



Seoul, Korea: 22-24 April 2009

Summit TCT Asia Pacific 2009
April 22-24, 2009
The Convention Center of Sheraton Grande Walkerhill Hotel, Seoul, Korea

Left Main and Bifurcation Summit

**Debate: treating side branch-planned
use of side branch stenting for all
bifurcations**

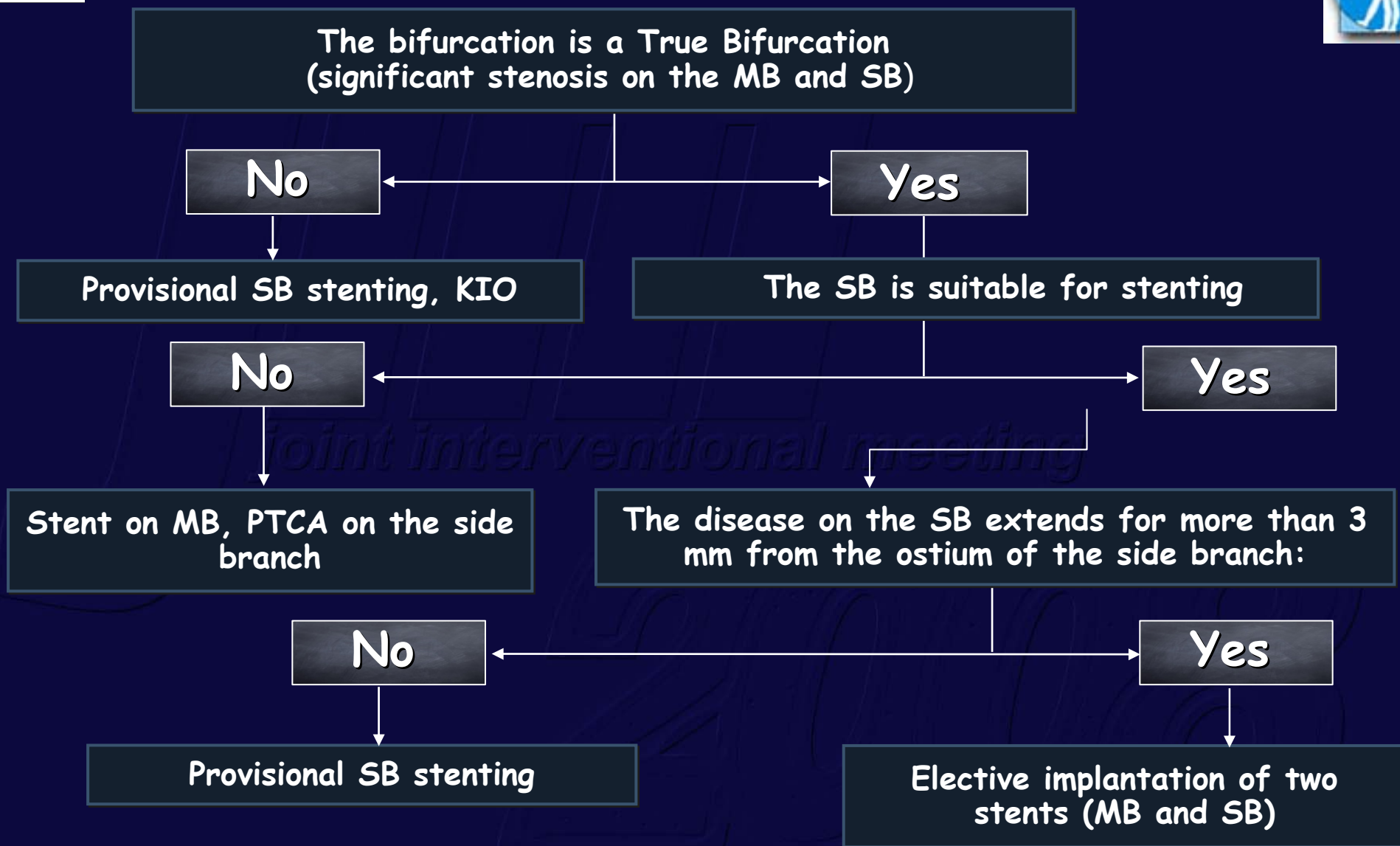
Speaker - 15'

Alaide Chieffo and Antonio Colombo

S. Raffaele Hospital Milan, Italy
Centro Cuore Columbus Milan, Italy



Approach to Bifurcational Lesions Including LM



Bifurcations

1. Provisional

2. Two Stents

3. Keep It Open (KIO)

Bifurcations

Two Stents

When the SB has disease extending beyond its ostium AND when the SB is suitable for stenting

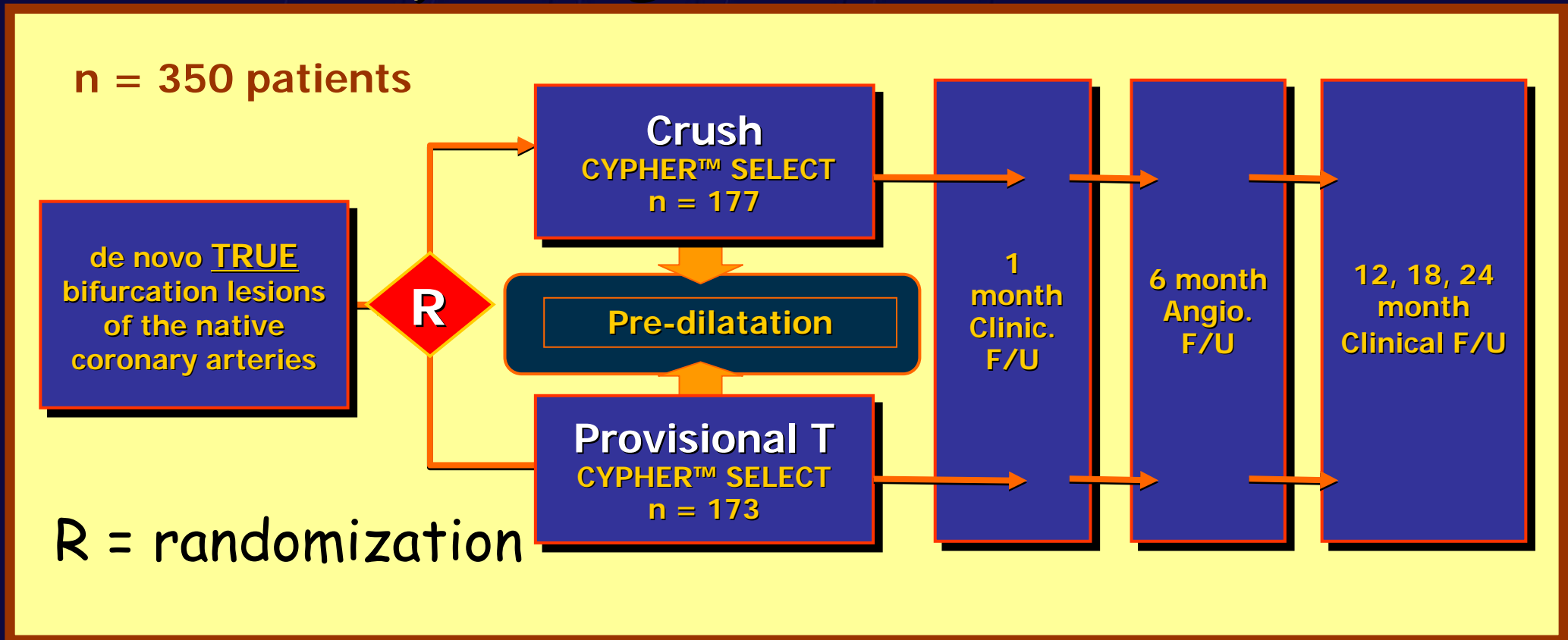
8 Fr guiding catheter

1. Wire both branches
2. Dilate MB and SB if needed
3. Perform crush or V-stent
4. If crush: rewire SB and perform high pressure SB dilatation
5. Kissing balloon inflation

CACTUS trial

Coronary Bifurcation Application of the Crush Technique Using Sirolimus-Eluting stents

Study Design and Time Frame



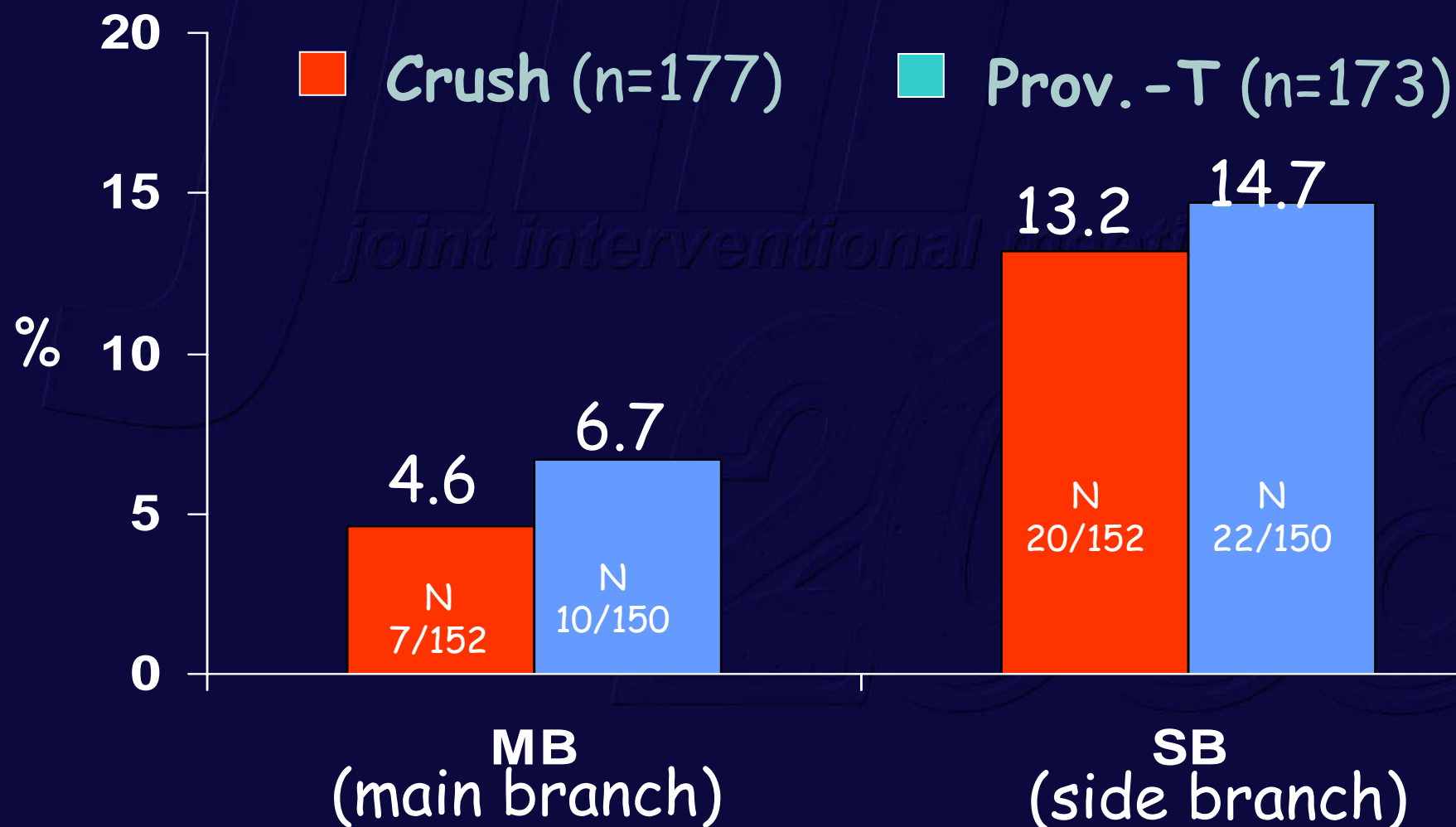
Dual antiplatelet therapy was recommended in all pts for at least 6 months

CACTUS trial

Coronary Bifurcation Application of the Crush Technique Using Sirolimus-Eluting stents

6-month in-segment binary restenosis

Angiographic F.U. performed in 86% of pts in both groups



CACTUS trial
Coronary Bifurcation Application of the Crush Technique Using Sirolimus-Eluting stents

Stent thrombosis

	Total	Acute (first day)	Subacute (days 2-30)	Late (days 31-180)
Crush (n=177)	3 (1.7%)	1 (0.5%)	2* (1.1%)	0
Prov.T (n=173)	2 (1.1%)	0	1 (0.5%)	1 (0.5%) (definitive)

p = 0.62 for comparisons between crush and prov.-T

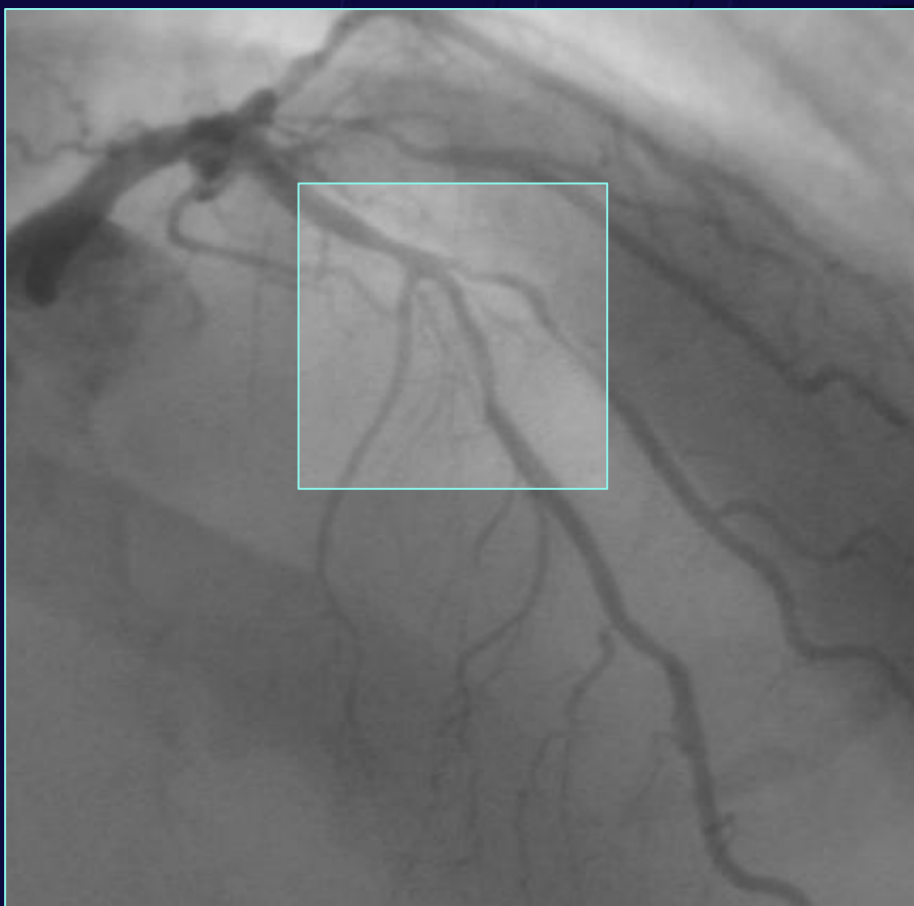
** One patient did not take thienopyridine therapy after discharge*

Provisional could be Ok
2 Stents better

joint interventional meeting

2008

A Typical Case for 2 stents



Baseline



Following Crush

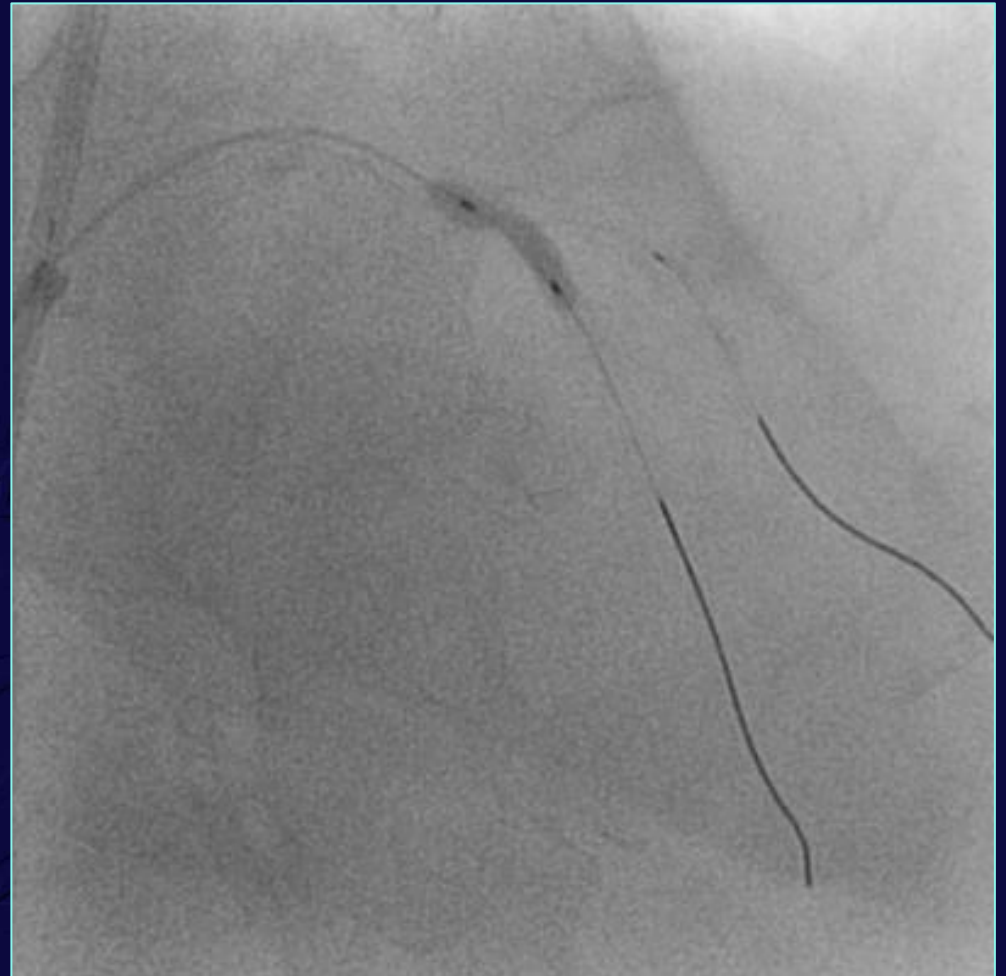
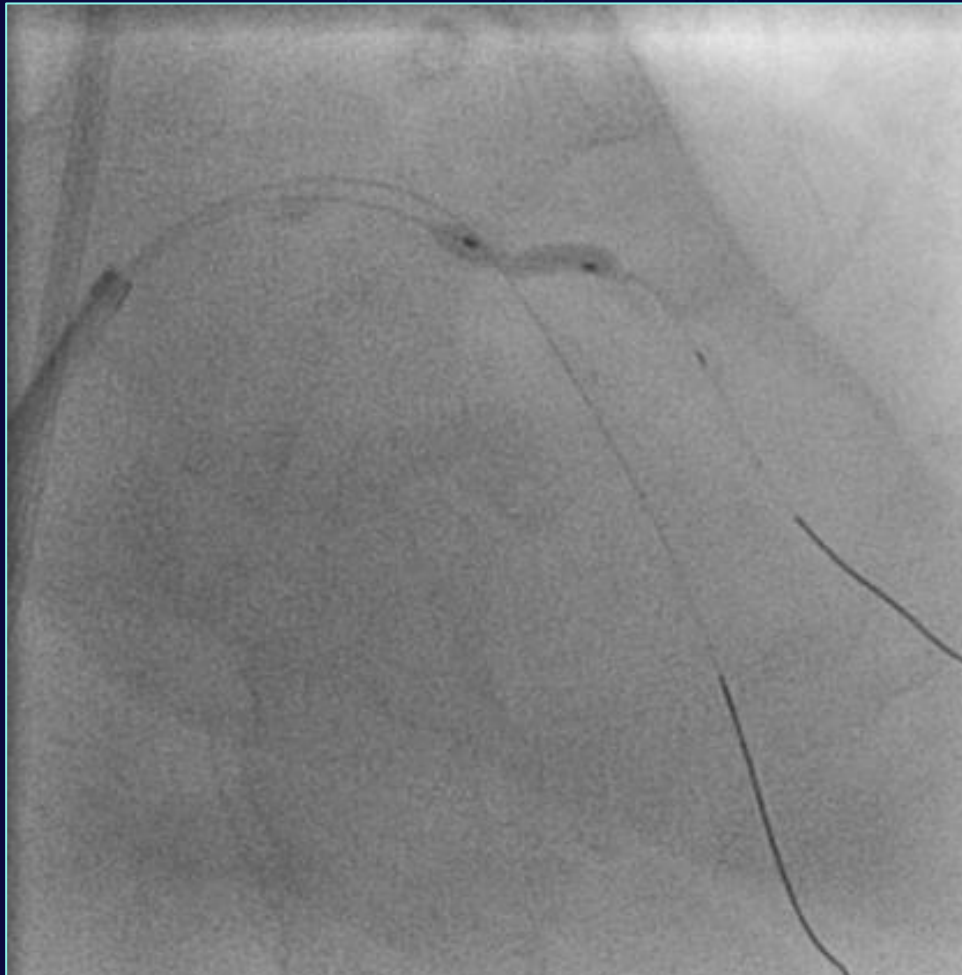
Mini-Crush Case1



Baseline

Min12870

Mini-Crush Case1



Pre-dilatation

Min12870

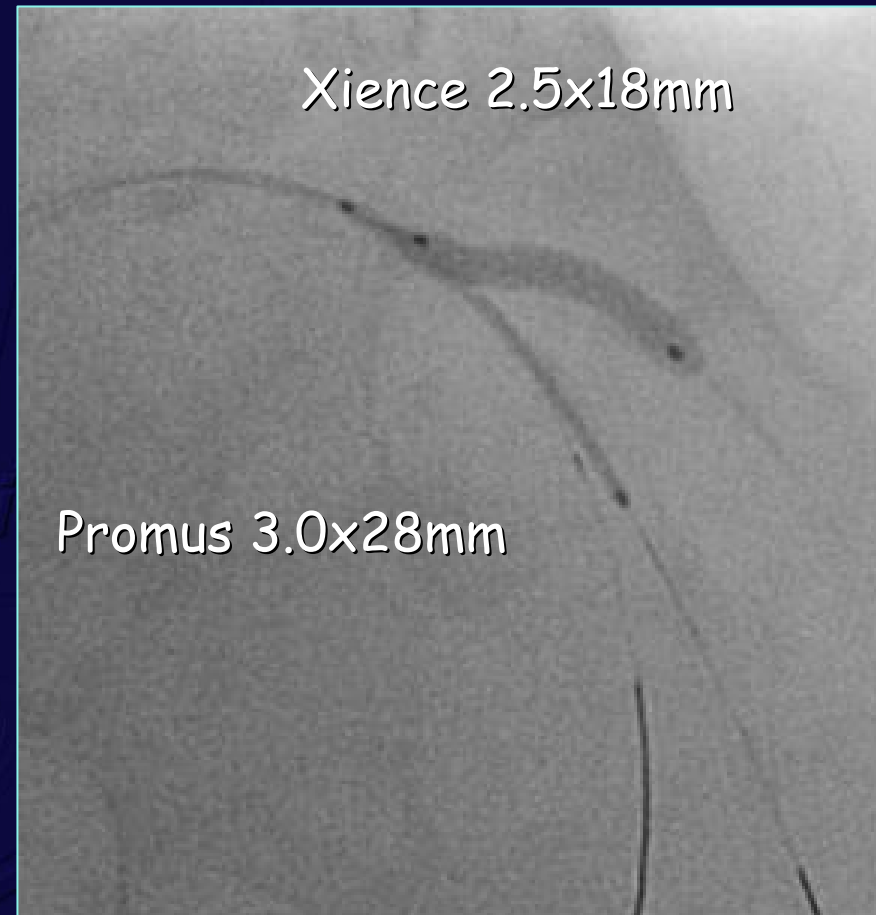
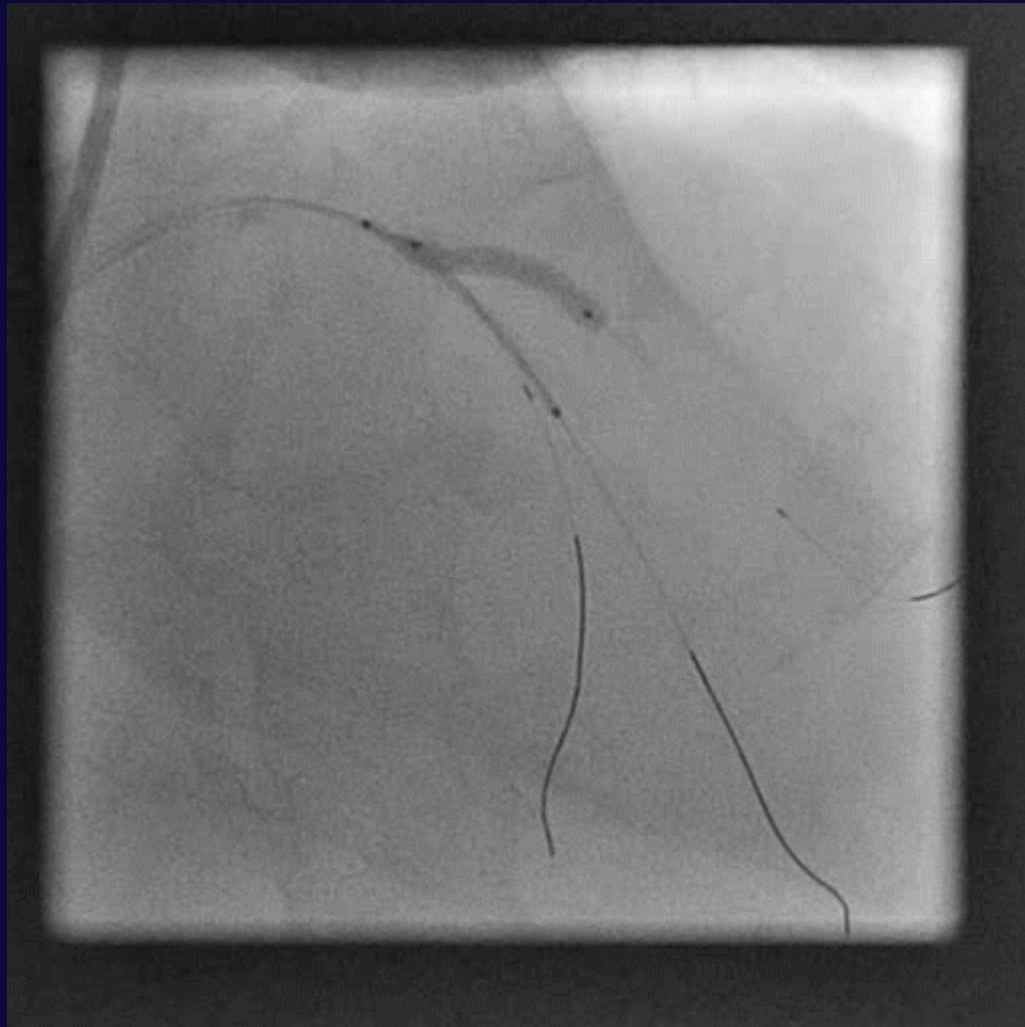
Mini-Crush Case1



Result after pre-dilatation

Min12870

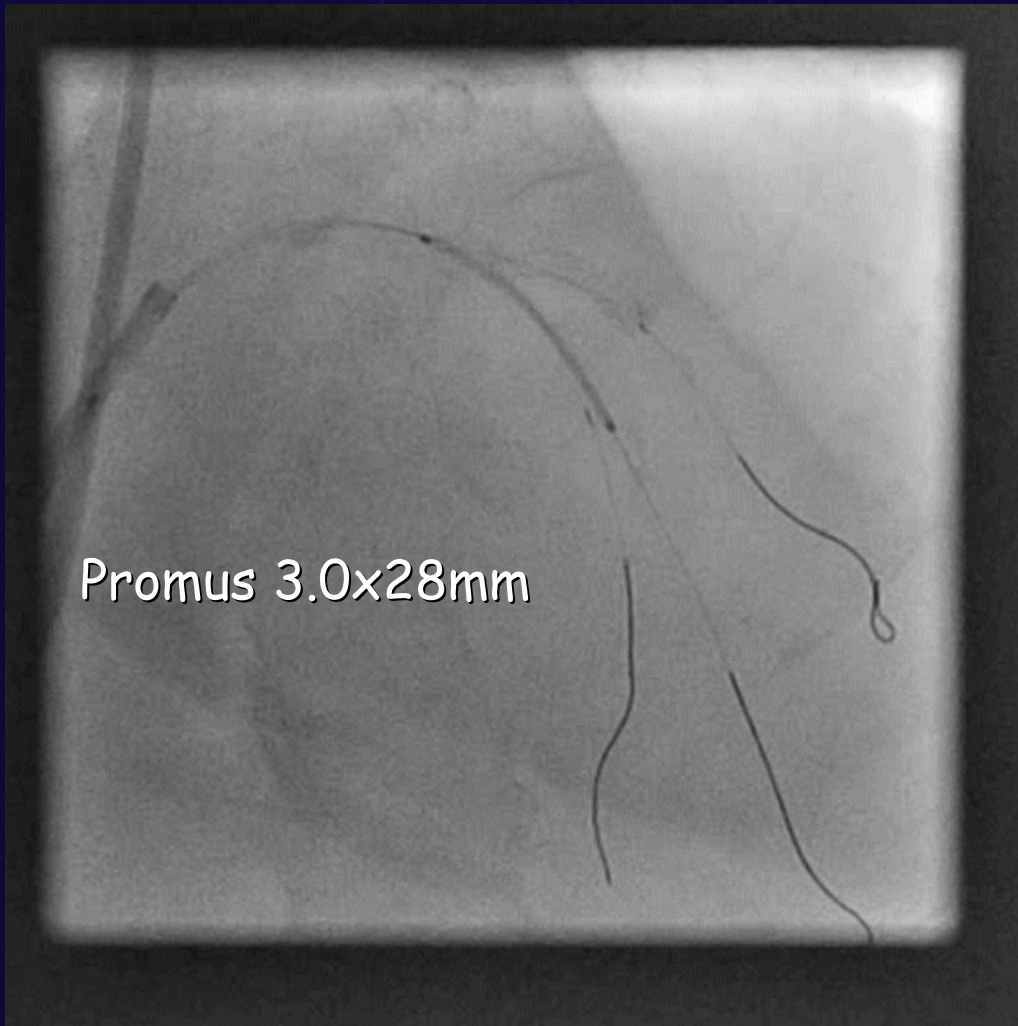
Mini-Crush Case1



Mini-Crush

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Mini-Crush Case1



Stent on LAD

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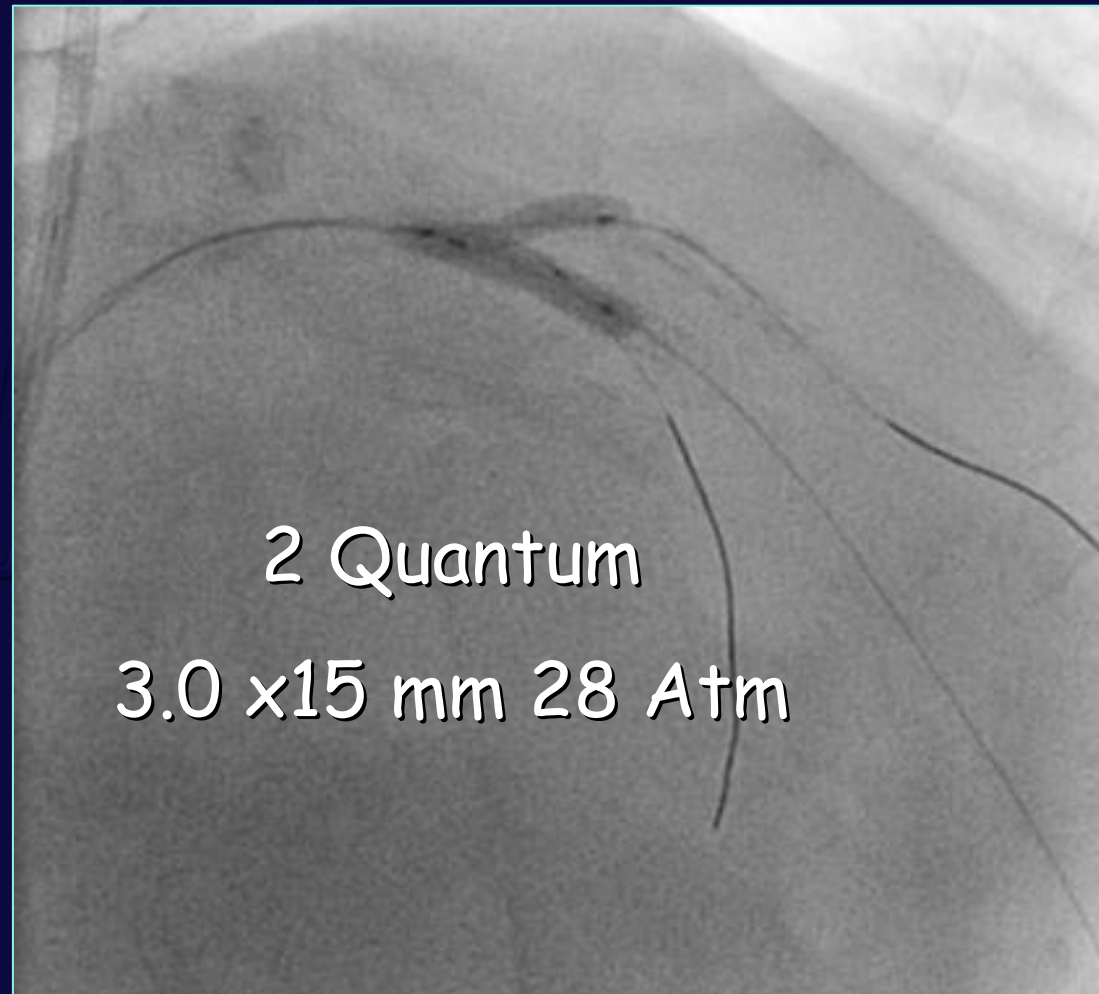
Mini-Crush Case1



After Stent on LAD

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Mini-Crush Case1



Kissing Balloon

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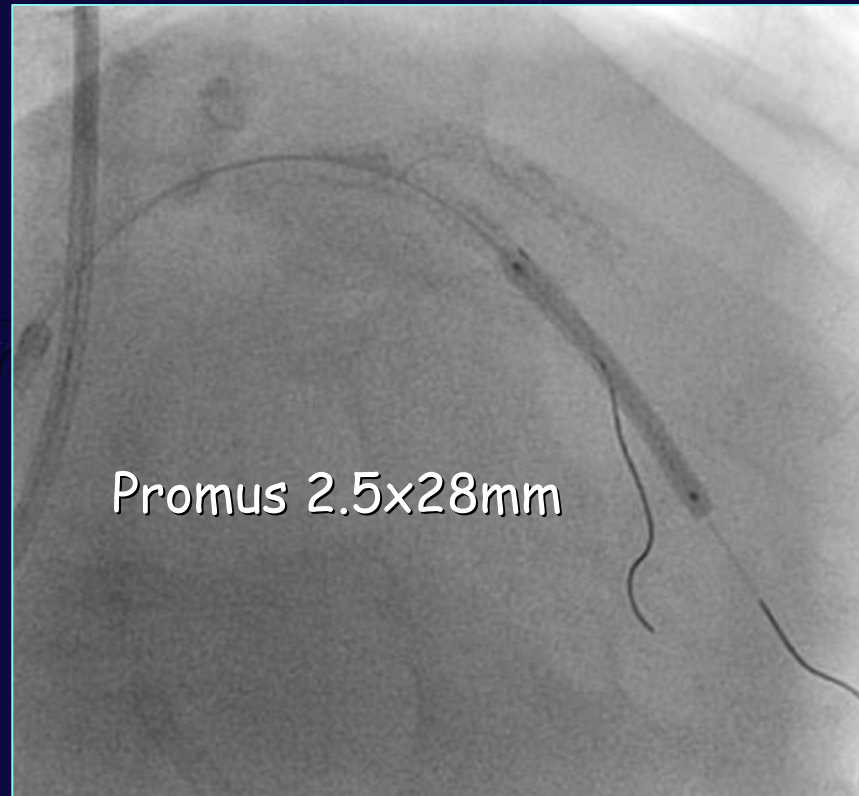
Mini-Crush Case1



Result post Kissing

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Mini-Crush Case1

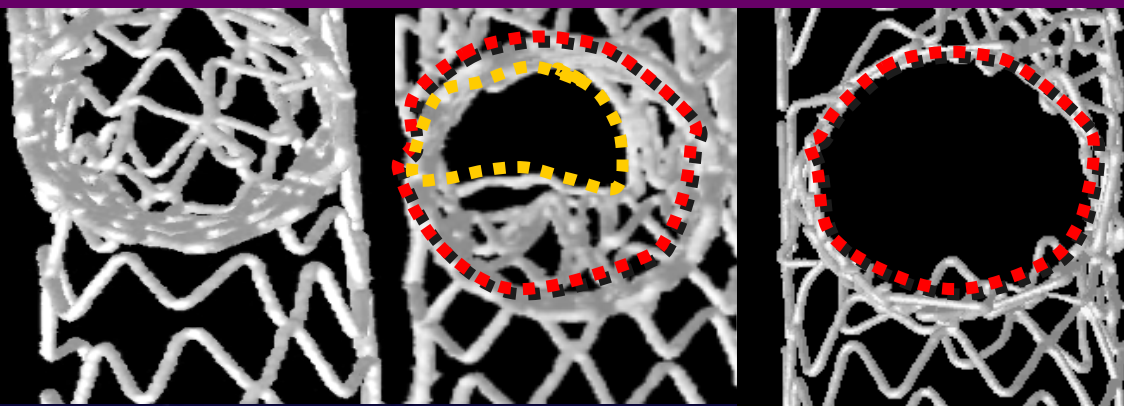


Distal Stent

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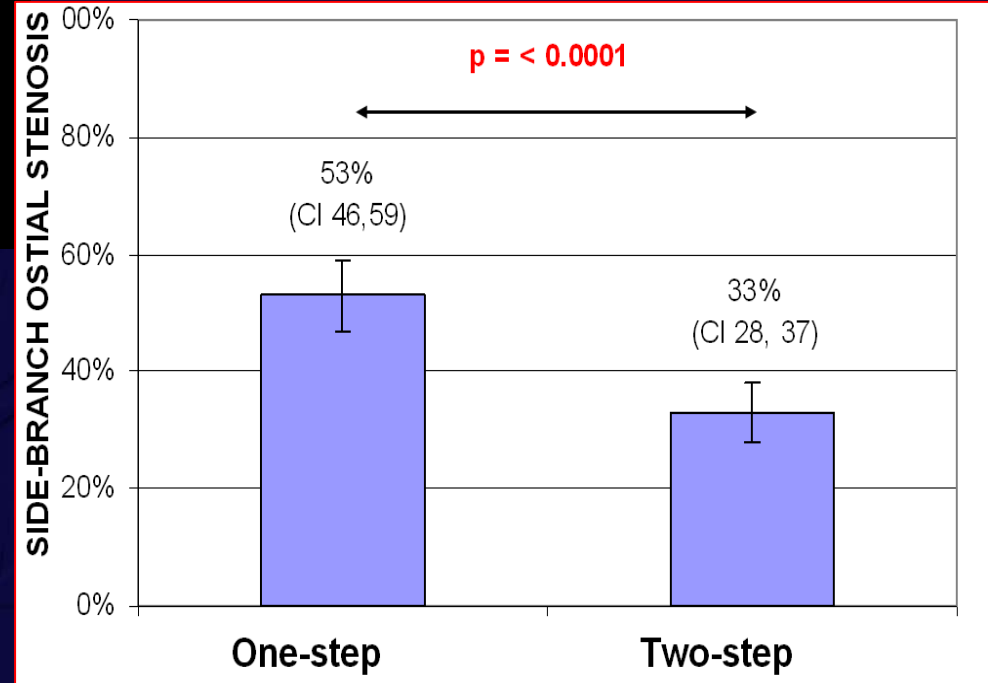
We observed that two-step kissing was more effective than one-step kissing for improving metallic side-branch ostial area

No kissing One-step kissing post-dilatation Two-step kissing post-dilatation

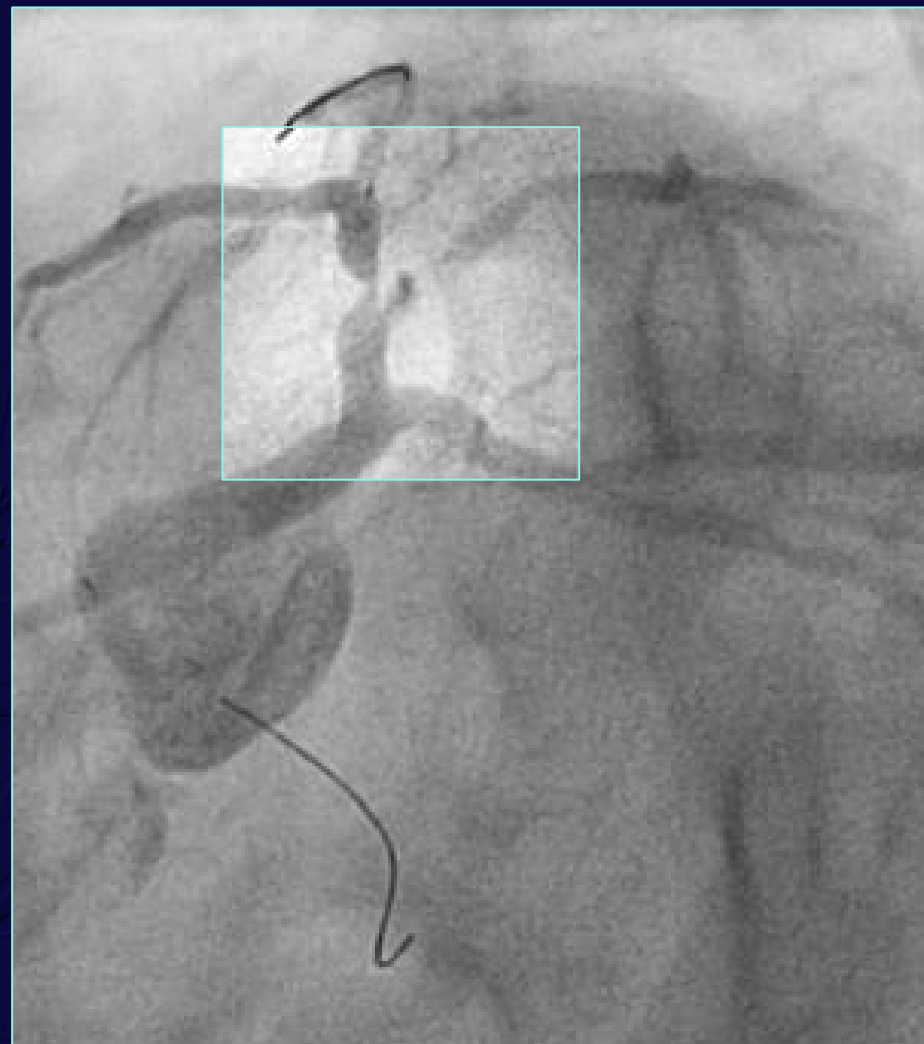


Two steps:
1) Inflation at high pressure only the SB balloon
2) Perform kissing inflation

SB ostial stenosis (%) with one step vs. two step kissing



2 case. IVUS-Guided Stent Bifurcation



Baseline

IVUS-Guided Stent Bifurcation

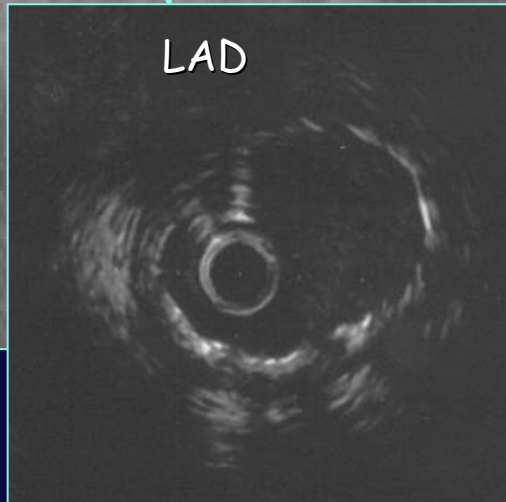
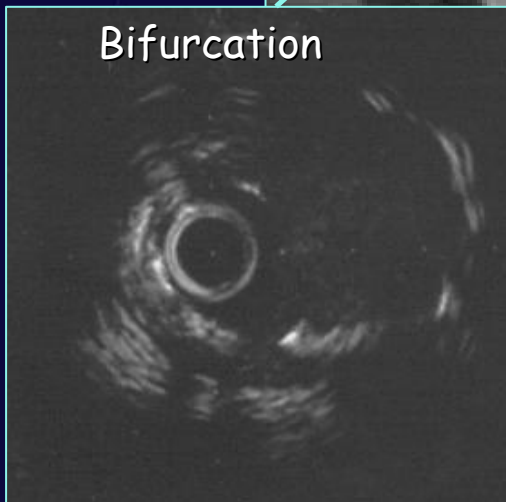
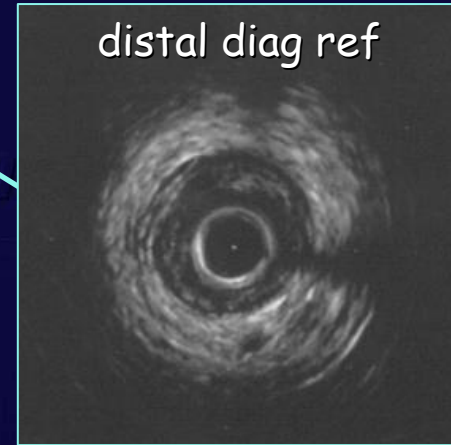
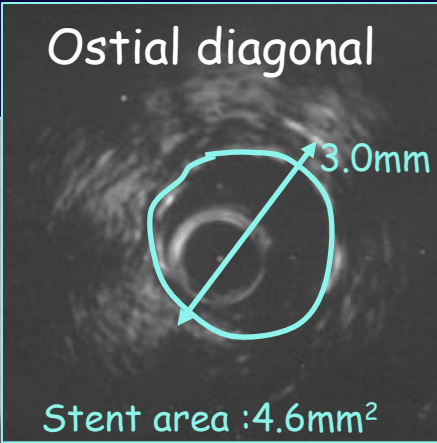
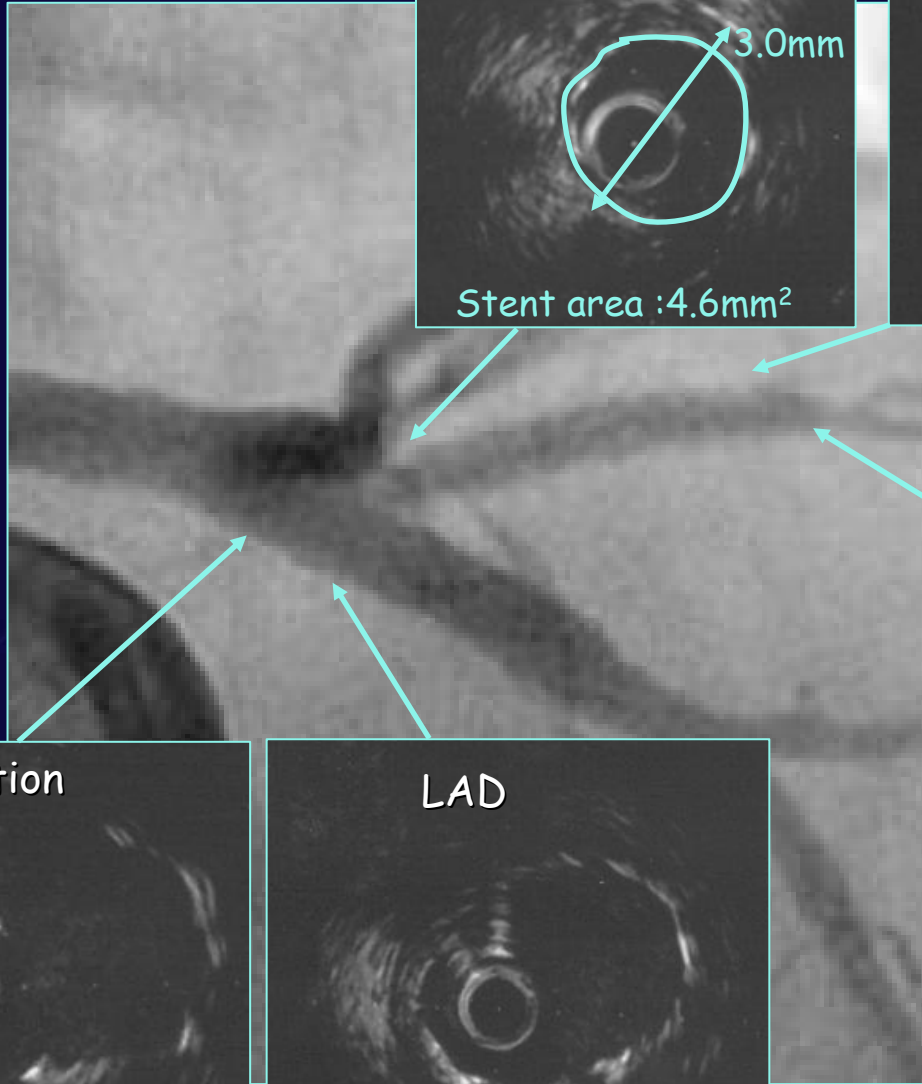
Diag: Xience 2.5x18mm 14atm

LAD: Xience 3.5x18mm 18atm

Stents in
bifurcation



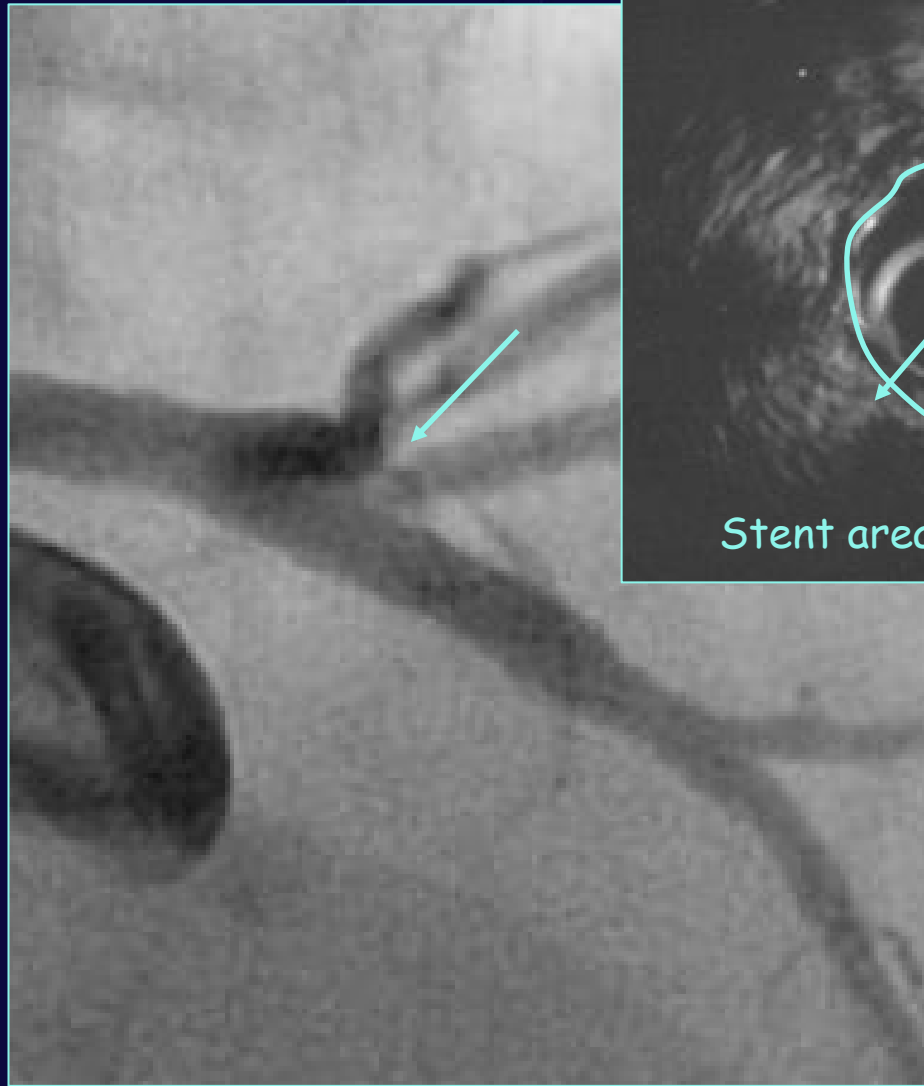
Result after stent



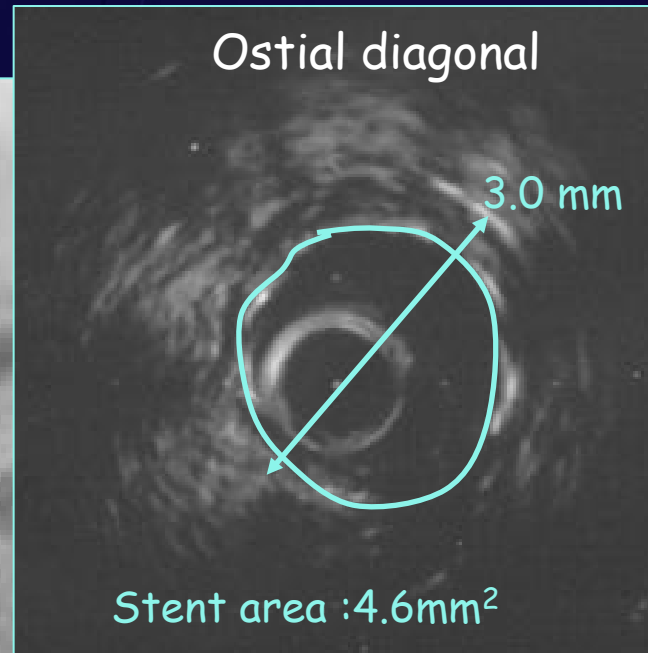
IVUS-Guided Stent Bifurcation

Result after stent

IVUS-Guided Stent Bifurcation



Result after stent

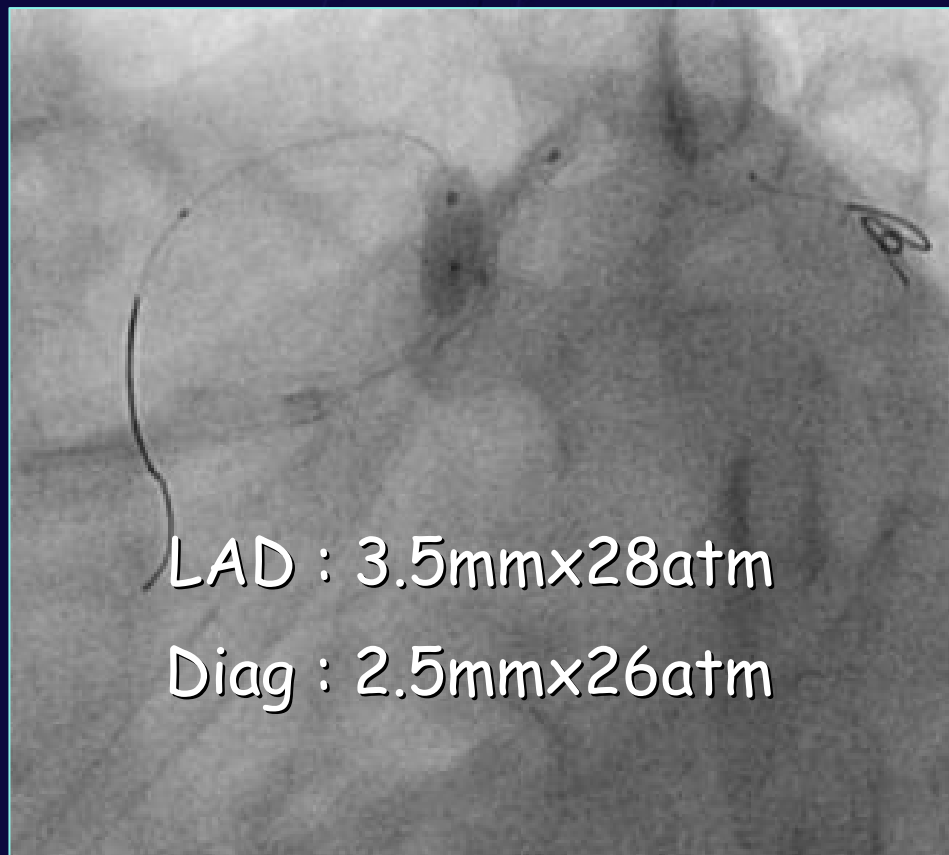


More can be done



Suggested 3.0 mm balloon for
diagonal post-dilatation
and agreed on 2.5mm very
high pressure

IVUS-Guided Stent Bifurcation



LAD : 3.5mmx28atm

Diag : 2.5mmx26atm

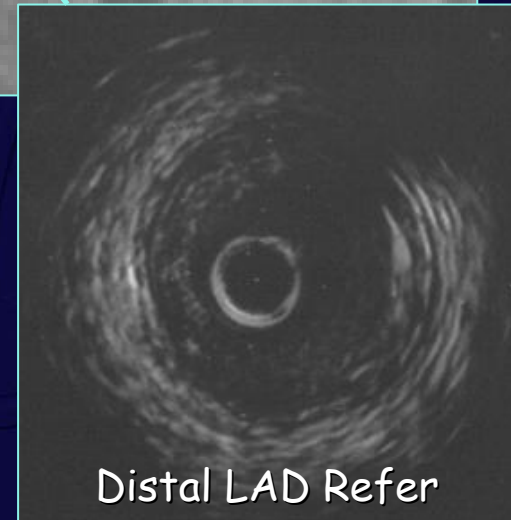
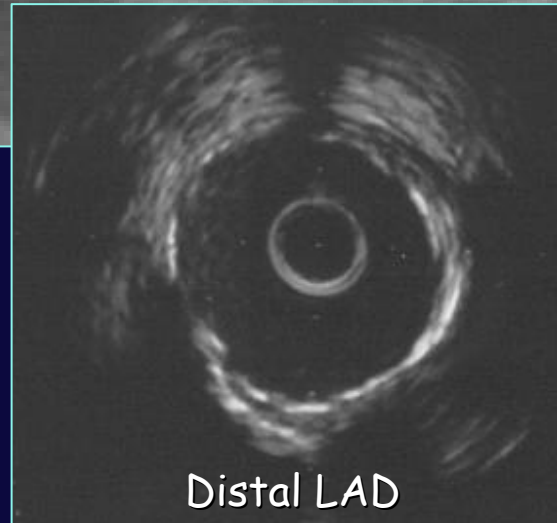
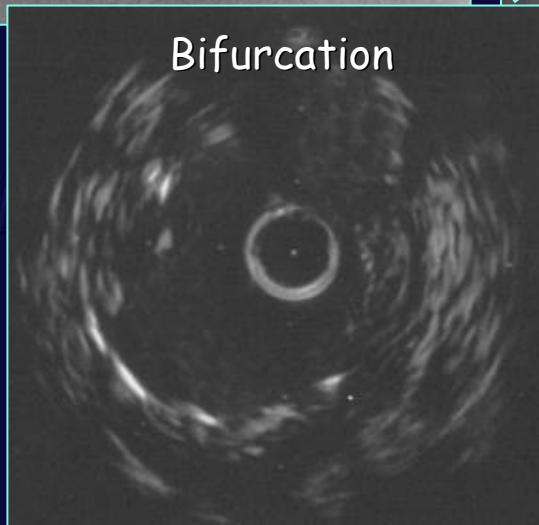
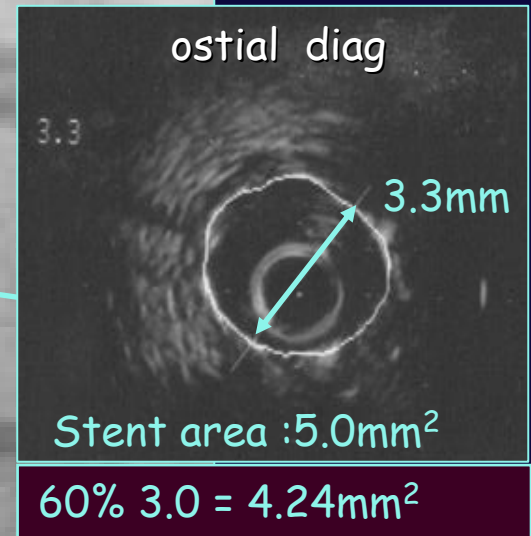
High-pressure
dilatation



Result post high-pressure
dilatation

IVUS-Guided Stent Bifurcation

Result post high-pressure dilatation



IVUS-Guided Stent Bifurcation



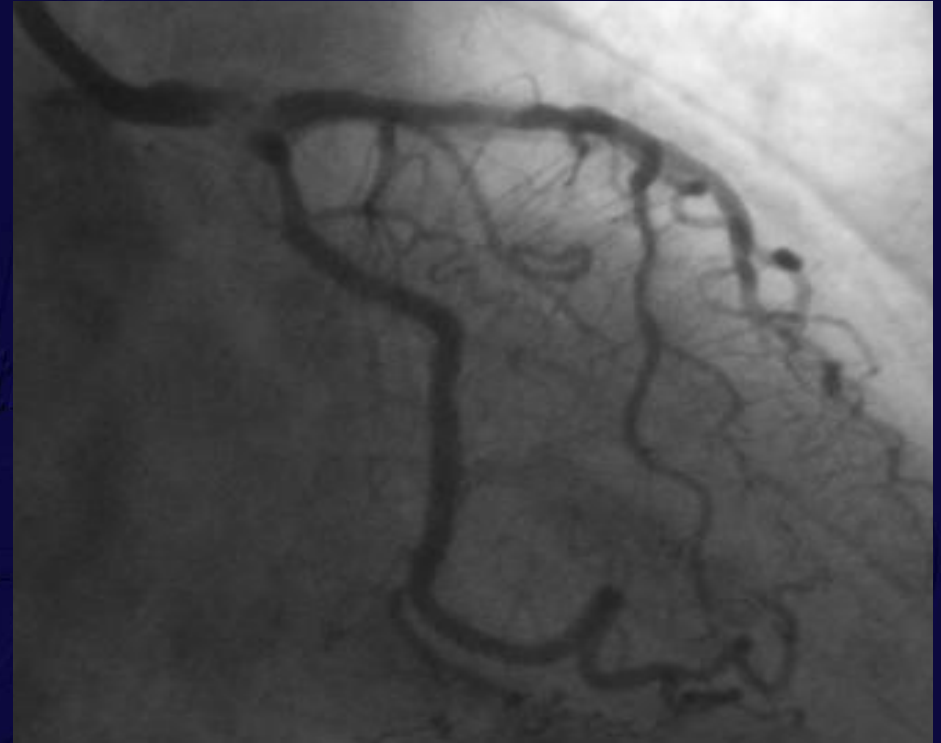
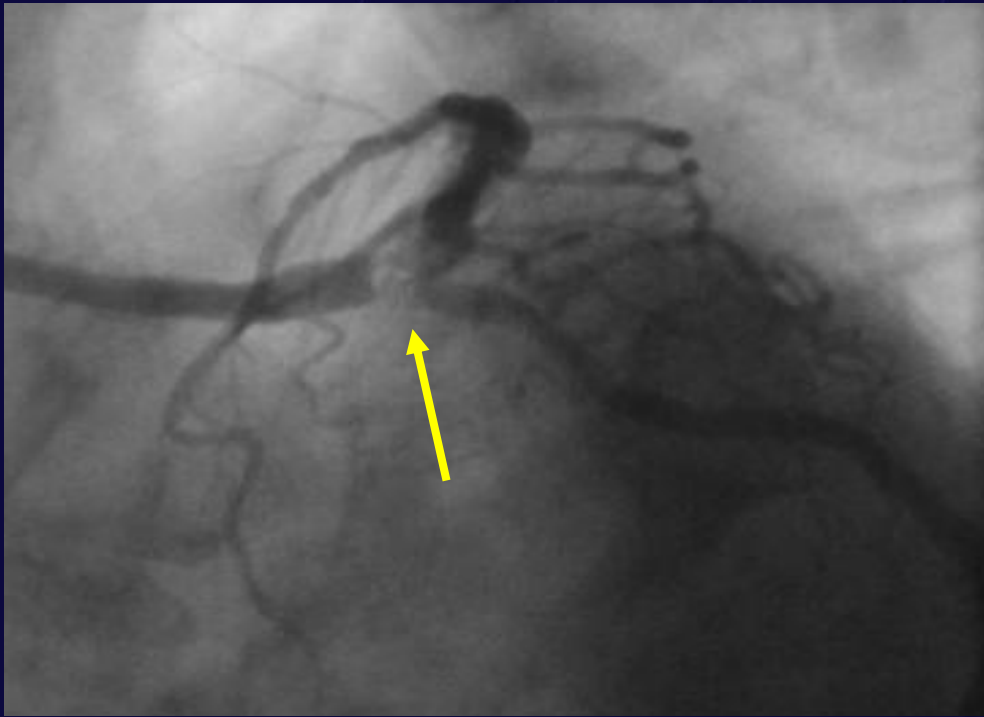
Final Result

IVUS-Guided Stent Bifurcation

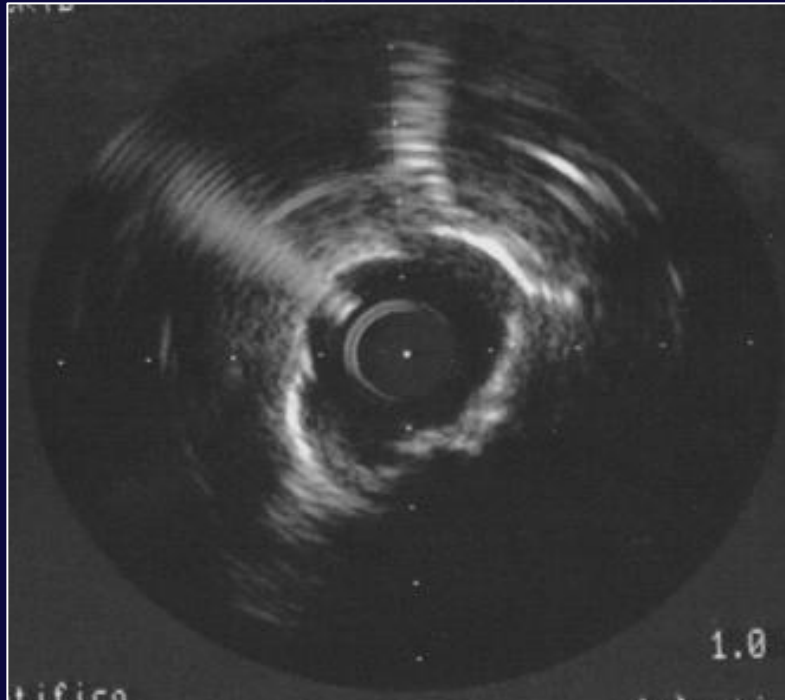


9 months Follow-Up

3 case Distal LM



IVUS Images Post Rotablator



LAD Os



Cx Os

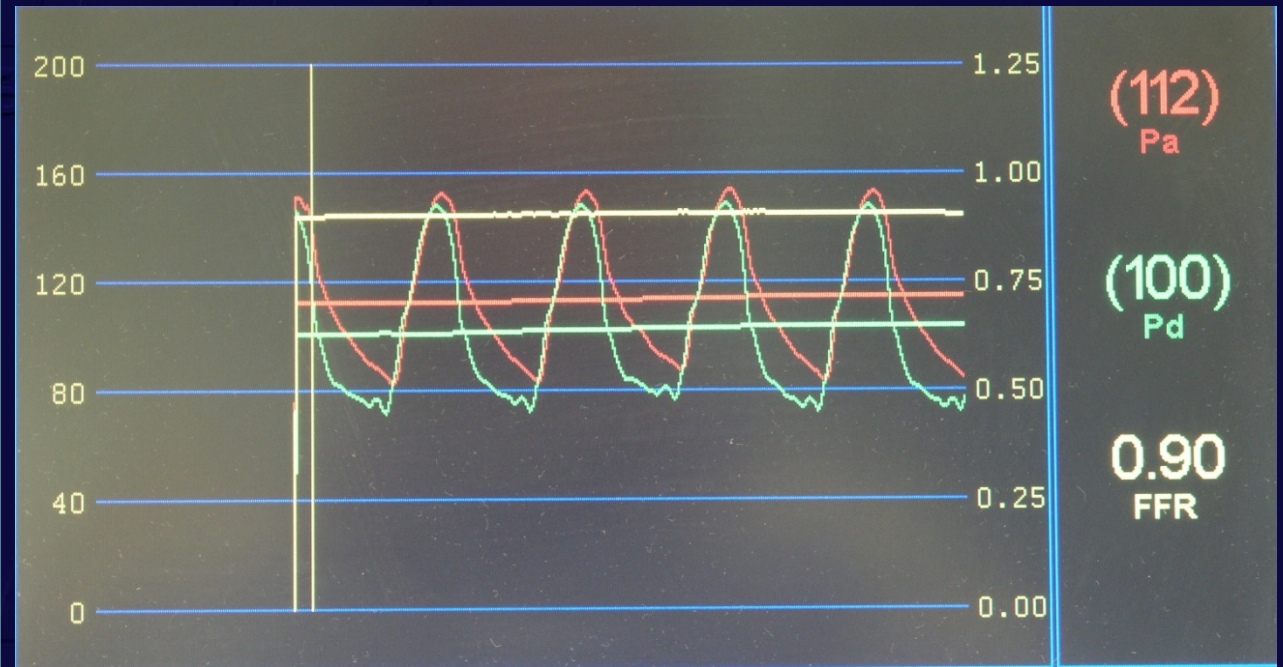
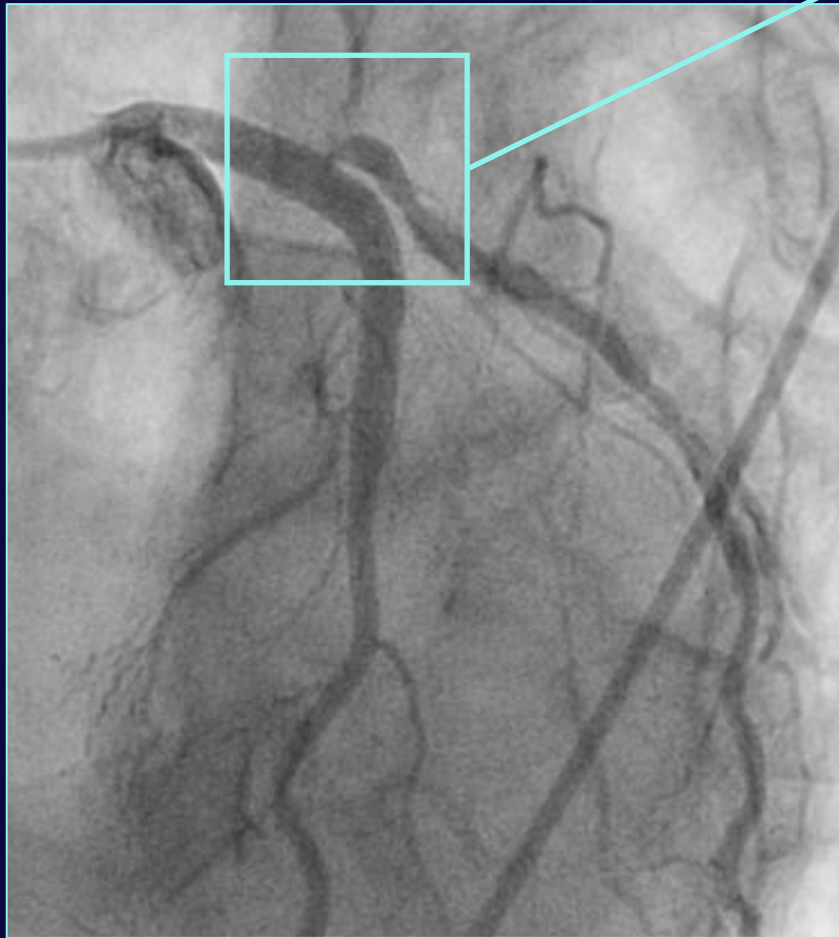


- Crush technique: 3.0x33 Cypher in Cx and 3.5x18 Cypher in LAD.

Final result after kissing



No restenosis at FU



Nordic 6 months MACE

MACE in 2 stents 3.4%

MACE in 1 stent 2.9%

joint interventional meeting

Peri procedural MI not included in the MACE

Steigen et al. *Circulation* 2006;114:1955-1961

NORDIC Bifurcation Study



Individual End Points after 6 months

	1 Stent	2 Stents	P
Patients	207	206	
Cardiac death	2 (1.0)	2 (1.0)	1.00
Myocardial infarction	0 (0.0)	1 (0.5)	0.31
Stent thrombosis	1 (0.5)	0 (0.0)	0.31

Safety in simple versus complex stenting of coronary artery bifurcation lesions. The Nordic Bifurcation Study 14-month follow-up results

Jan S. Jensen¹; Anders Galløe¹, MD; Jens F. Lassen², MD; Andrejs Erglis³, MD; Indulis Kumsars³; Terje K. Steigen⁴, MD; Rune Wiseth⁵, MD; Inga Narbute³, MD; Pål Gunnes⁶, MD; Jan Mannsverk⁴, MD; Oliver Meyerdierks⁷, MD; Svein Rotevatn⁸, MD; Matti Niemelä⁹, MD; Kari Kervinen⁹, MD; Kjell Nikus¹⁰, MD; Saila Vikman¹⁰, MD; Jan Ravkilde¹², MD; Stefan James¹¹, MD; Jens Aarøe¹², MD; Antti Ylitalo¹³, MD; Steffen Helqvist¹⁴, MD; Iwar Sjögren¹⁵, MD; Per Thayssen¹⁶, MD; Kari Virtanen¹⁷, MD; Mikko Puhakka¹⁸, MD; Juhani Airaksinen¹⁹, MD; Leif Thuesen^{2*}, MD for the Nordic-Baltic PCI Study Group

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Nordic Bifurcation Study

Clinical endpoints after 14 months

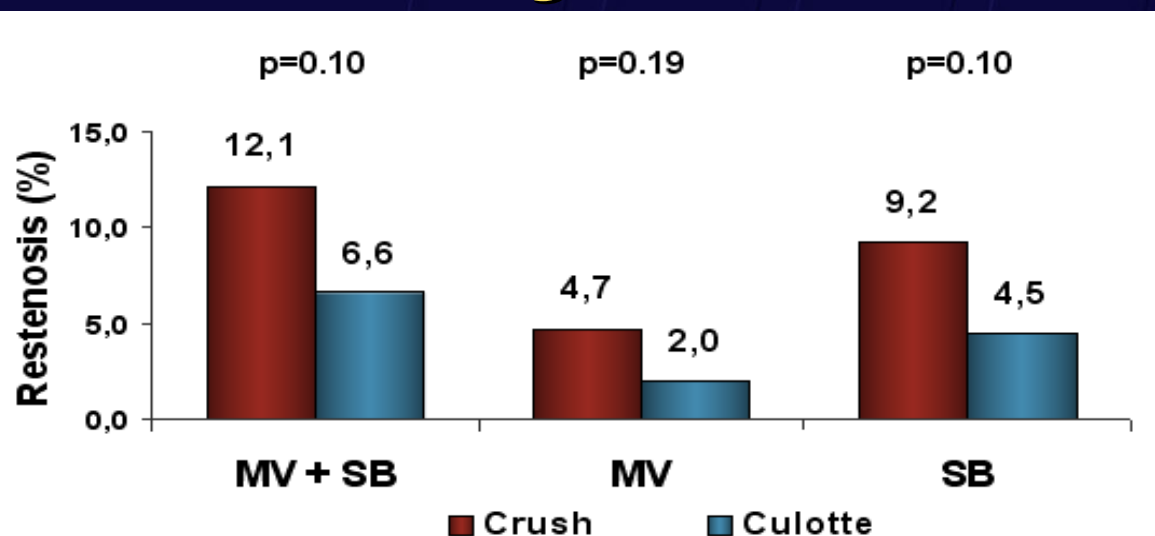
	MV	MV + SB	P
Definite stent thrombosis, n (%)	2/199 (1.0)	1/196 (0.5)	ns
Probable stent thrombosis, n (%)	2/199 (1.0)	0/196 (0)	ns
Possible stent thrombosis, n (%)	1/199 (0.5)	0/196 (0)	ns
Overall stent thrombosis, n (%)	4/199 (2.0) ^o	1/199 (0.5)	ns
Total death, n (%)	5/207 (2.4)	2/206 (1.0)	ns
Cardiac death, n (%)	3/207 (1.4)	2/206 (1.0)	ns
Myocardial infarction, n (%)	4/199 (2.0)	2/196 (1.0)	ns
Target lesion revascularisation, n (%)	13/199 (6.5)	11/196 (5.6)	ns
Target vessel revascularisation, n (%)	15/199 (7.5)	12/196 (6.1)	ns
MACE, n (%)	19/199 (9.5)	16/196 (8.2)	ns

*One patient experienced a definite stent thrombosis and was treated with balloon angioplasty. The same patient died suddenly ten days later and the event was classified as a possible stent thrombosis.

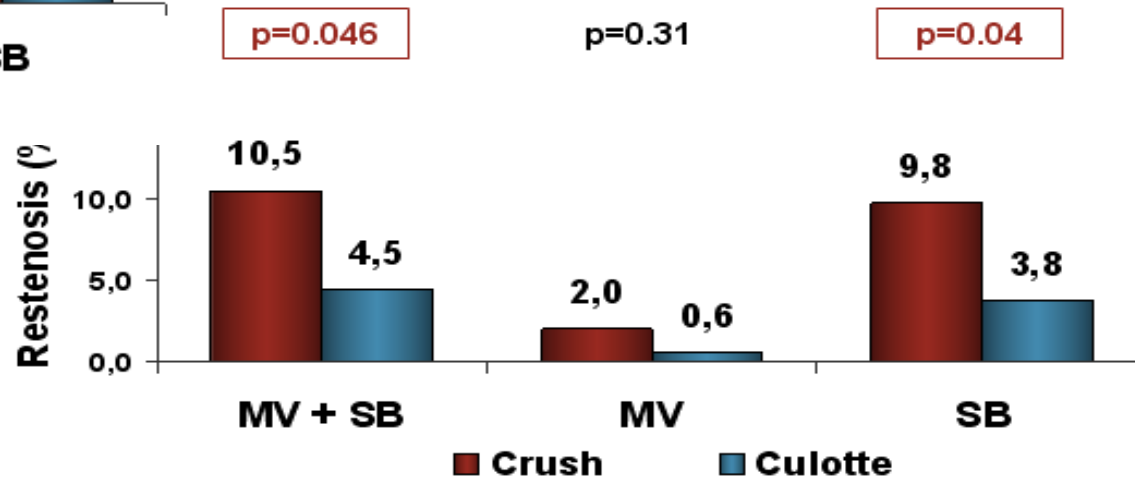
Nordic II: Rate of Restenosis ($\geq 50\%$ diameter stenosis by QCA) at 8M



In-segment

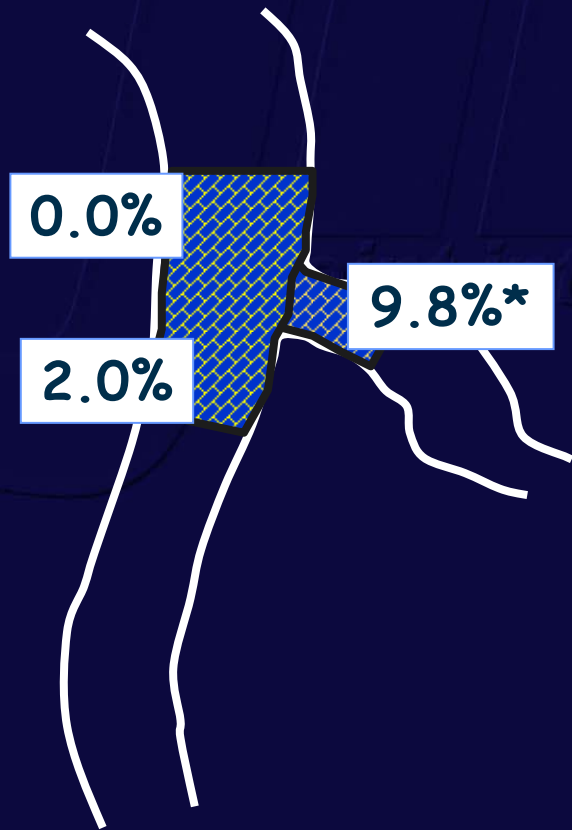


In-stent

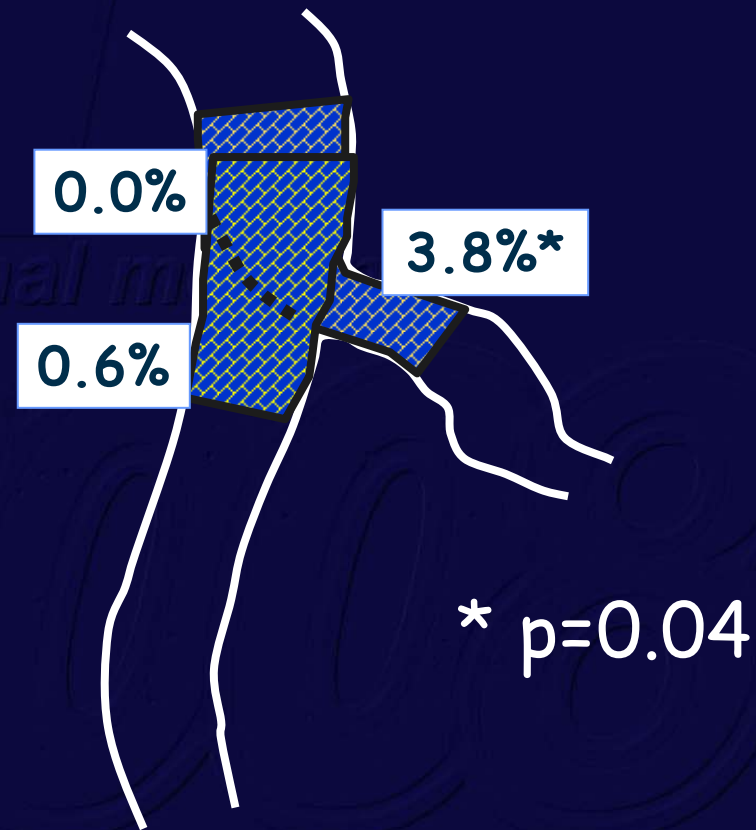


Nordic II: Localization of In-Stent Restenosis at 8 Months Follow-up

CRUSH



CULOTTE

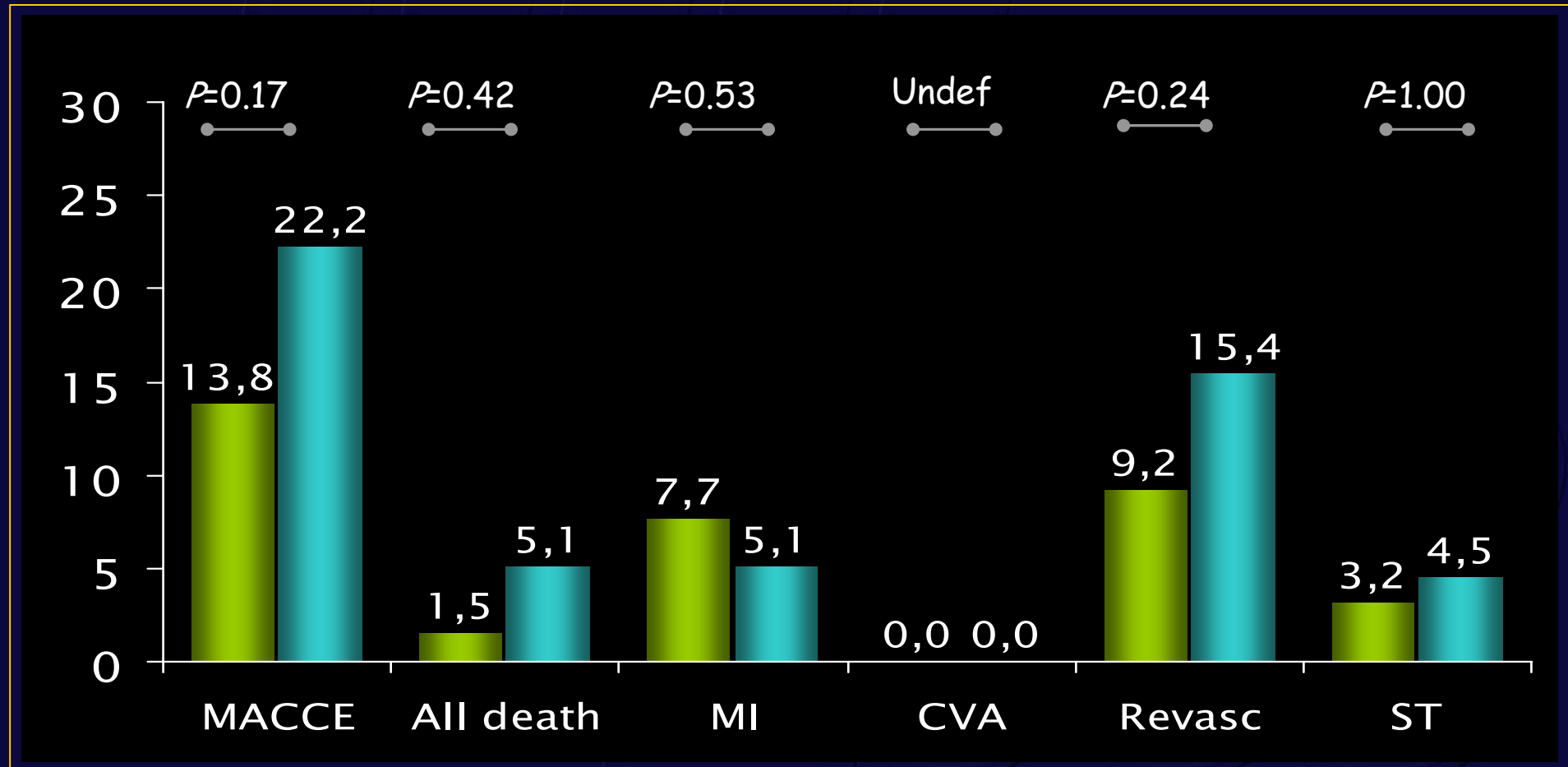


* p=0.04

MACCE at 12 Months: SYNTAX pts non LM

PCI Bifurcation/Trifurcation Subset (Non LM)

■ >2 Stents (n=67) ■ 1 Stent (n=118)



ST=Per-protocol stent thrombosis

Conclusions

- A) Bifurcations without SB ostial disease are usually successfully treated with one stent on the MB and kissing balloon inflation toward the side branch
- B) Bifurcation with significant narrowing at the ostium of the SB are treated as in (A) with the need of a stent on the in 1/3 of the cases (miniCrush, culotte or T)
- C) Bifurcation with a large SB and with disease extending more than 3-4 mm from the ostium are treated with 2 stents

If you need 2 stents implant 2 stents