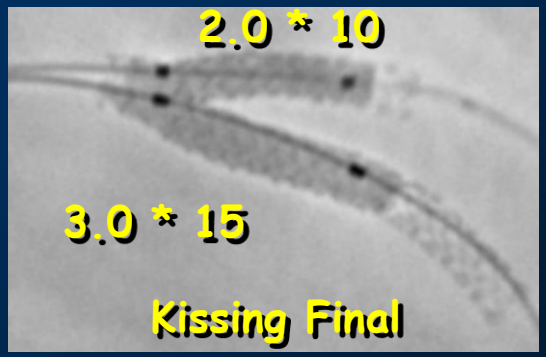




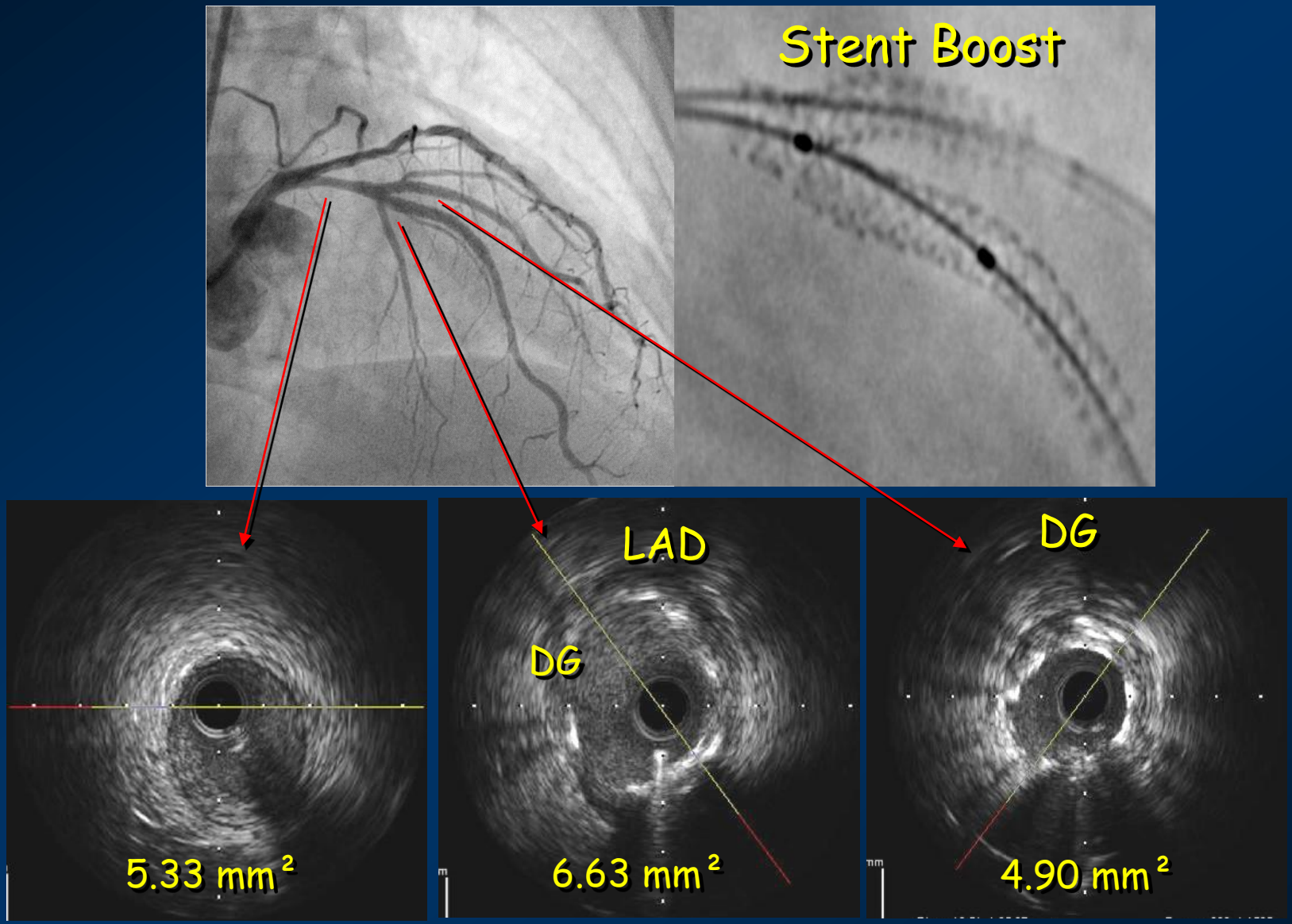

DG - Promus 2.75 * 15


Wrong Way
Wire


Wire

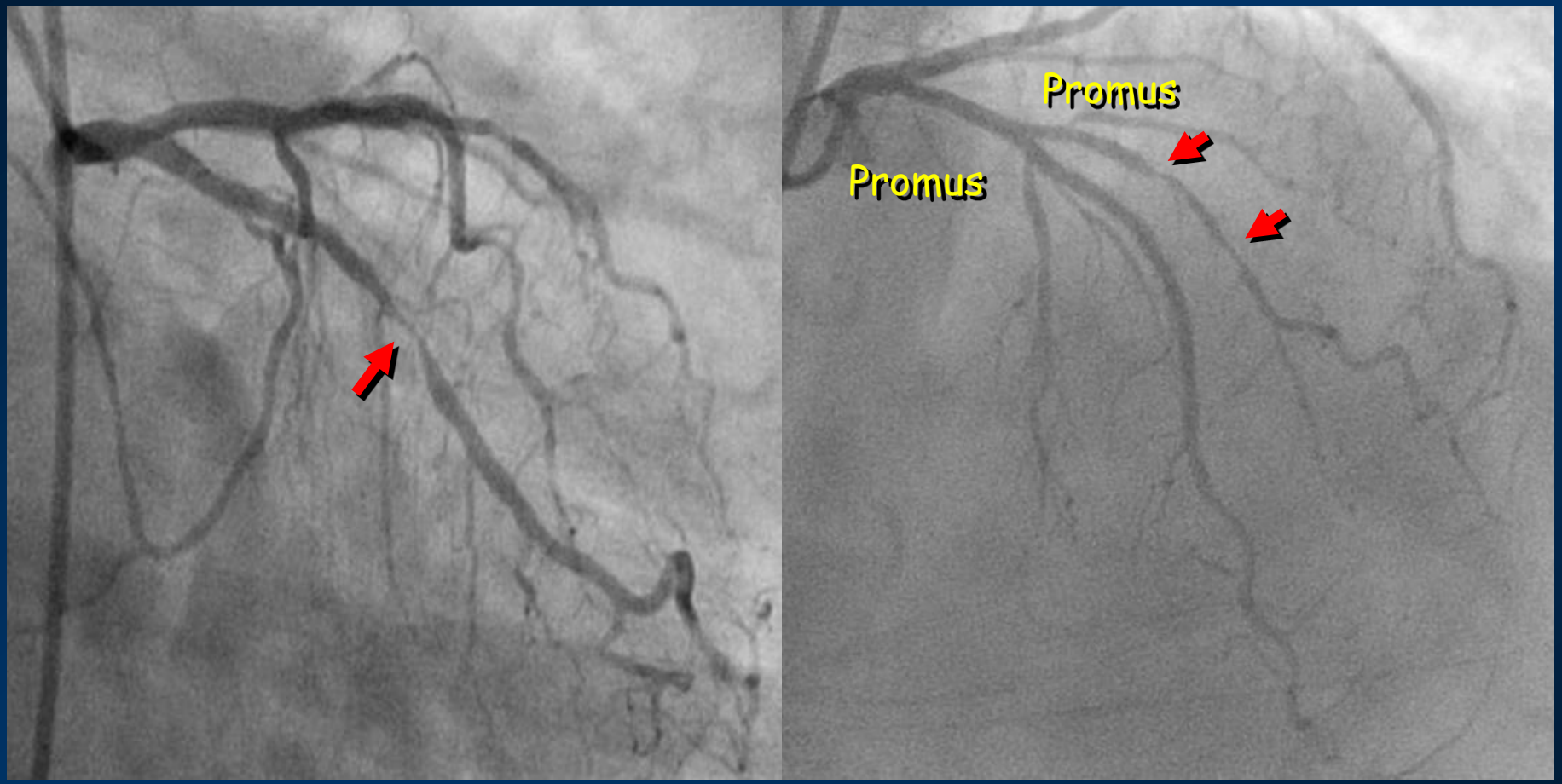

2.0 * 10
3.0 * 15
Kissing Final

Final Result



Follow Up @ 5 Yrs

Positive Thallium test lateral wall



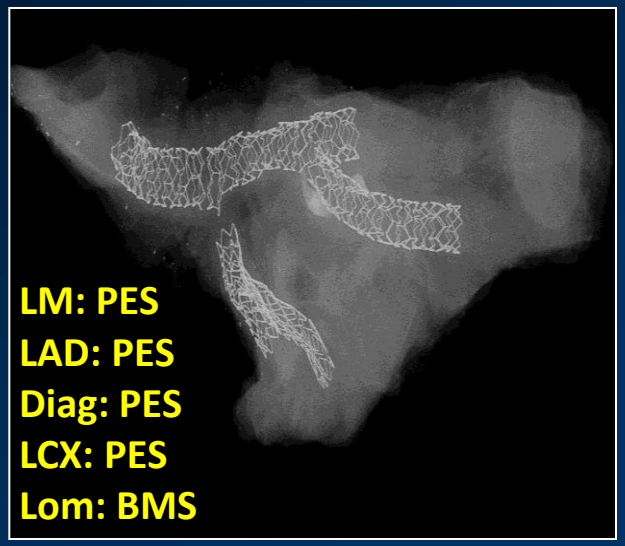
CLINICAL RESPONSIBILITY !!!

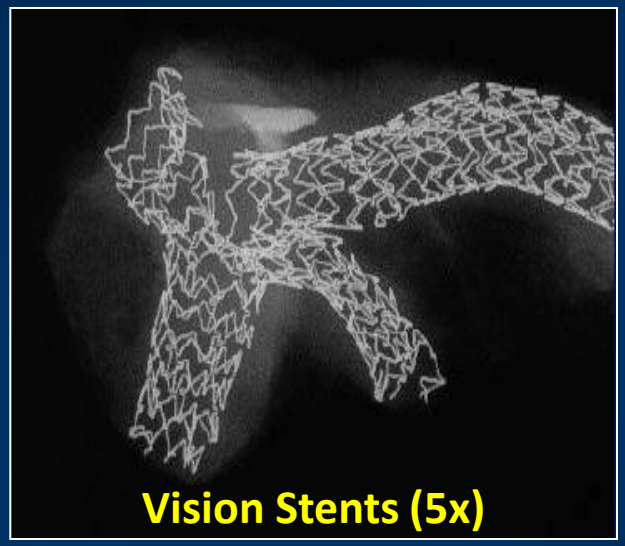
Tronco de Coronária Esquerda

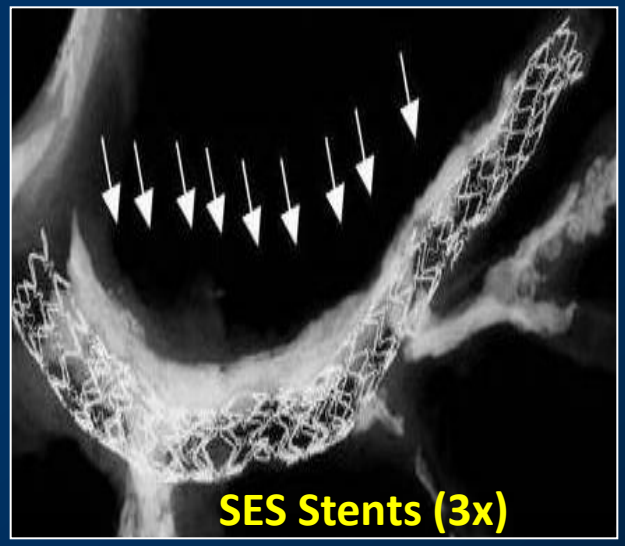
Left Main

MACCE

TROMBOSIS







Vorpahl M, Virmani R. presented ACC 2010

Who Was Thrombogenic: The Stent or the Doctor?

Patrick W. Serruys, MD, PhD; Carlo Di Mario, MD, PhD

1995

Patrick Serruys. Circulation. 1995;91:1891-1893

2014 ESC/EACTS Guidelines on Myocardial Revascularization

Recommendation for the type of revascularization (CABG or PCI) in patients with SCAD with suitable coronary anatomy for both procedures and low predicted surgical mortality

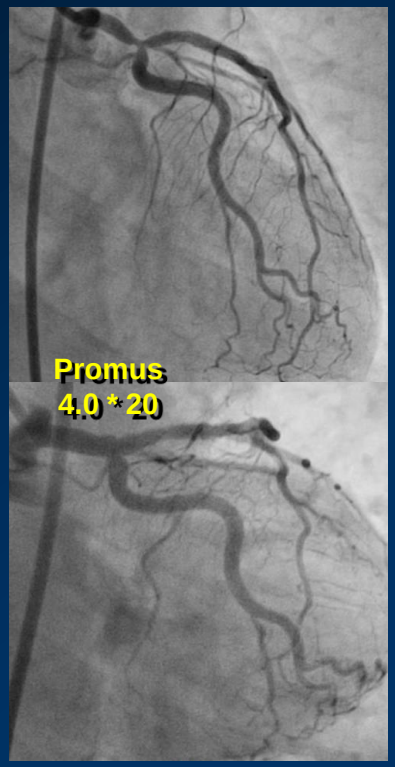
Recommendations according to extent of CAD	CABG		PCI	
	Class[a]	Level[b]	Class[a]	Level[b]
One or two-vessel disease without proximal LAD stenosis.	IIb	C	I	C
One-vessel disease with proximal LAD stenosis.	I	A	I	A
Two-vessel disease with proximal LAD stenosis. ?	I	B	I	C
Left main disease with a SYNTAX score ≤ 22. ?	I	B	I	B
Left main disease with a SYNTAX score 23–32.	I	B	IIa	B
Left main disease with a SYNTAX score >32.	I	B	III	B
Three-vessel disease with a SYNTAX score ≤ 22.	I	A	I	B
Three-vessel disease with a SYNTAX score 23–32.	I	A	III	B
Three-vessel disease with a SYNTAX score >32.	I	A	III	B

Windecker et al., Eur Heart J. 2014 Aug 29. pii: ehu278

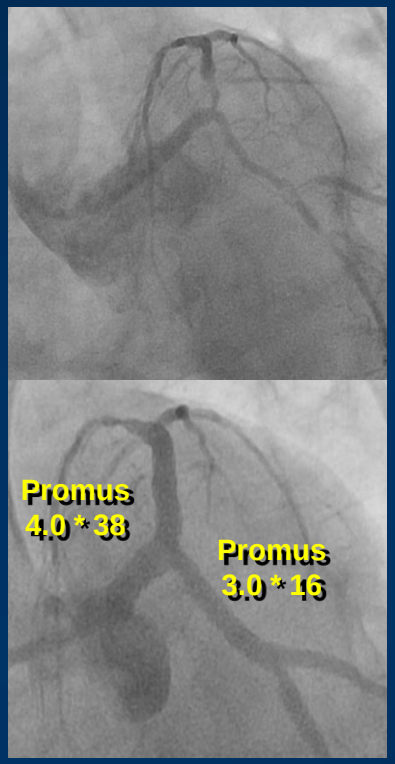
????????

Left Main Techinique

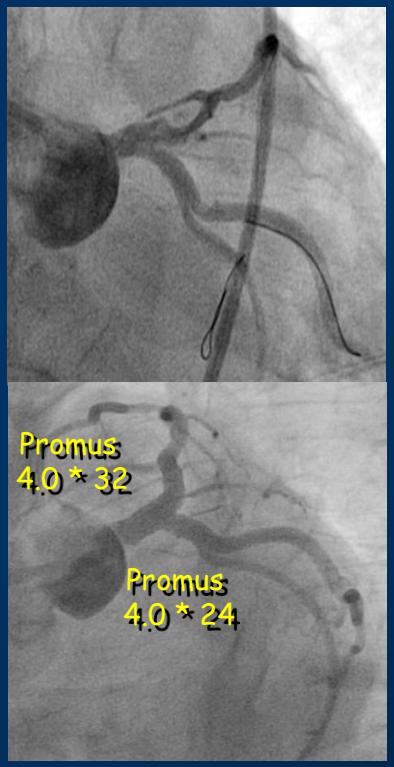
PROVIONAL



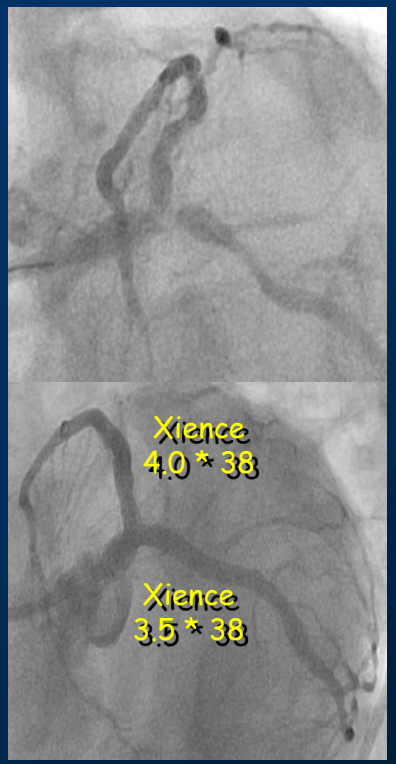
TAP



CRUSHING



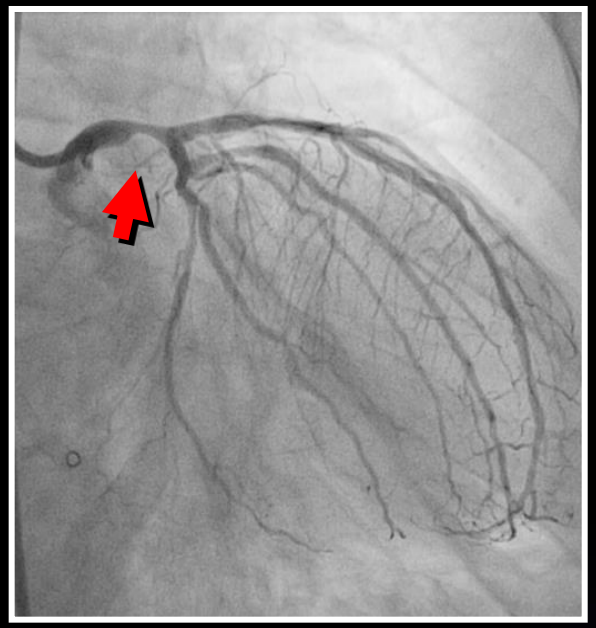
CULOTTE



Source: Hospital Costantini registry PCI in UPLM.

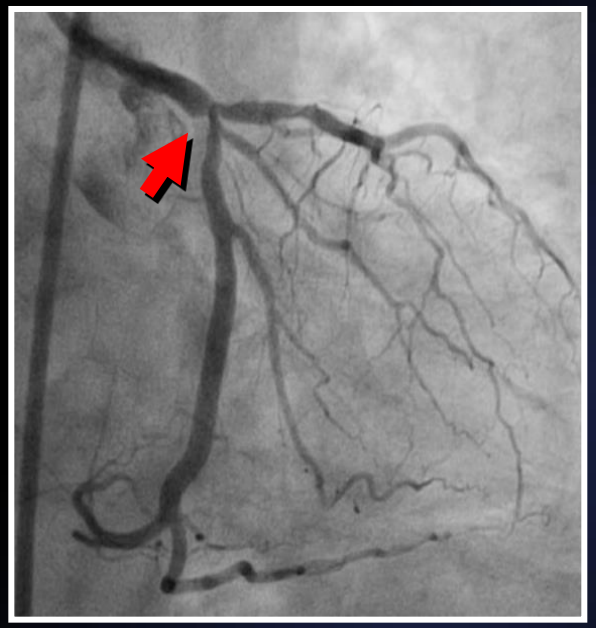
First Point: All Left Main are Equal ??? Not !.....

Euro Score 4
Inter. Risk



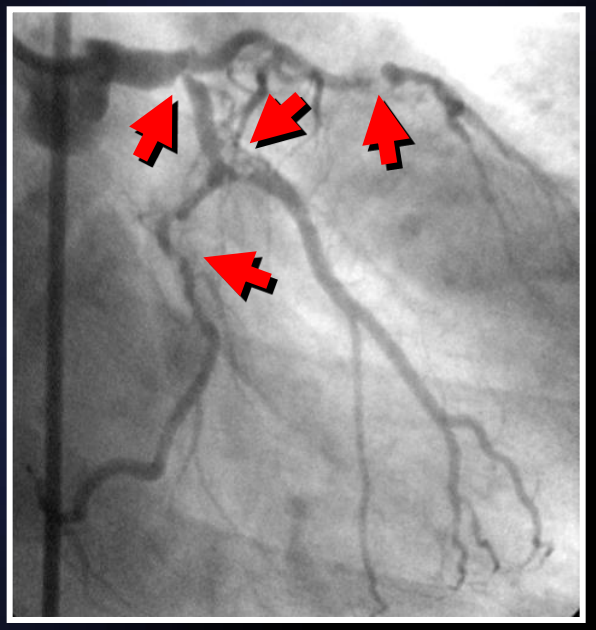
Syntax Score 18
Low Risk

Euro Score 2
Low Risk



Syntax Score 23
Inter. Risk

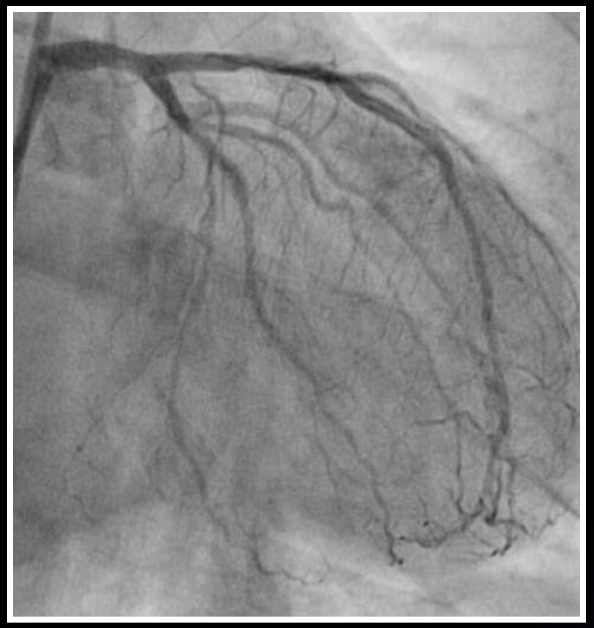
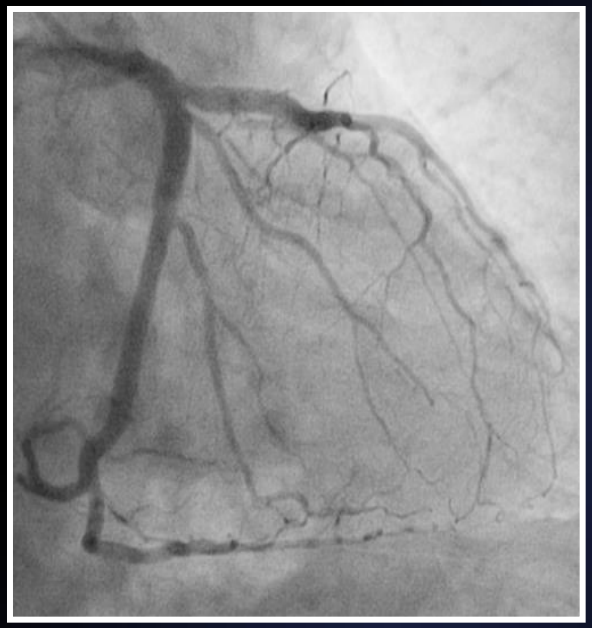
Euro Score > 6
High Risk



Syntax Score 36
High Risk

Source: Hospital Costantini registry PCI in UPLM.

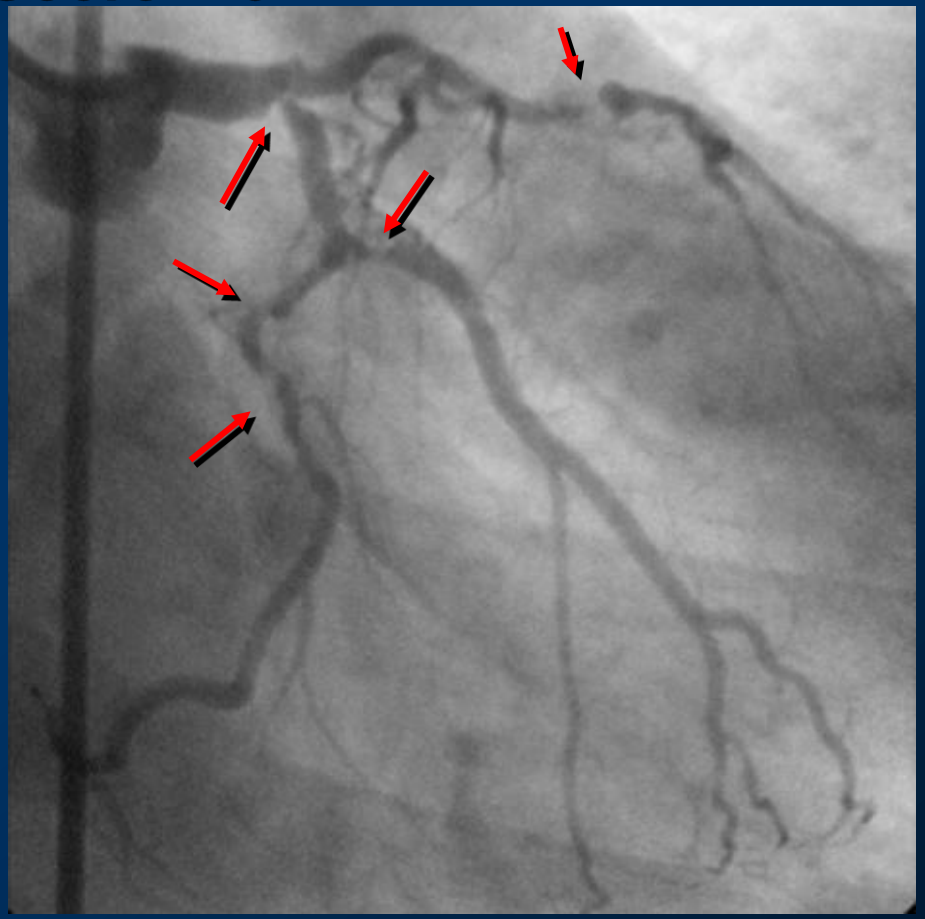
Second Point: Follow Up

Follow Up 8 mo	Follow Up 16 mo	Follow Up 5 yo
		
Syntax Score 18 Low Risk	Syntax Score 23 Inter. Risk	Syntax Score 36 High Risk

Source: Hospital Costantini registry PCI in UPLM.

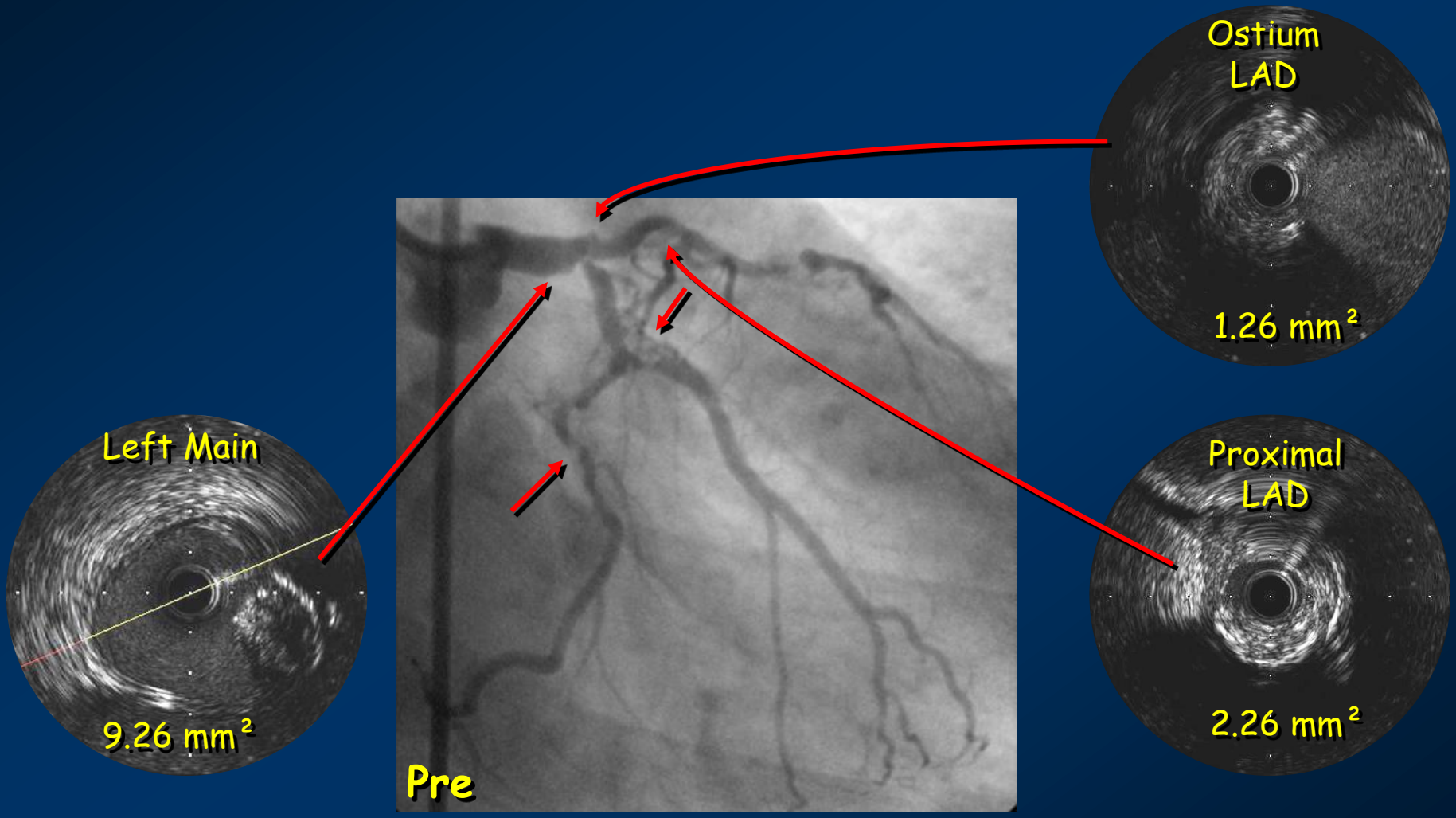
Clinical Presentation

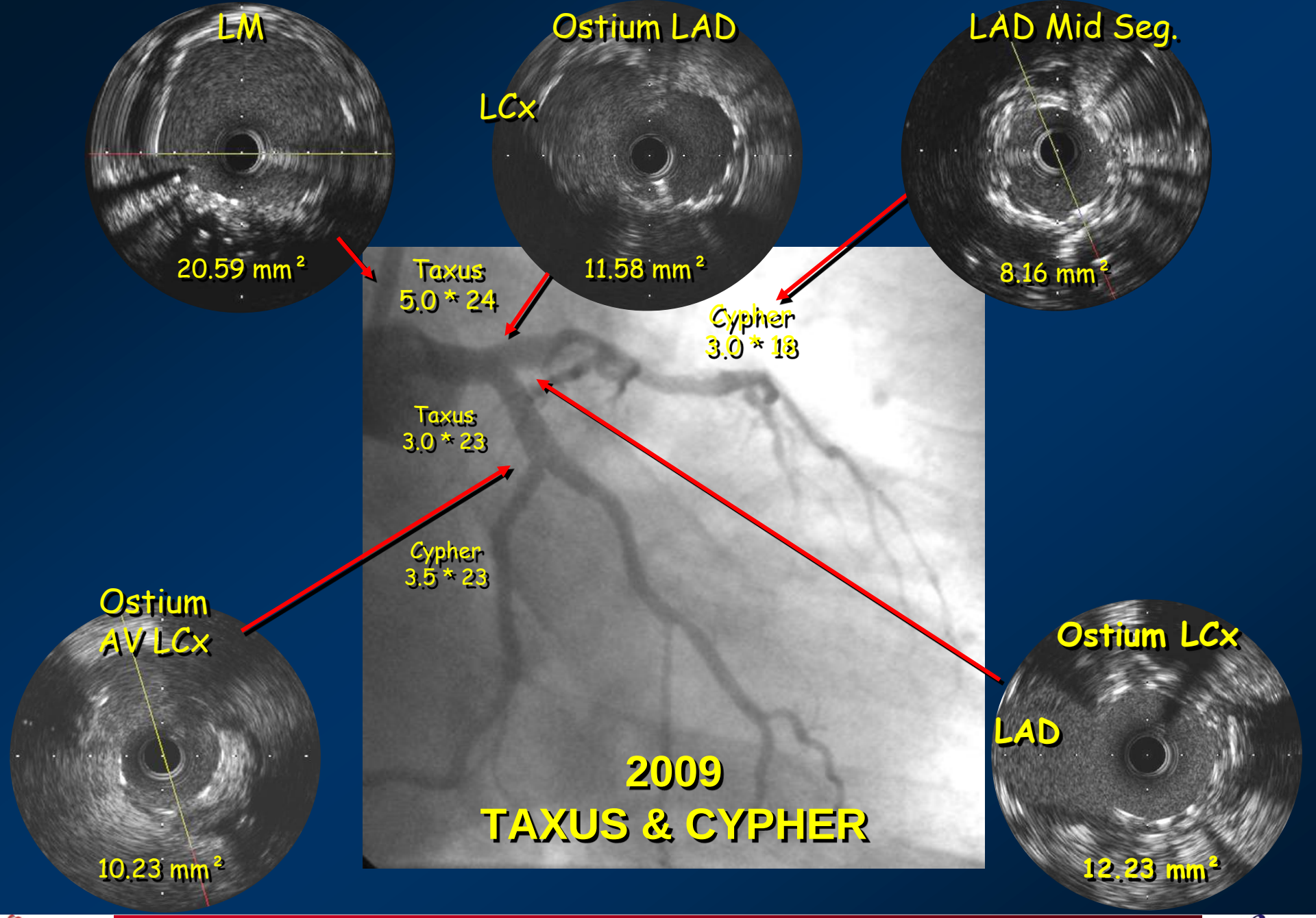
- W.S, 61 years old male, with stable angina Class II, positive treadmil test,
- Syntax Score 36 – Euro Score > 6



- Family history
- Hyperlipidemia
- Former smoker
- LVEF= 51%

Angiography + IVUS pre procedure

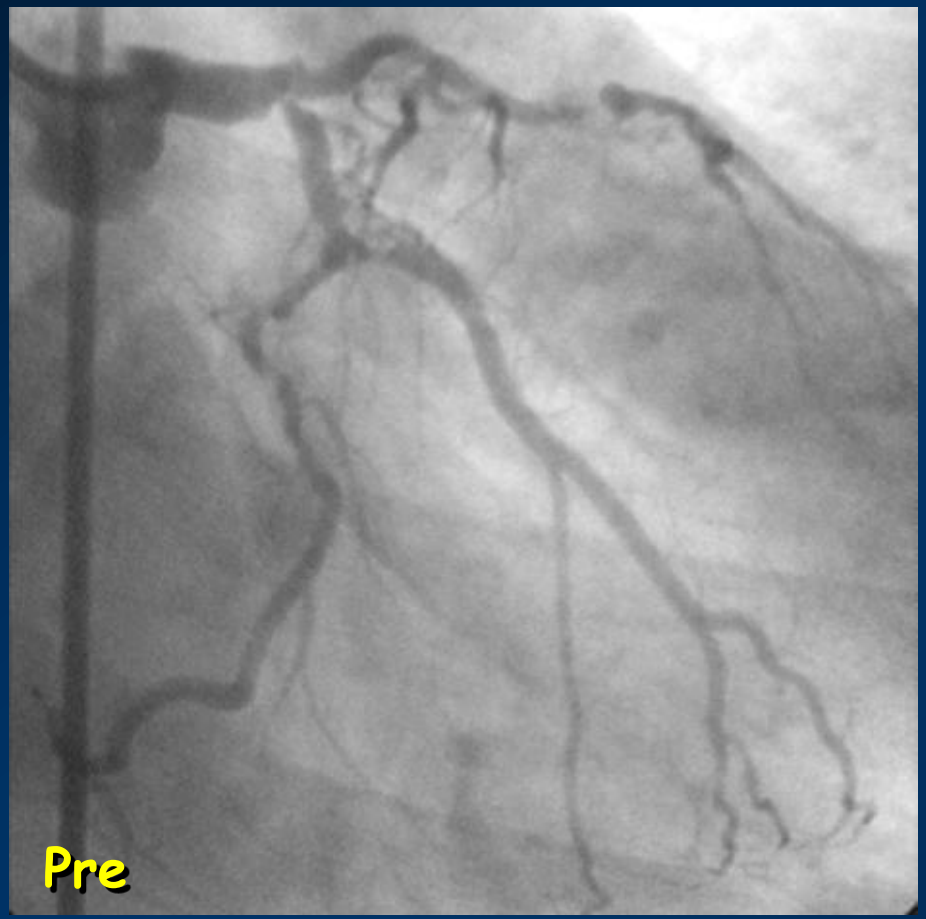



LM
20.59 mm²
Ostium LAD
LCx
11.58 mm²
LAD Mid Seg.
8.16 mm²
Taxus
5.0 * 24
Cypher
3.0 * 18
Taxus
3.0 * 23
Cypher
3.5 * 23
Ostium
AV LCx
10.23 mm²
Ostium LCx
LAD
12.23 mm²
2009
TAXUS & CYPHER

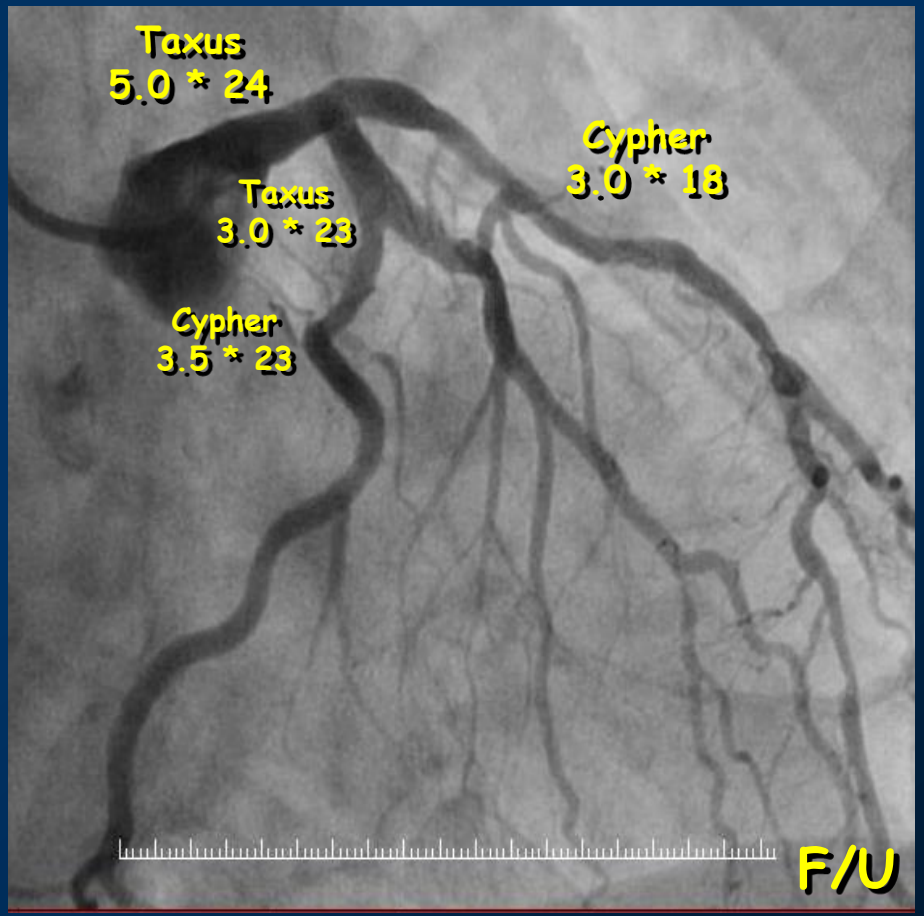
Left Main PCI

Image pre & last 5 yrs - stents1ª generation.

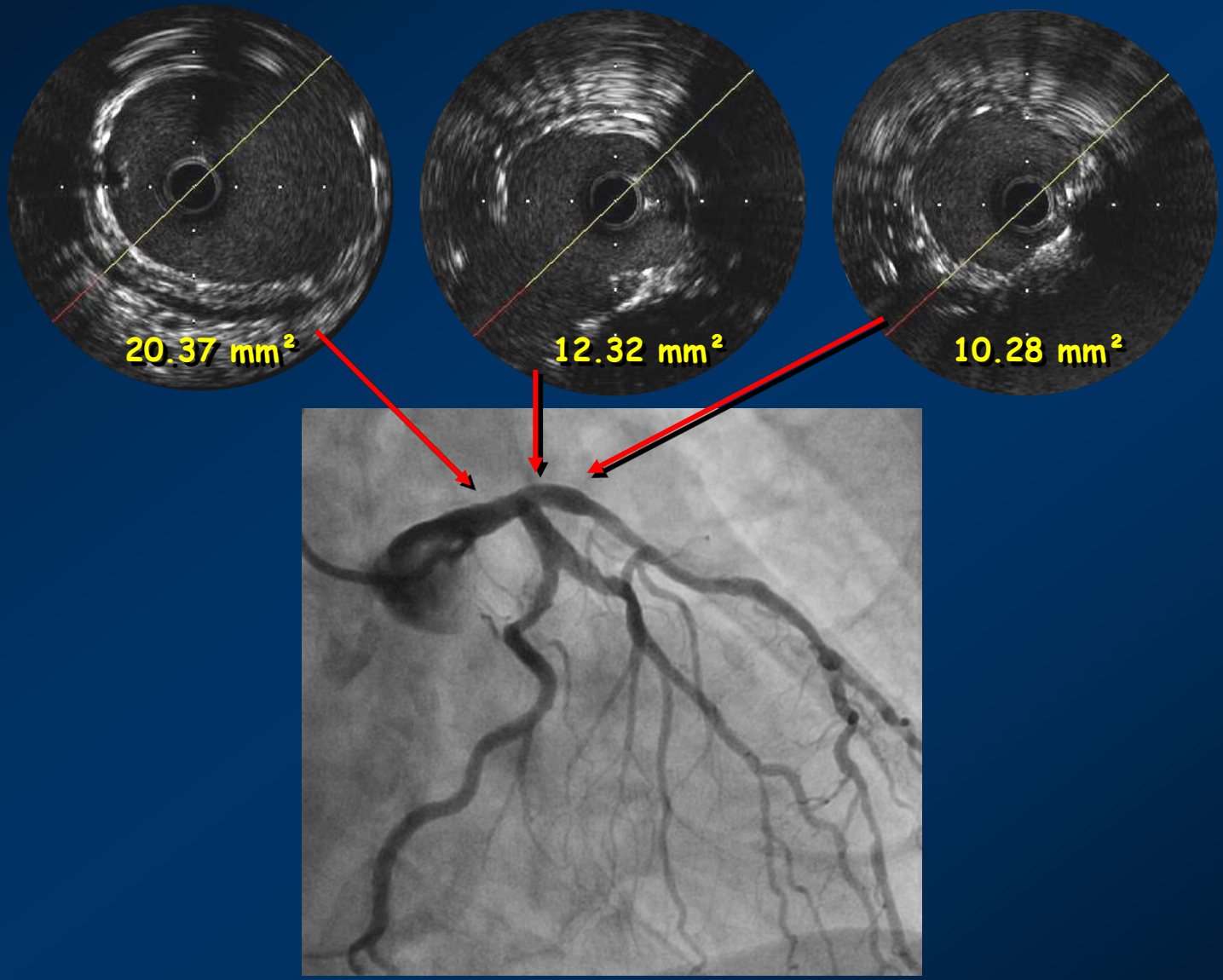
2009 pre PCI



2014 FU @ 5 YRS

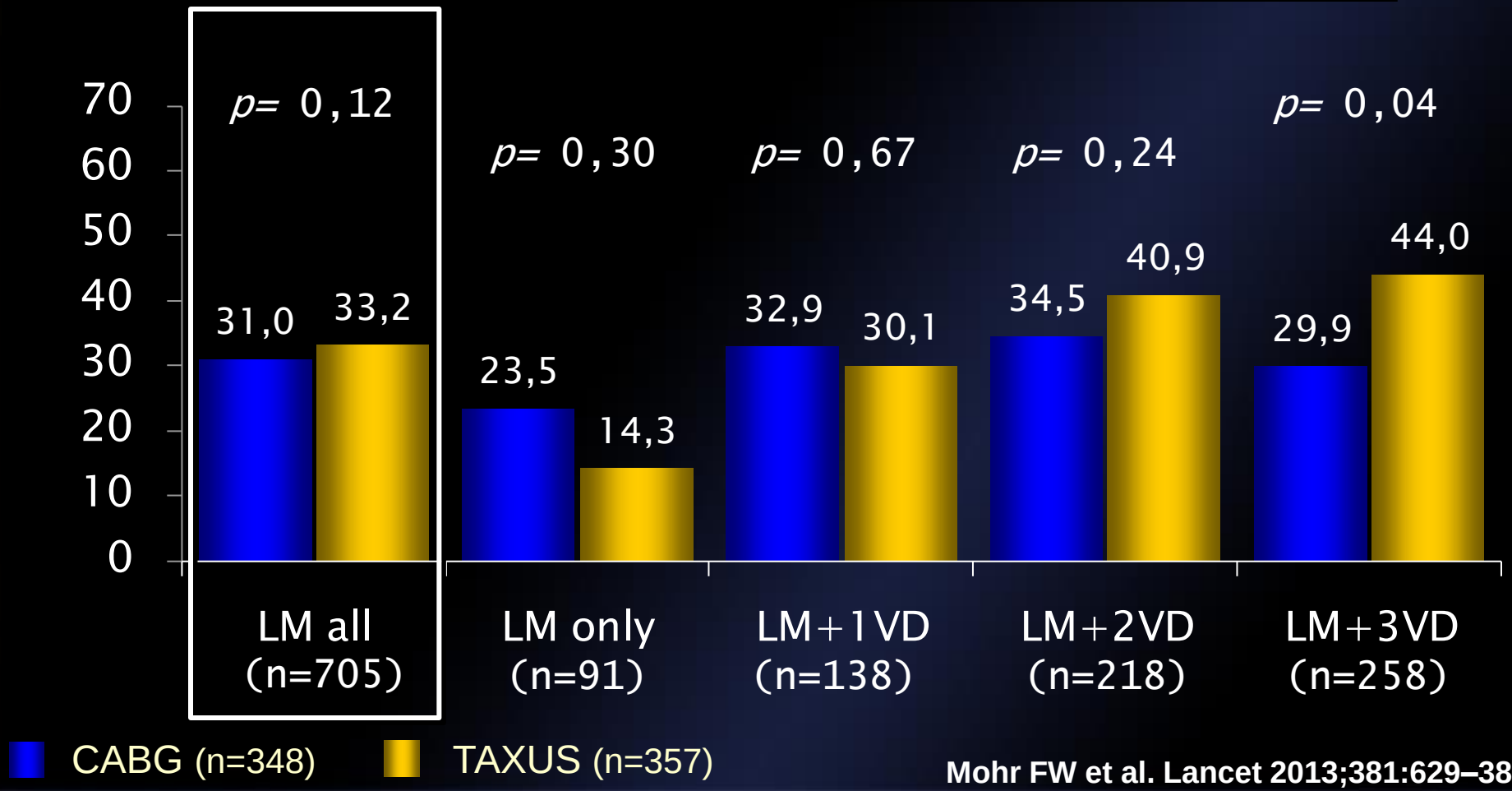


Follow Up @ 5 Yrs (Taxus & Cypher)



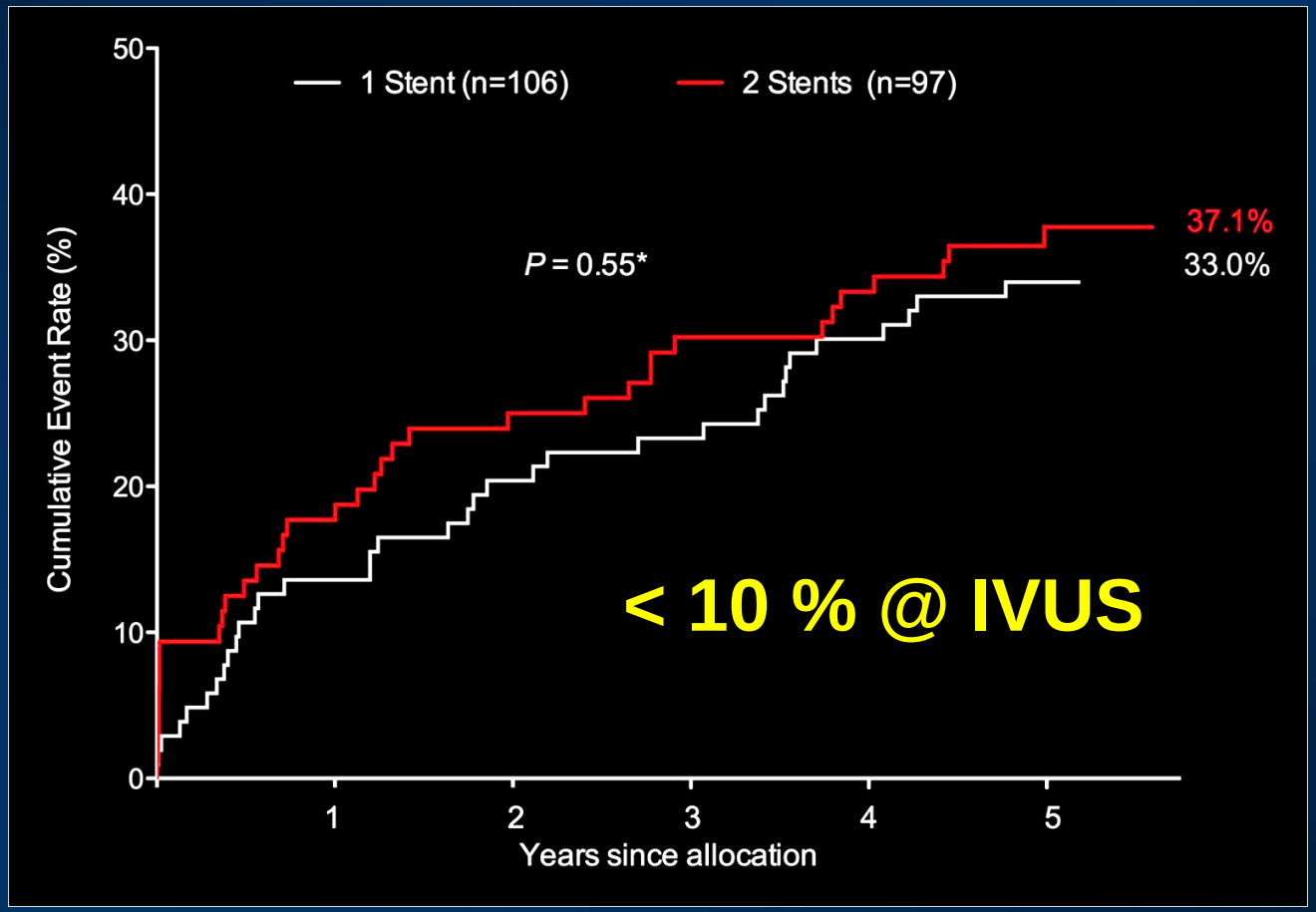
MACCE to 5 Years
Left Main Subsets

< 10% with IVUS ???



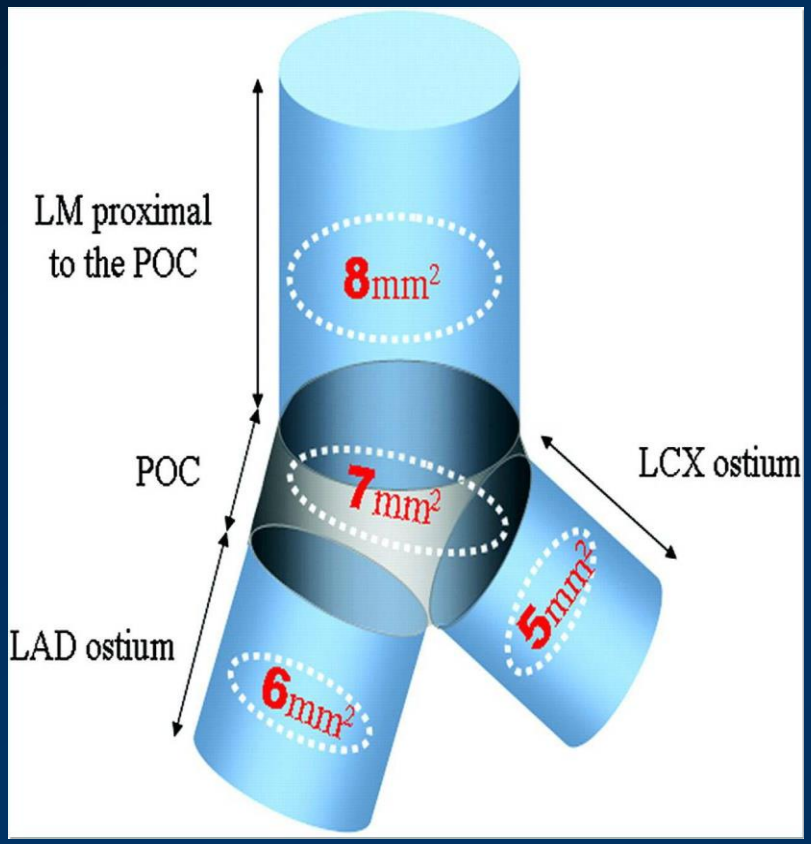
Mohr FW et al. Lancet 2013;381:629–38

Syntax
MACCE to 5 years
LM Distal PCI Bifurcations: 1 vs ≥ 2 stents



TCT 2014; Oral presentation Marie-Claude MORICE

Minimal stent area threshold values for the prediction of angiographic in-stent restenosis



- ✓ MACE-free survival was lower in pts with underexpansion vs those without underexpansion (89.4% vs 98.1%)
- ✓ TLR-free survival was lower in pts with underexpansion vs no underexpansion (90.9% vs 98.5%).
- ✓ Although acute malapposition was observed in 28 pts, malapposition was not related to MACE at follow-up.

Kang S et al. Circ Cardiovasc Interv. 2011;4:562-569

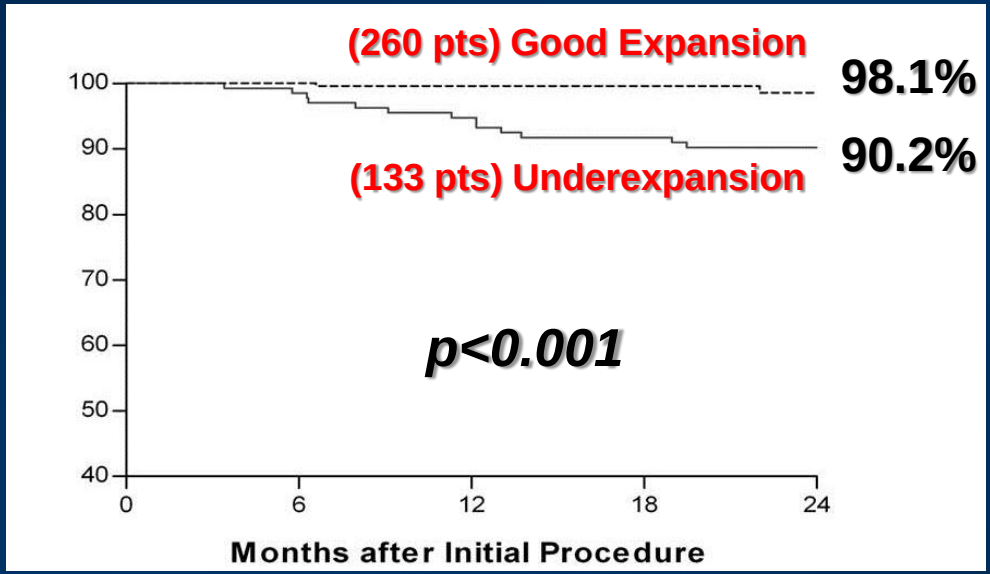
HOSPITAL CARDIOLÓGICO COSTANTINI

Angiography don't give information !!!

Fundação Francisco Costantini

Comprehensive Intravascular Ultrasound Assessment of Stent Area and Its Impact on Restenosis and Adverse Cardiac Events in 403 Patients With Unprotected Left Main Disease

Under Expansion Mortality Predictor !!!!



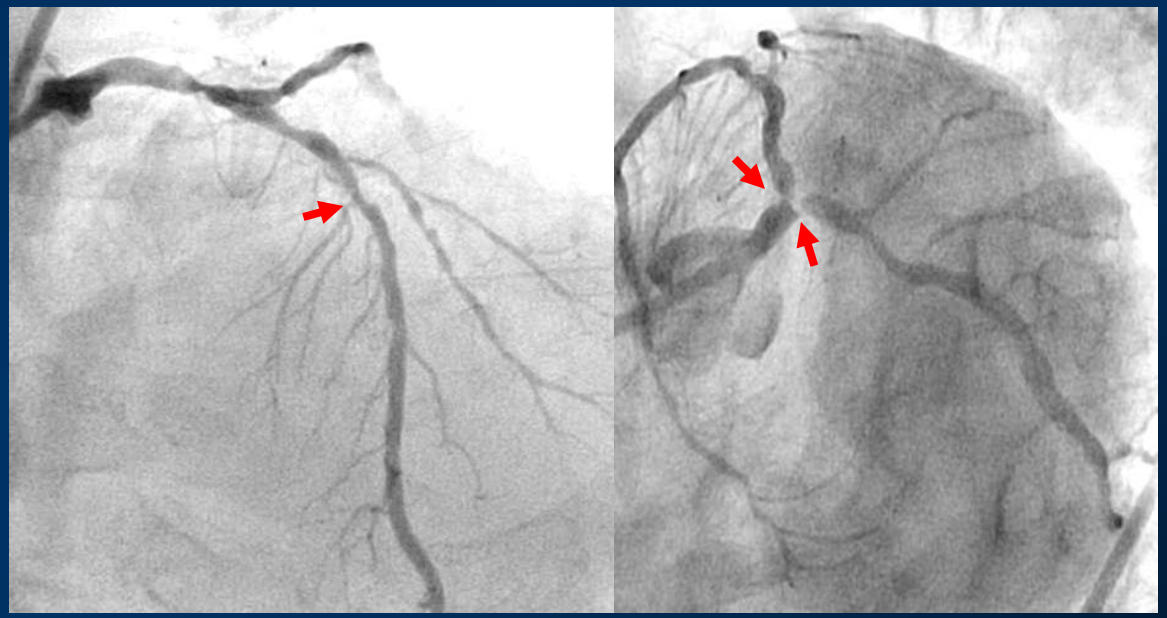
Conclusion

A smaller IVUS-MSA within any one of these segments was responsible for a higher rate of angiographic ISR and clinical MACE. Correcting underexpansion with these optimal IVUS criteria using IVUS guidance during LM stenting procedures may reduce cardiac events after DES treatment for unprotected LM disease.

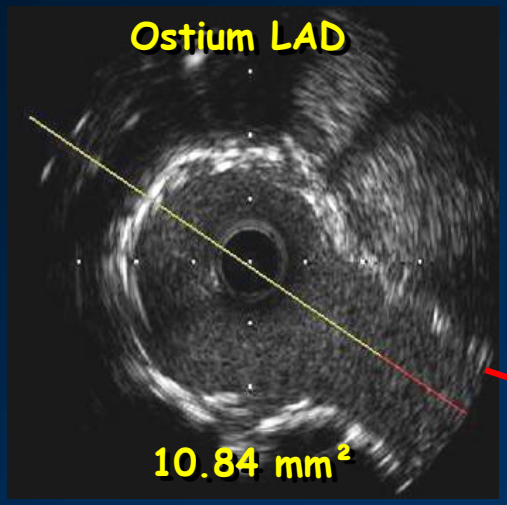
Kang S et al. Circ Cardiovasc Interv. 2011;4:562-569

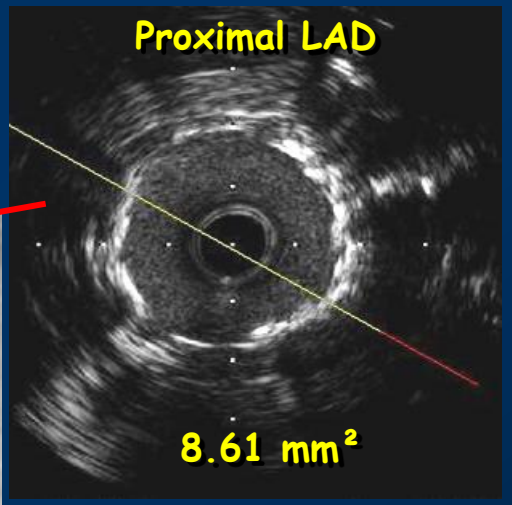
- V.S.N, 79 years old male, Atrai fibrilation, ACS NSST;
- Syntax Score 28 – Euro Score > 6

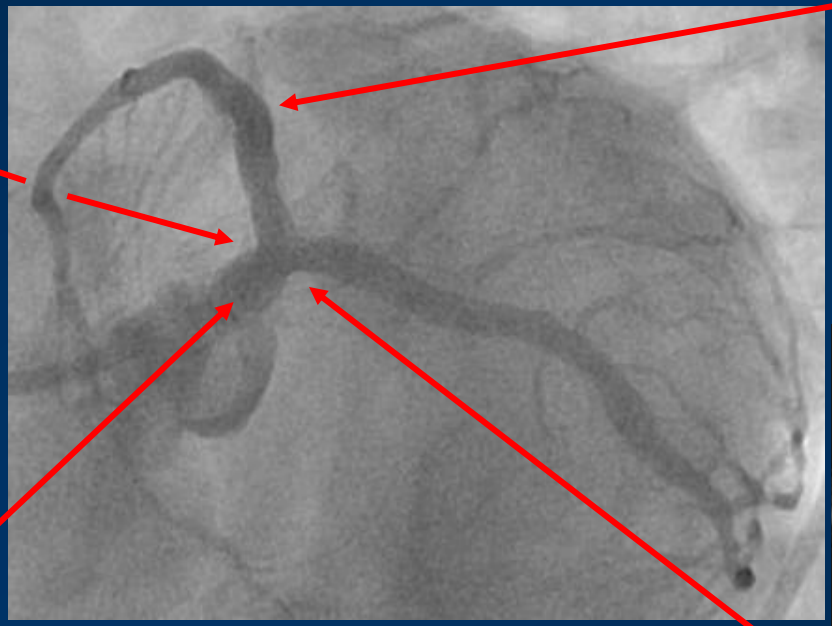
- Family history
- Diabetes
- Hyperlipidemia
- Former smoker
- LVEF= 51%

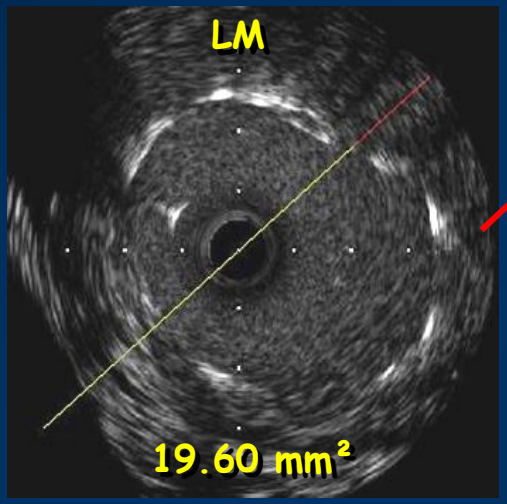


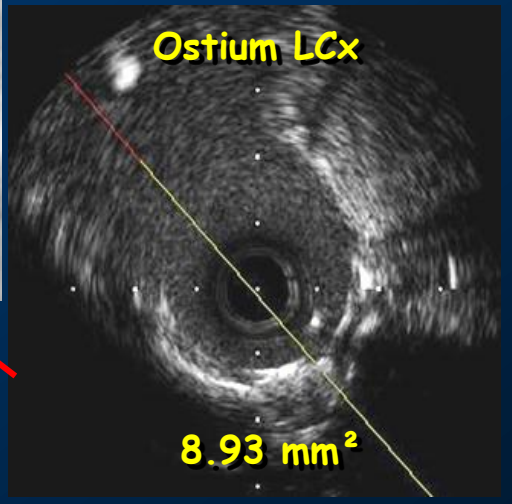
Final Result



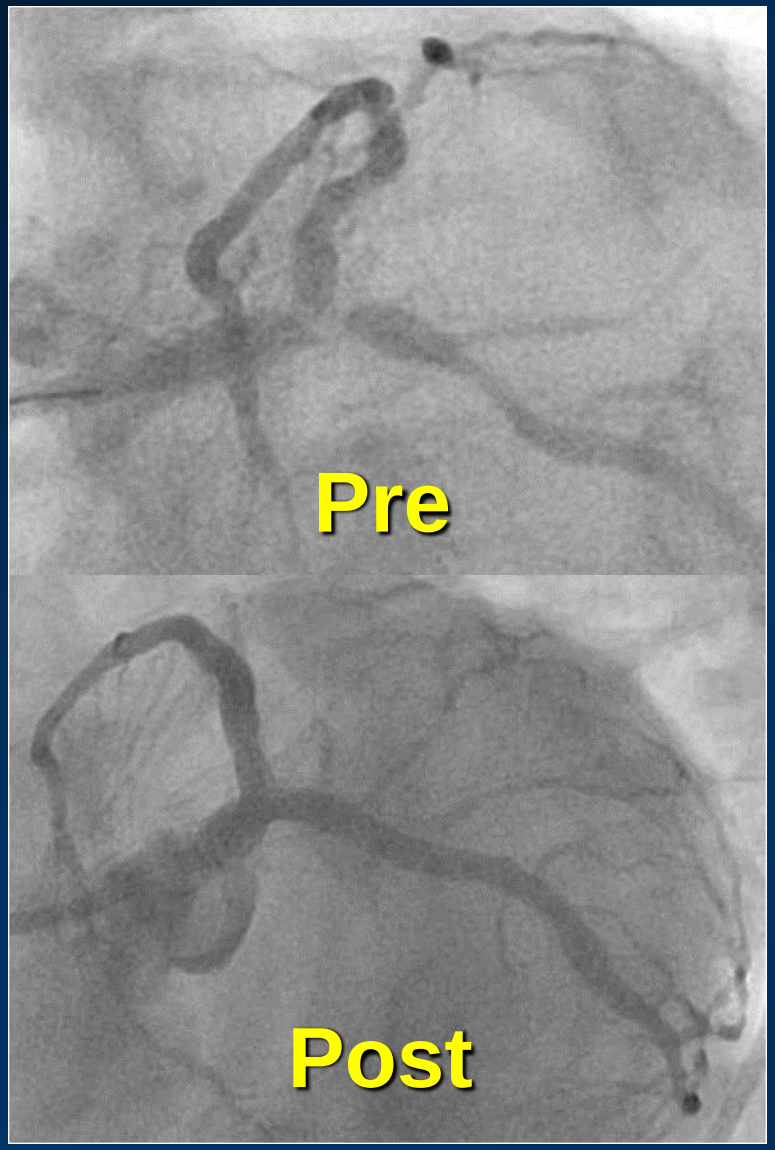








Summary



3:15 hs of procedure
65 min X Ray
350 ml de Contrast

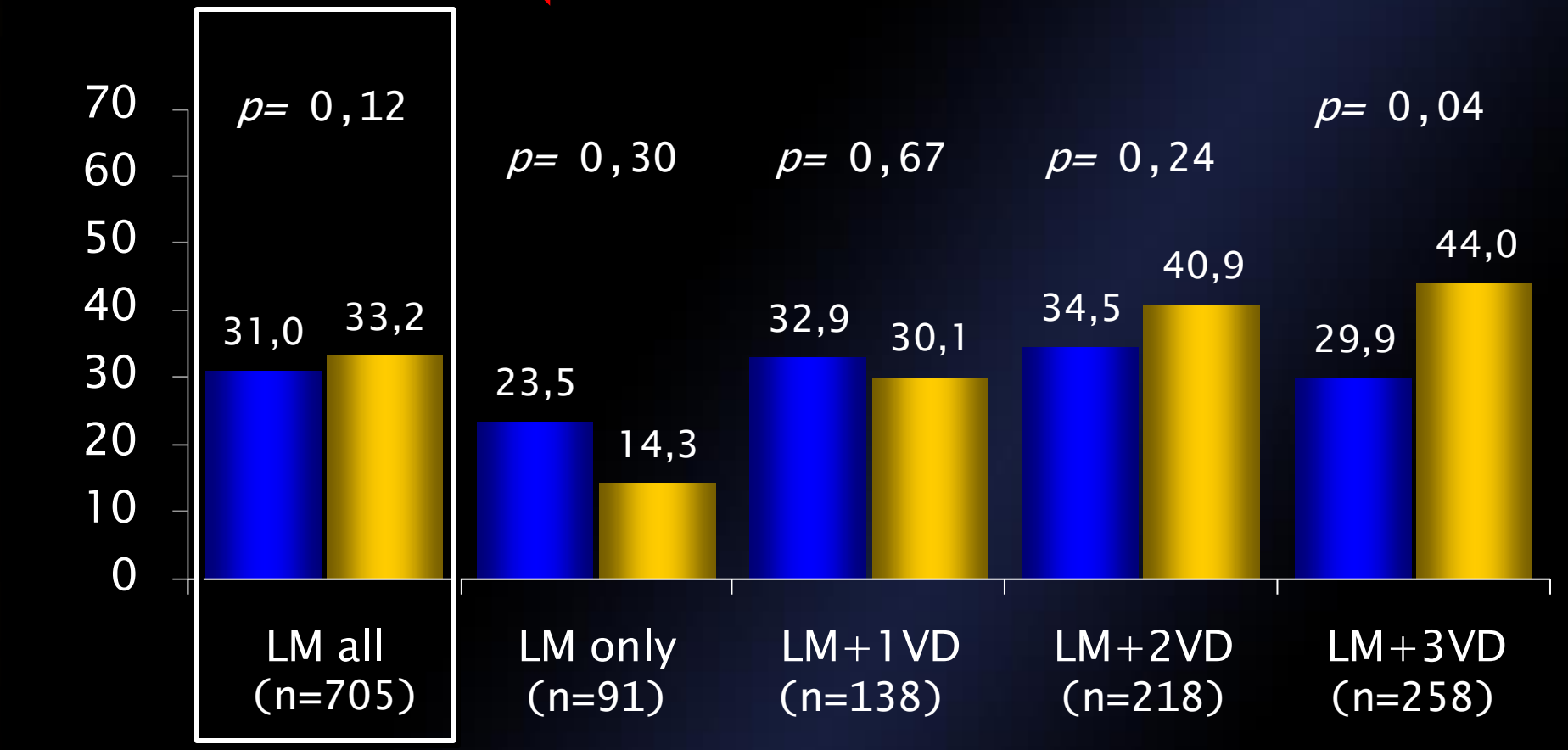
- ✓ IVUS
- ✓ Stent BOOST
- ✓ Kissing Balloon
- ✓ Patience

MACCE to 5 Years

Left Main Subsets

SYNTAX

< 10% with IVUS ???



Mohr FW et al. Lancet 2013;381:629–38

The First Brazilian Registry UPLM PCI

Revista Brasileira de Cardiologia Invasiva
© 2011 Sociedade Brasileira de Hemodinâmica e Cardiologia Intervencionista

Vol. 19, Nº 2, 2011
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Artigo Original

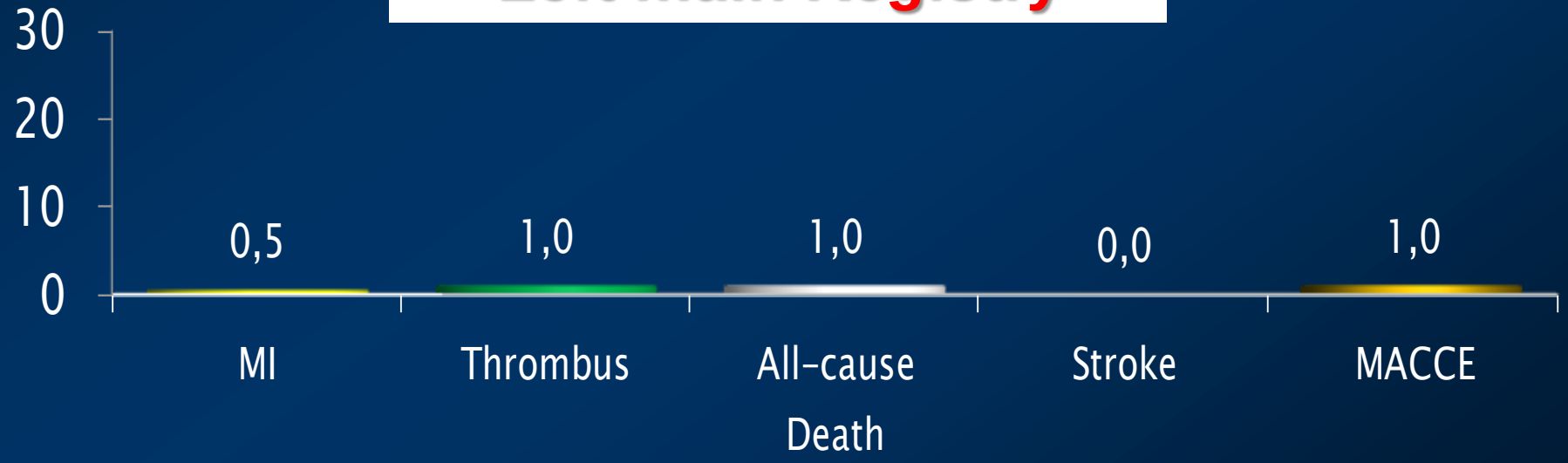
Evolução Clínica de Pacientes com Lesões de Tronco de Coronária Esquerda Não-Protegido Submetidos a Angioplastia Coronária com Implante de Stents Farmacológicos

Costantino R. Costantini[1], Daniel Zanuttini[1], Marcos A. Denk[1], Sergio G. Tarbine[1], Marcelo F. Santos[1], Eduardo F. Oliveira[1], Marcos H. Bubna[1], José F. Rocha[1], Marcos J. Barbosa[1], Costantino O. Costantini[1]

Costantini et al. RBCI; Junho, 2011;19(2): 153-9

In Hospital Outcomes
(n= 255 pts)
Procedural Success 99,8%
Discharge: 99,18%

Hospital Costantini
Left main Registry



Hospital Costantini Registry LM PCI

Follow Up mean 6,5 yrs
(n= 255 pts)

BIFURCATION = 87,3%

MULTIVESSEL = 79%

SYNTAX SCORE ≥ 33 = 44%

EUROSCORE > 6 = 49%

96,6 % IVUS

CABG Results (F/U mortality)
Cleveland: 11,3 (1 year)
NYS Database: 9,6 (2 years)
Duke Database: 10,29 (2 years)

Hospital Costantini
Left main Registry

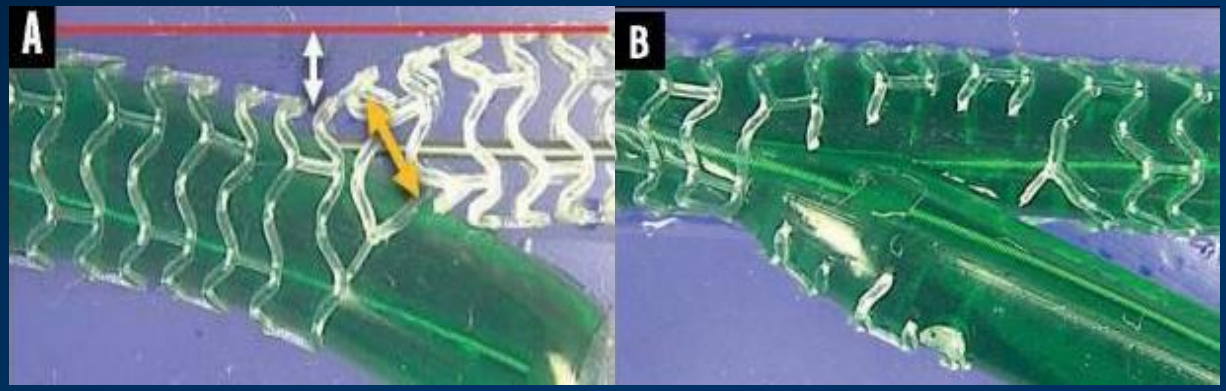
Hospital Costantini Registry LM PCI

Bioresorbable scaffolds

2015

Bioresorbable scaffolds on the bench

John Ormiston[1,2,6]*, MBChB; Pascal Motreff[3], MD; Olivier Darremont[4], MD; Bruce Webber[2], MHSc; Patrice Guerin[5], MD; Mark Webster[2,6], MBChB



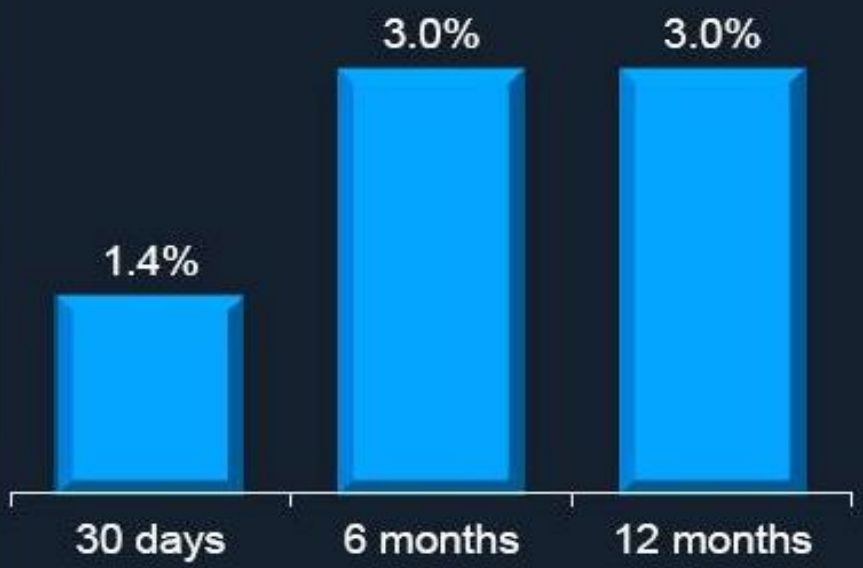
The interventionalist needs to understand the different BRS performance characteristics in order to select appropriate coronary lesions for BRS, and to deliver, deploy and post-dilate BRS appropriately and safely. Because polymeric BRS struts may break more readily than those of metallic stents it is essential that the interventionalist understands safe balloon size and pressure post-dilatation limits. It is likely that the "T" strategy with a metallic drug-eluting stent is the best strategy if, after deployment of an MB scaffold, the SB needs treatment. The culotte, crush and SKS strategies have important disadvantages, including technical difficulty, multiple strut layers and the potential for strut fracture. The withdrawal of a trapped wire during a provisional SB strategy causes a limited amount of polymer coating damage.

EuroIntervention 2015;11:V166-V169

GHOST-EU Absorb BVS in Bifurcations

289 patients, 302 bifurcation lesions from 10 centers (86% provisional)

Kaplan-Meier Estimates of Definite Stent Thrombosis



Diabetes mellitus	25%
ACS at presentation	34%
Prasugrel or ticagrelor	19%
True bifurcation	45%
Predilation of MB	95%
Postdilation of MB	61%
FKBI	19%
IVUS	22%
OCT	21%

Ferrarotto Hospital
AOU Policlinico-Vittorio Emanuele
Catania, Italy

Naganuma T, Latib A, GHOST-EU Investigators. Submitted

GHOST-EU Absorb BVS in Bifurcations

289 patients with 302 bifurcation lesions from 10 centers (86% provisional)

Case	DM	ACS	Medina	Technique	Post-dilation on MB	KBI	OCT and/or IVUS	P2Y12 inhibitor	On DAPT
1	Yes	No	1,1,1	Single	Yes	No	Yes	Clop	No
2	No	No	0,1,0	Single	No	No	No	Clop	Yes
3	No	Yes	1,0,0	Single	No	No	Yes	Clop	Yes
4	No	Yes	1,1,1	Single	No	No	No	Ticlop	Yes
5	Yes	Yes	1,1,0	Single	No	No	No	Clop	Yes
6	No	Yes	1,1,1	Double*	Yes	No	No	Clop	No
7	No	Yes	1,1,0	Single	No	No	No	Clop	Yes
8	Yes	Yes	1,1,0	Single	No	No	No	Clop	Yes
9	Yes	Yes	0,0,1	Single	No	Yes	No	Pras	Yes

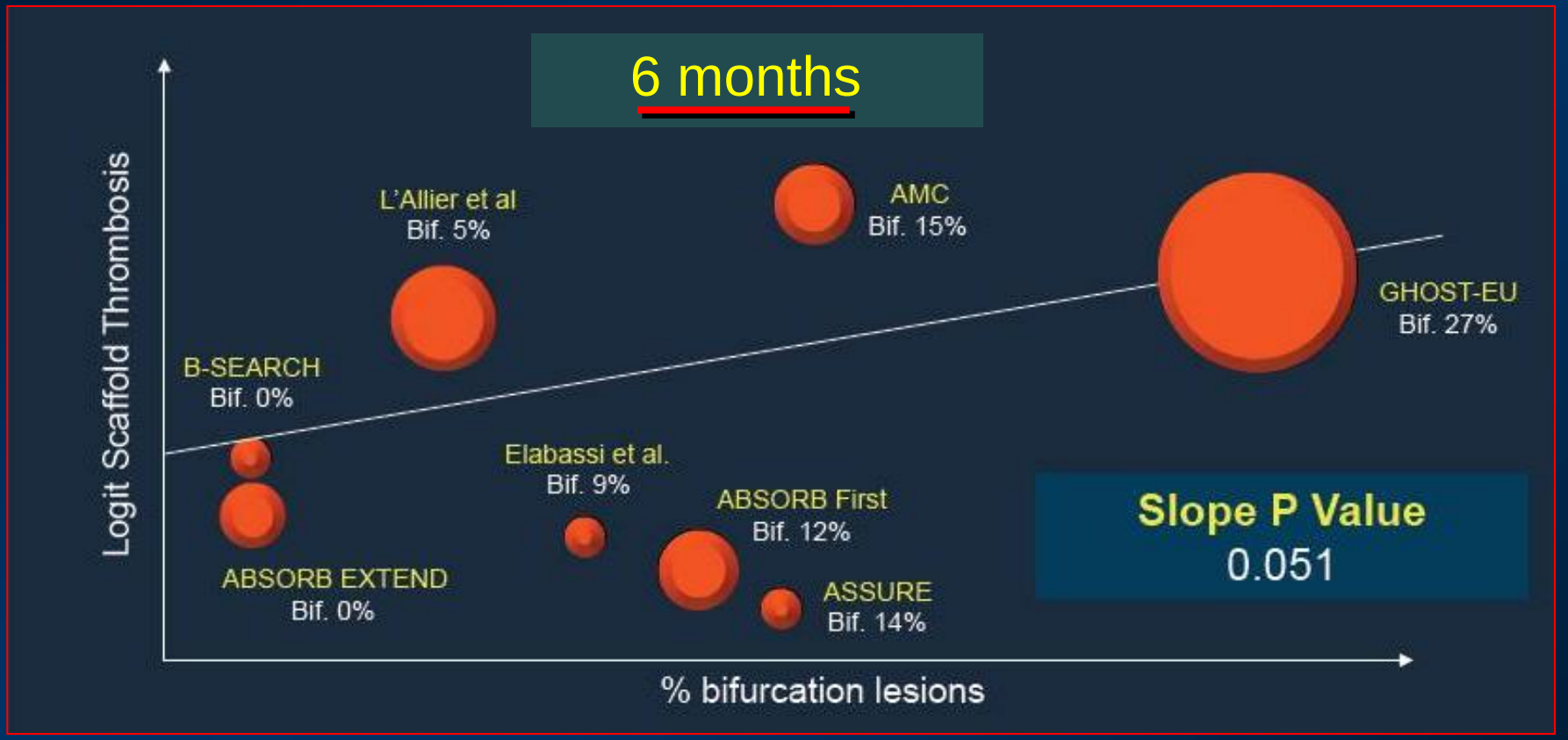
*DES on SB. Favorable characteristics are shown in green. Unfavorable characteristics are shown in red.

Ferrarotto Hospital
AOU Policlinico-Vittorio Emanuele
Catania, Italy

Naganuma T, Latib A, GHOST-EU Investigators. Submitted

Early Scaffold Thrombosis And Bifurcation Rate

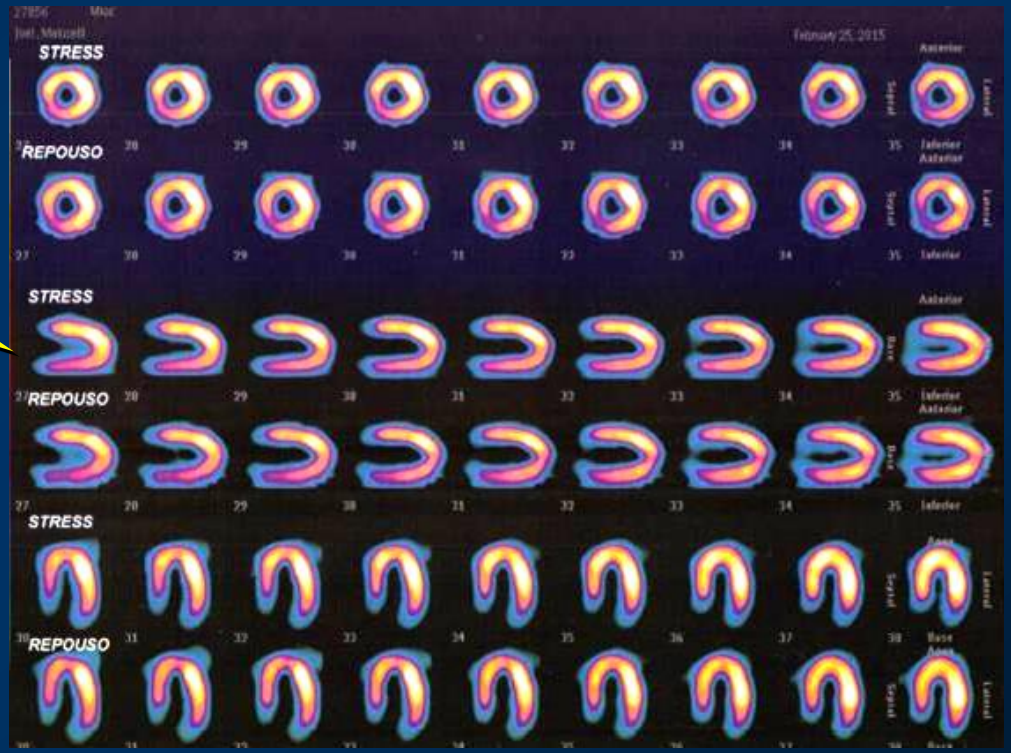
Meta-regression of 3,386 patients undergoing BVS-PCI from 8 Registries



10th European Bifurcation Club; 2014, Capodanno D. Tamburino C. Unpublished

Apresentação clínica

- J.M, 69 masculino, Ergometria com TVNS prévia.
- Angiotomo com piora da lesão em DA/Dg desde a última análise.....(2011)
- Cintilografia: 2011; 2013 e 2015 (com perfusão homogênea)

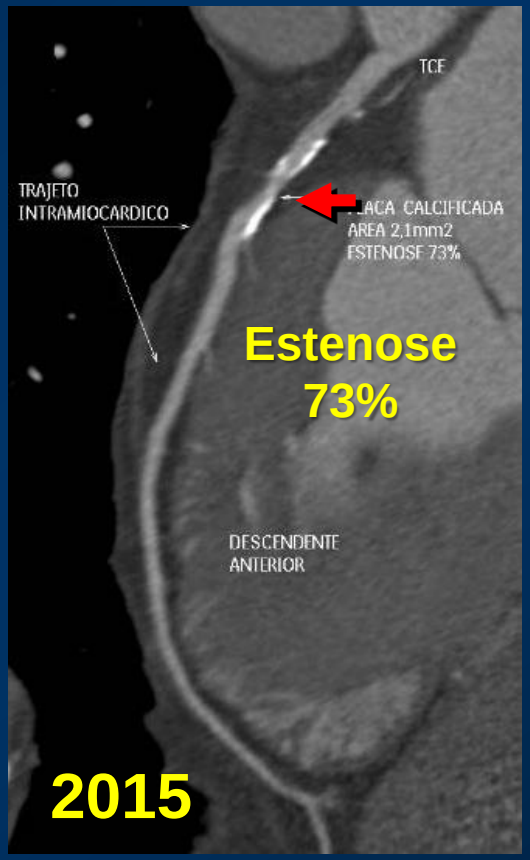


2015

- Hipertensão
- Dislipidemia
- Stress

Angiotomo


Estenose
60%
2011


TCE
TRAJETO
INTRAMIOCARDICO
PLACA CALCIFICADA
AREA 2,1mm2
ESTENOSE 73%
Estenose
73%
DESCENDENTE
ANTERIOR
2015

Arritmias

CINTILOGRAFIA DE PERFUSÃO MIOCÁRDICA

2011

Imagens tomográficas do coração foram obtidas após a administração venosa de sestamibi-^{99m}Tc em repouso e após exercício isotônico. A aquisição das imagens foi sincronizada ao eletrocardiograma para análise da função ventricular esquerda (GSPECT).

O Teste de Esforço Cardiopulmonar teve duração de 10:31 minutos, protocolo de Rampa, atingindo 80% da FC máxima prevista e um volume pico de oxigênio de 29,4ml/kg/min (aproximadamente 8 METs). O paciente manteve-se assintomático, sem alterações significativas do segmento ST. Apresentou 01 episódio de taquicardia supraventricular não sustentada (menos de 10 segundos), 2 extrassístoles ventriculares pareadas e 01 episódio de taquicardia ventricular não sustentada de 7 batimentos no pico do esforço. Na recuperação apresentou extrassístoles supraventriculares isoladas frequentes.

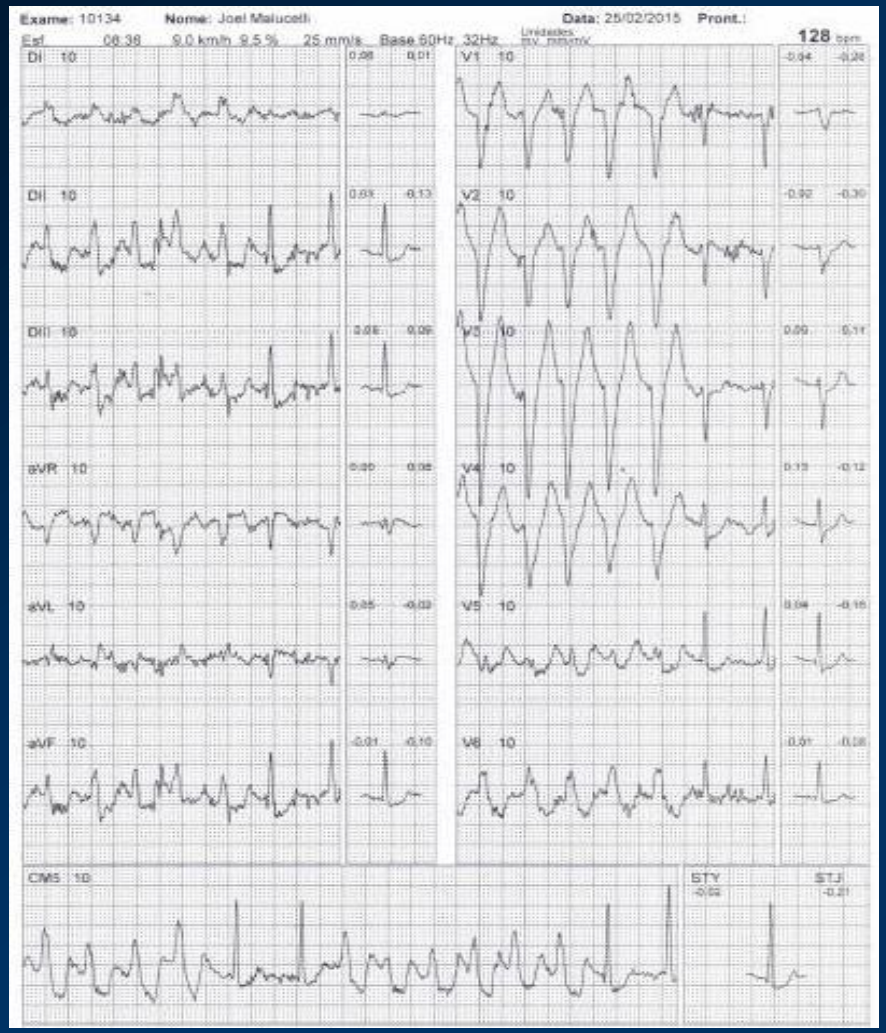
CINTILOGRAFIA DE PERFUSÃO MIOCÁRDICA

2013

Imagens tomográficas do coração foram obtidas após a administração venosa de sestamibi-^{99m}Tc em repouso e após exercício isotônico. A aquisição das imagens foi sincronizada ao eletrocardiograma para análise da função ventricular esquerda (GSPECT).

O Teste de Esforço Cardiopulmonar teve duração de 9:51 minutos, protocolo de Rampa, atingindo 89% da FC máxima prevista e um consumo pico de oxigênio (VO_2 pico) de 29,4 ml/kg/min. (aproximadamente 8 METs). Não revelou alterações clínicas ou eletrocardiográficas sugestivas de resposta isquêmica do miocárdio. Apresentou extrassístoles supraventriculares e ventriculares frequentes, vários episódios pareados e múltiplos episódios de taquicardia ventricular não sustentada de até 5 batimentos no esforço e no início da recuperação. Regular capacidade aeróbica.

ECG (Fev 2015)



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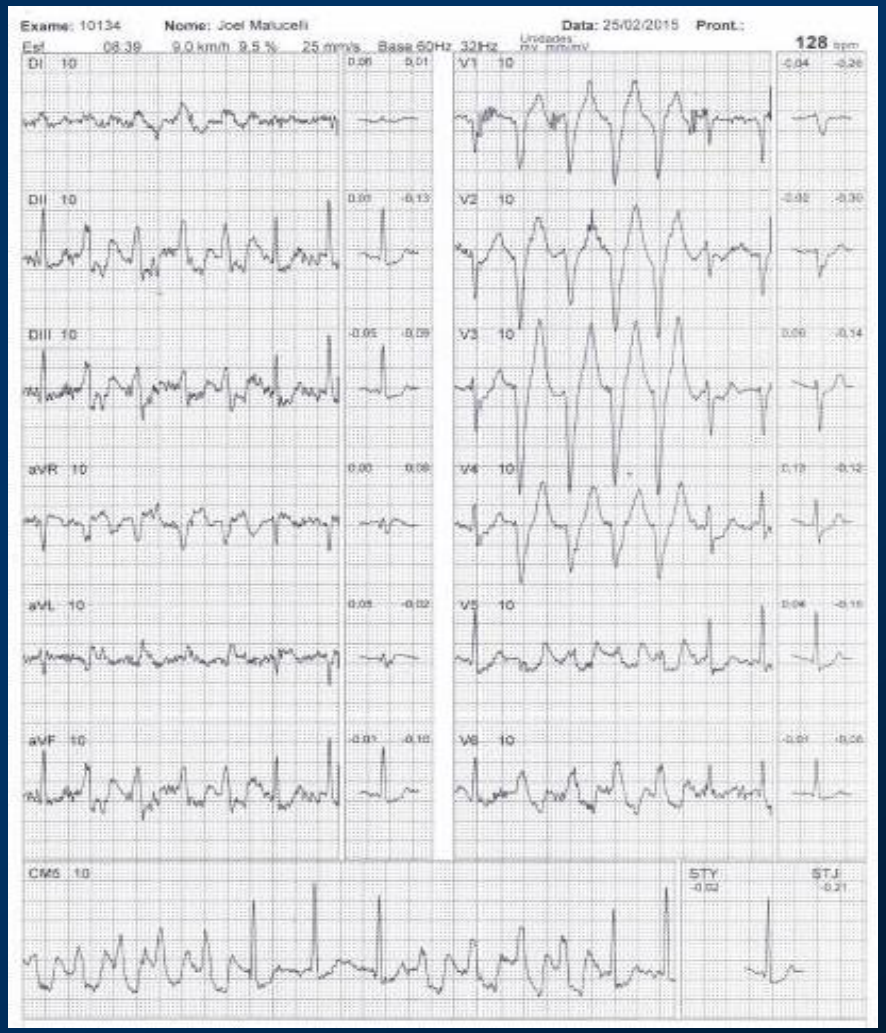
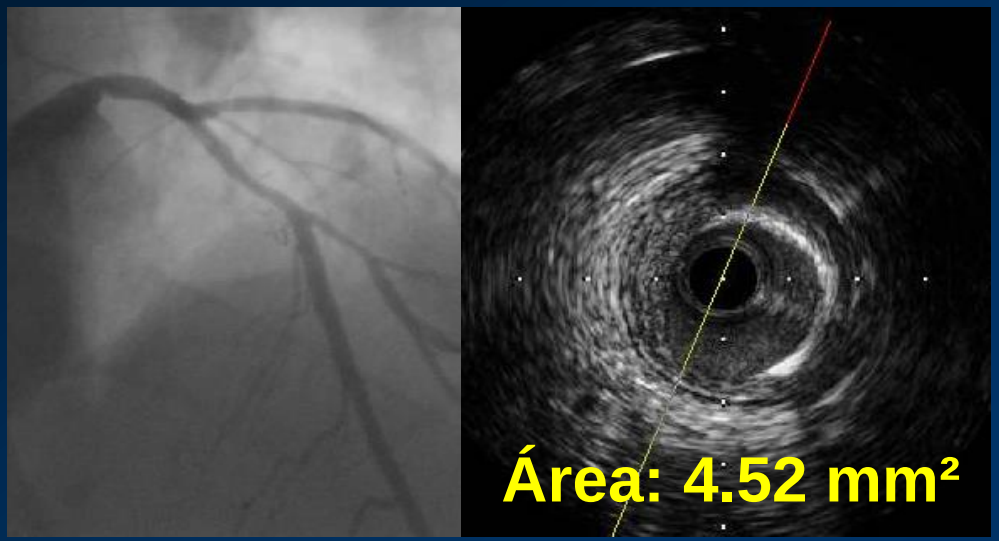
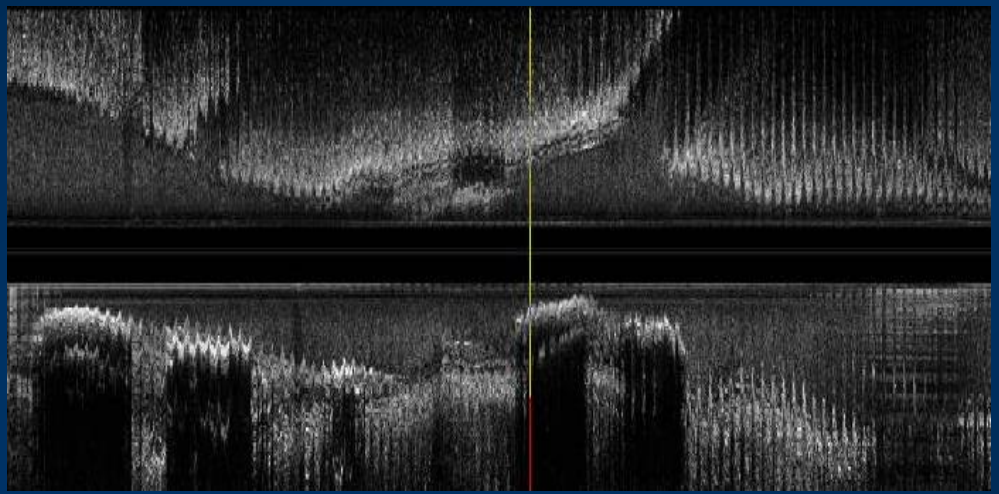


08:39 (128 Bpm)

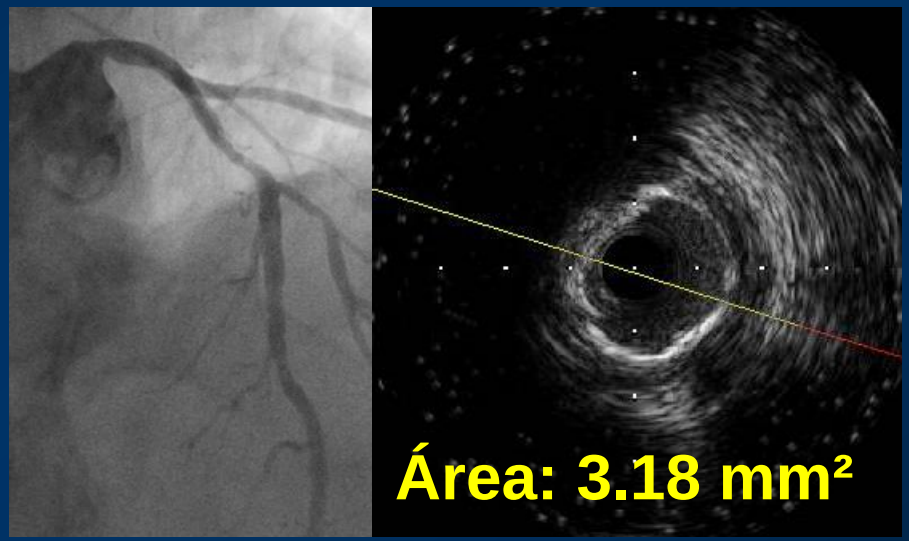
Angiografia / IVUS

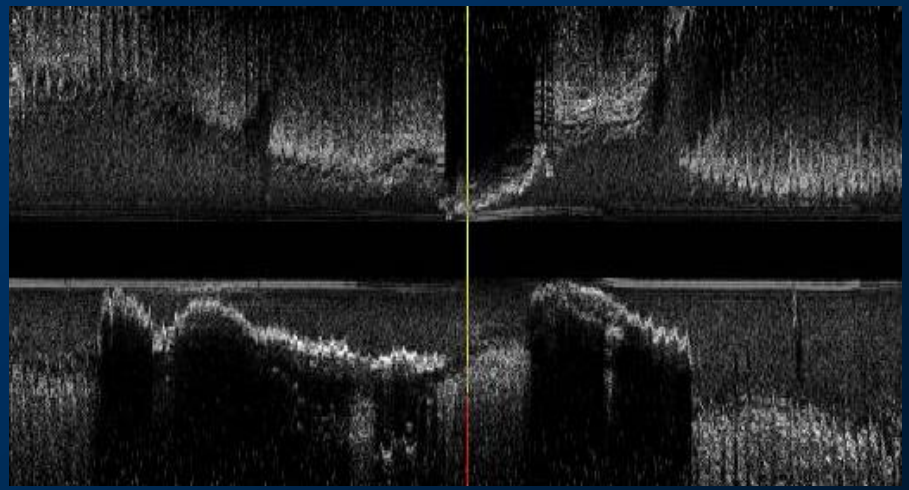
2009



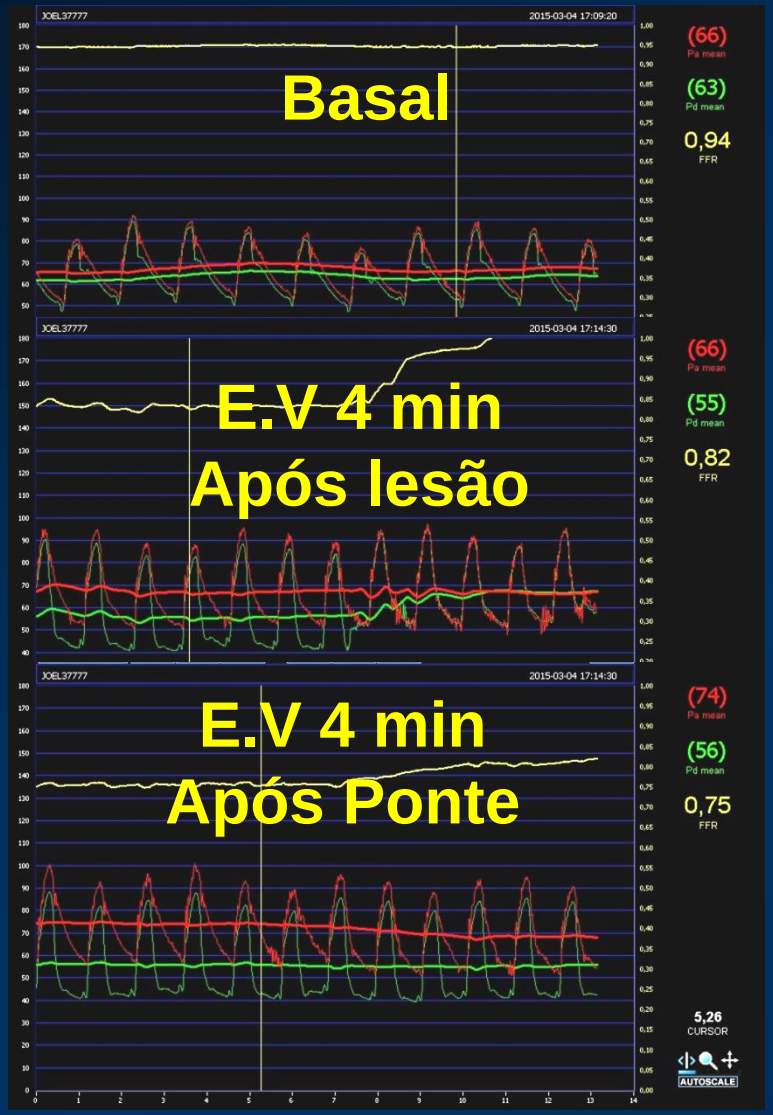


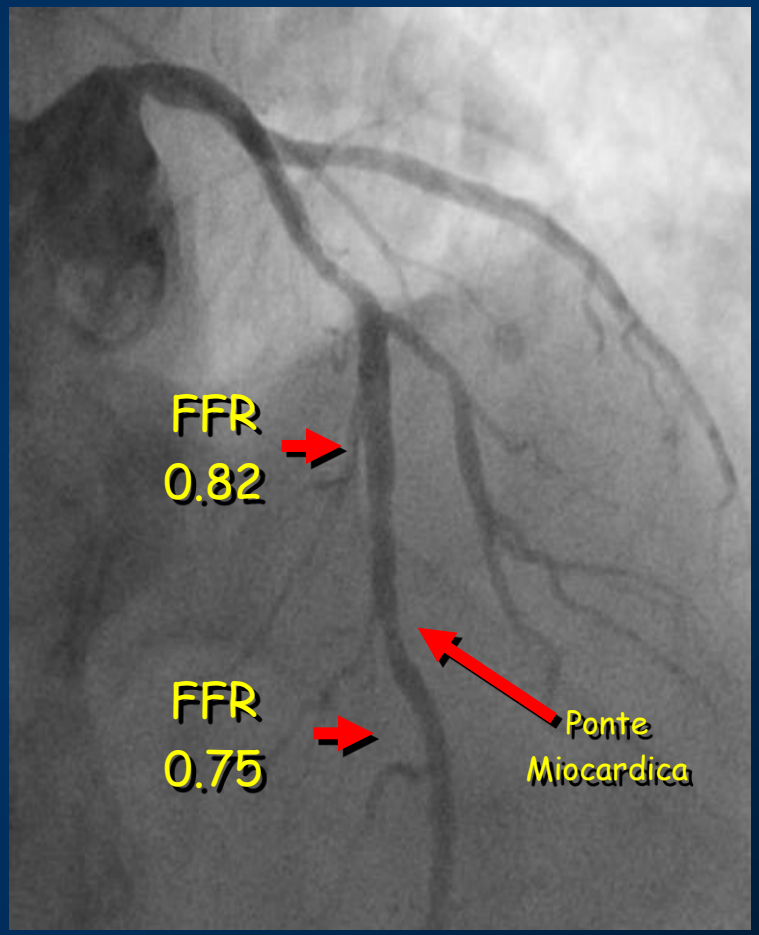
2015



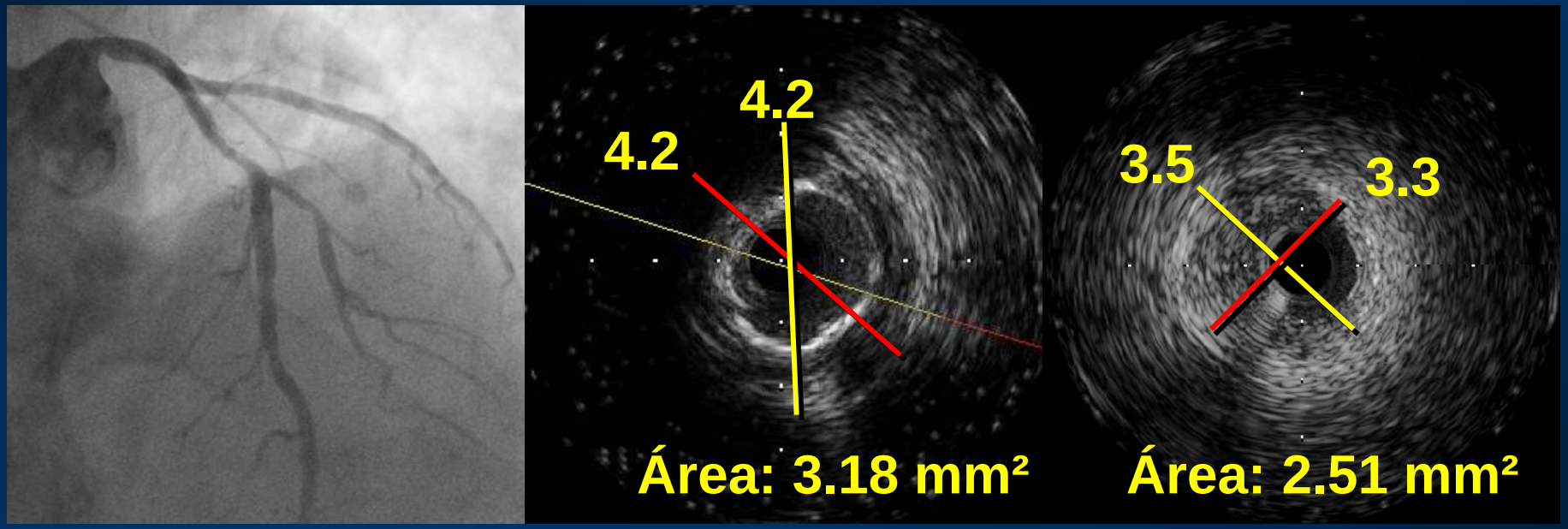


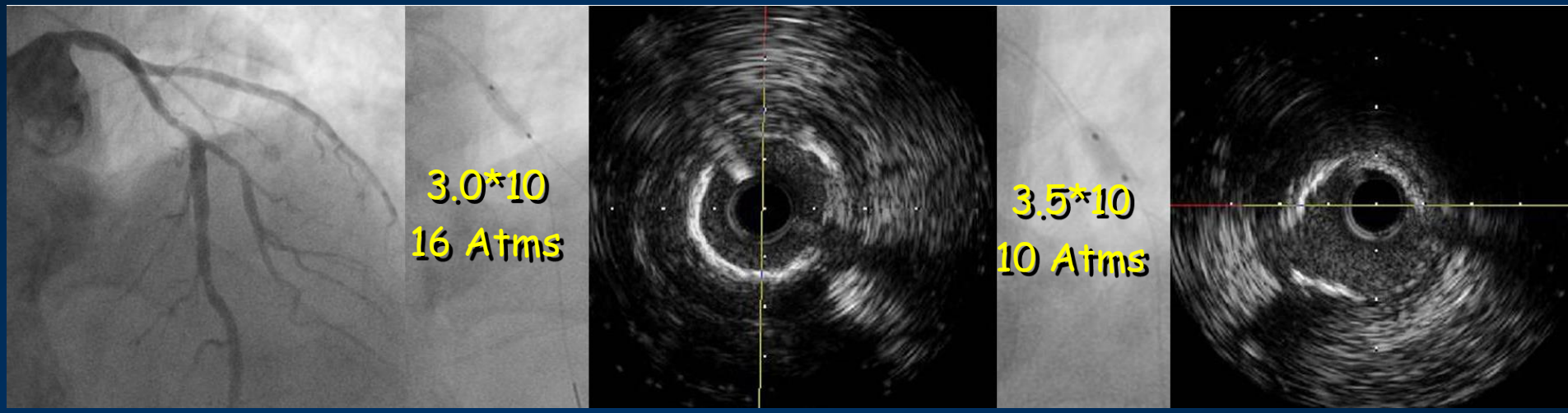
Angiografia / (FFR adenosina e.v - 140µg/kg/min) 2015





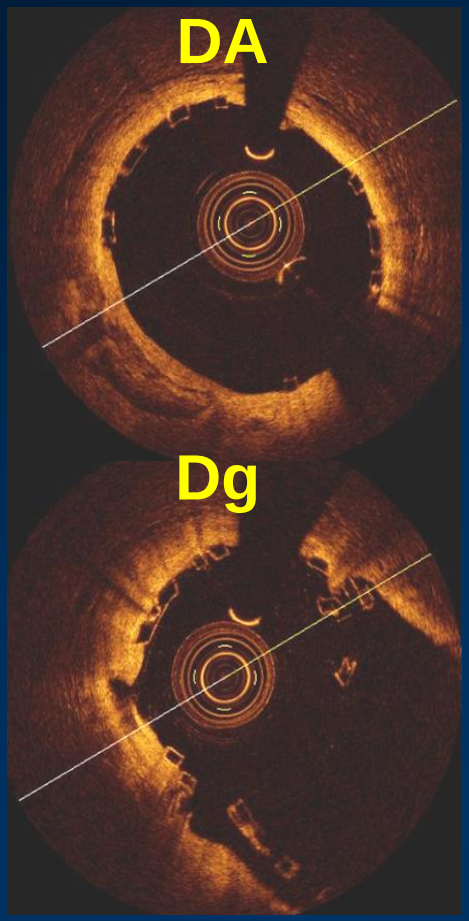
Angiografia + IVUS (2015)

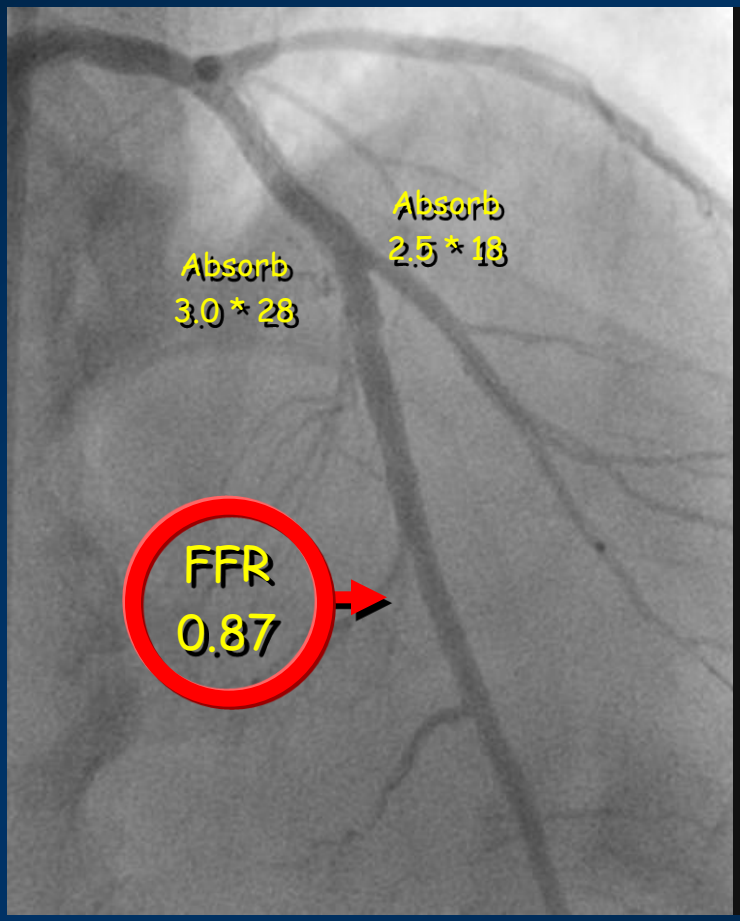


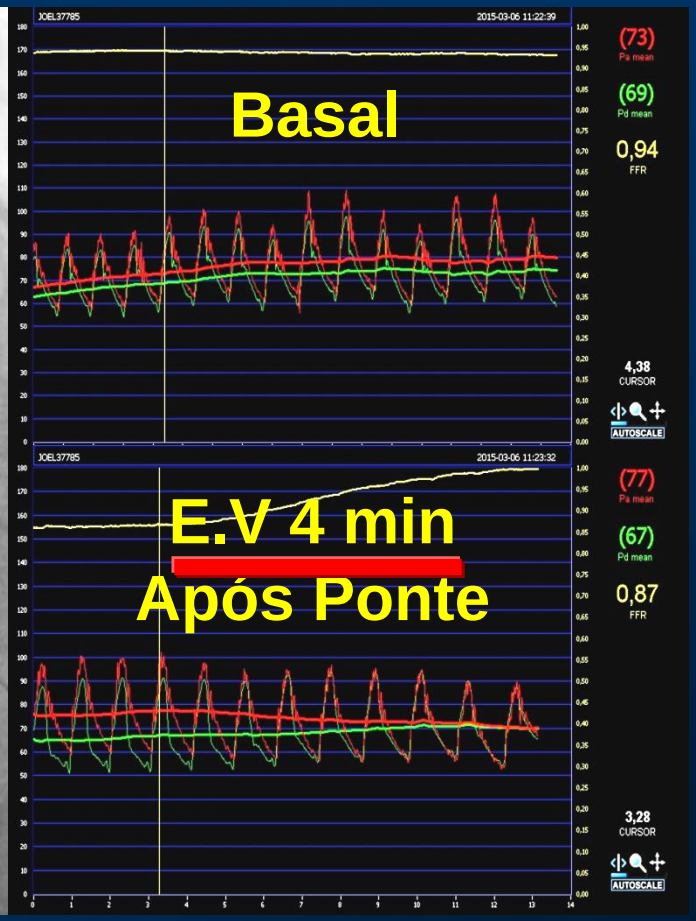


Basal CB Pós Balão CB Pós Cutting

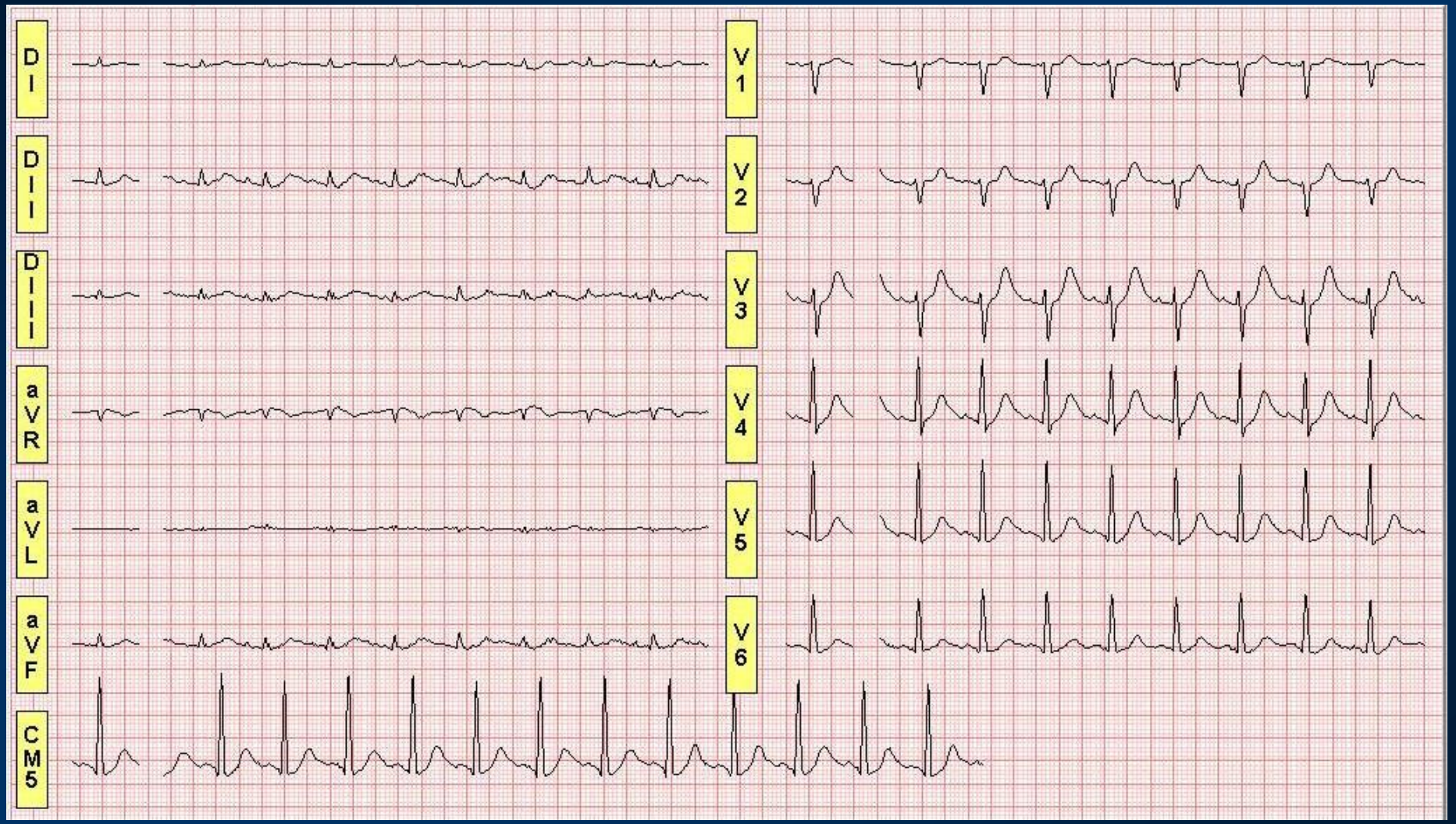
Angiografia / FFR / OCT
Resultado Final





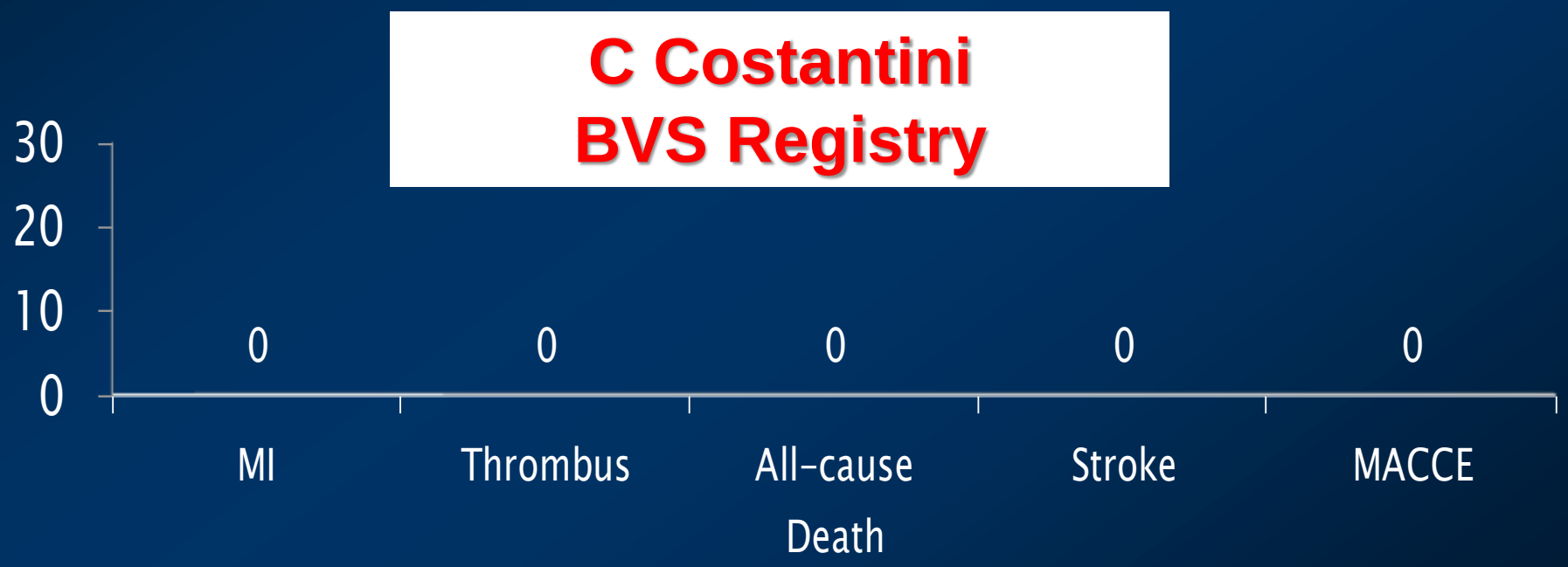


Teste Ergomêtrico com 35 dias
Protocolo de Bruce 11 Mets (10:10 min)



Bioresorbable Vascular Scaffold
C Costantini Initial Experience
(n= 34 pts – 62 Lesões - 74 stents)

In Hospital Outcomes



Source: C Costantini Experience

Follow Up mean 5,9 mo
(n= 34 pts – 62 Lesões - 74 stents)

MULTIVESSEL = 63%

EUROSCORE > 6 = 42%

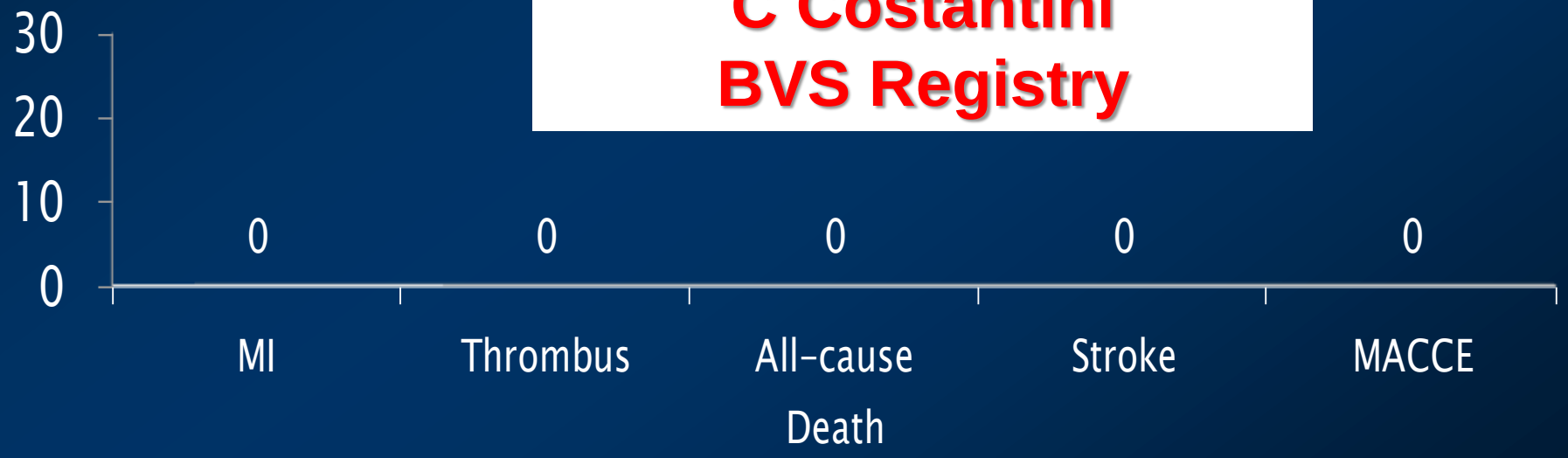
Bifurcation = 25 %

100 % post dilatation

100 % IVUS / 96% OCT

Lesões B/C:76%
BIFURCATIONS
25%

C Costantini
BVS Registry



Source: C Costantini Experience

Barreras para el diagnóstico y tratamiento adecuado : Un problema multifactorial

SISTEMA de SALUD (1)

POLÍTICO

- Educación para la Salud , Enfoque sobre la enfermedad en lugar de la prevención;
- Recursos limitados/Costos e La falta de información oportuna y adecuada.
- **Entre 20 a 40 % del dinero invertido en salud se desperdicia en BRASIL .... revela un informe de la OMS (2013)**

PACIENTE (2)

IGNORANCIA

- La falta de conocimiento o motivación;
- No visite al médico;
- Bajo cumplimiento al tratamiento;
- **Los factores culturales y sociales???**

MEDICO (2)

MAESTRO DIOS

- Subestima el riesgo real del paciente , centrándose en los factores de riesgo individual en lugar de abordar el riesgo Cardiovascular…
- **Error al buscar en los objetivos;**
- **Seguimiento y asesoramiento inapropiado paciente;**
- La capacitación inadecuada sobre la forma de aplicar el consejo médico.

1. Pearson TA, et al. *J Am Coll Cardiol.* 1996;27:1039-1047.
2. Hobbs FD, et al. *Fam Pract.* 2002;19:596-604.

Bifurcation is....Time

T echnique

I mage

M aterial

E xperience

Time = Patience

Costantino Costantini

Tratamiento de la Insuficiência Coronária

“Si pensamos siempre en el PACIENTE, estamos trabajando correctamente.

Si no es asi , NO ES ETICO”.

Professor Adib Jatene (J. Globo 27-9-13)

Cardio Interv 2015

15 th International Interventional Cardiology Symposium

November 26, 27 - Curitiba - Brazil

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