

Seoul, Korea: 25-27 April 2012

Left Main and Bifurcation Summit
"Paradigm Shift: Bifurcation Summit"

My top 10 rules in non-LM Bifurcation stenting

Speaker - 12'

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Presenter Disclosure Information

Antonio Colombo, MD

Co-founder & minor shareholder: Cappella Inc.

February 10-12, 2021

Rome, Italy

International Congress

Preamble

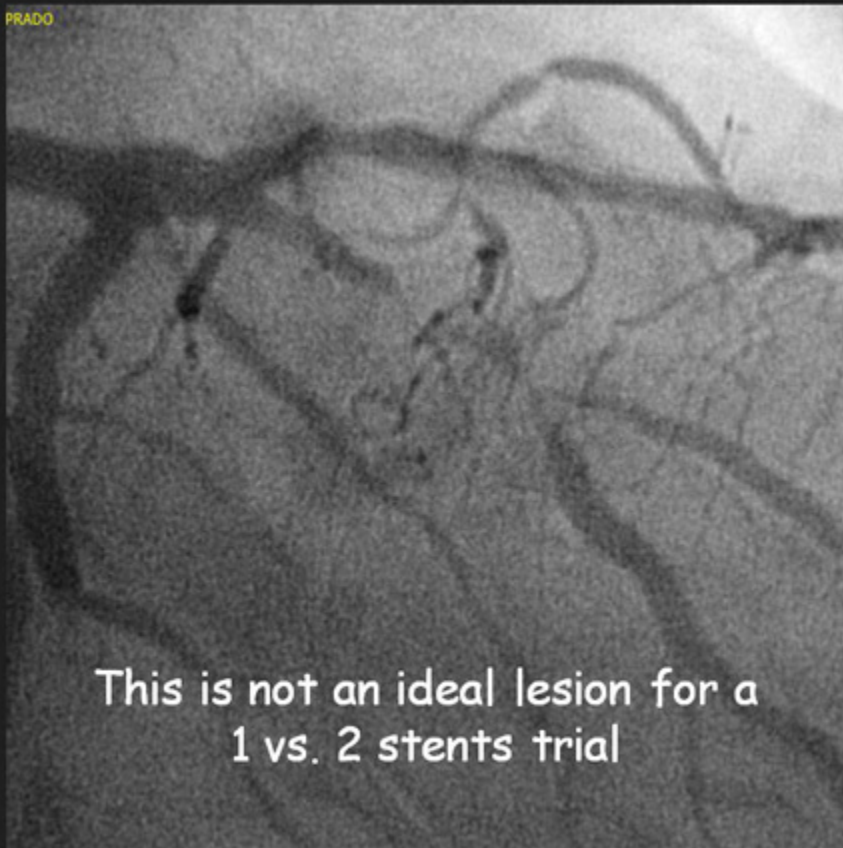
The main limitation of all randomized studies comparing provisional versus routine double stenting is that bifurcation lesions which are randomized are suitable for provisional. Bifurcation lesions which need to be treated with two stents are usually not randomized.

For bifurcation lesions, which are suitable for 1 stent or 2 stents, routine implantation of 2 stents does not give any advantage compared to routine implantation of 1 stent and cross-over to 2 stents when needed

Different approach for non-LM vs. LM bifurcations

In non-LM bifurcations we are more keen to accept an intermediate or suboptimal result on the SB, more common the keep it open approach, need to cross over to 2 stents about 20%

In LM bifurcations an optimal result on the LCX is important, need to cross over to 2 stents 30-40%



This is not an ideal lesion for a
1 vs. 2 stents trial

Why the provisional single-stent approach is not always the right strategy, arguments for the development of dedicated bifurcation devices; *Maik J. Grundeken et al. Euro Interv 2012*

Not all lesions in these trials were true bifurcations. In addition not every Medina with SIDE BRANCH ostial stenosis are the same

Crush stenting and in general 2 stent technique was not performed according to current standards

The decision about the need to cross over was very subjective

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Interventional cardiology

My view

If you decide to implant 2 stents you take more responsibilities : an optimal result will give you a low MACE rate, even if you perform angio f-u, a suboptimal result may increase the risk of thrombosis of the side branch and sometimes of the main branch.

If you decide to implant one stent you are mainly responsible about the side branch: an incorrect decision may lead to side branch closure

The final decision is a balance between the clinical relevance of the side branch (risk of occlusion) and how confident is the operator to obtain an optimal result

Problems with bifurcation lesions

- ✓ **Should I wire the side branch?** YES, very little to loose (except for a guide wire) to take this decision
- ✓ **Should I implant 1 or 2 stents?** 1 stent most of the times; 2 stents if you are afraid to loose the SB, if the SB is large and diseased extending distal to the ostium and if you are confident with 2 stent technique

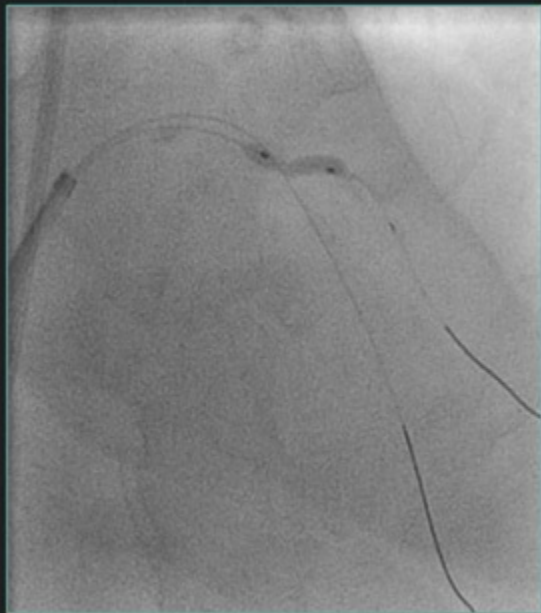
Mini-Crush Case1



Baseline

Min12870

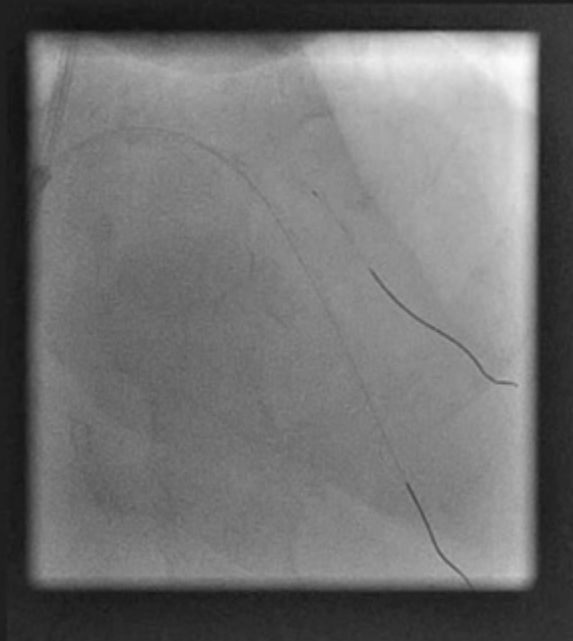
Mini-Crush Case1



Pre-dilatation

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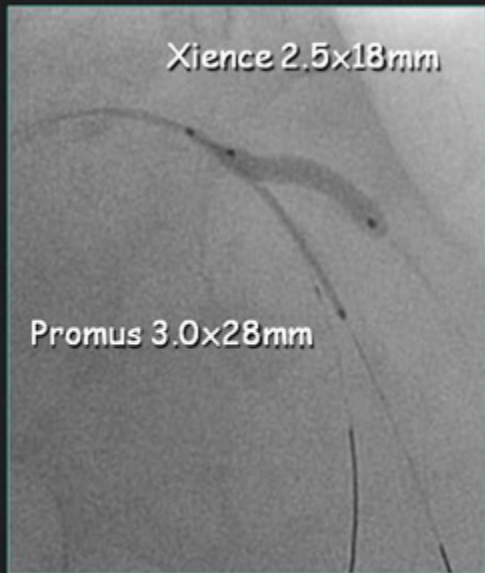
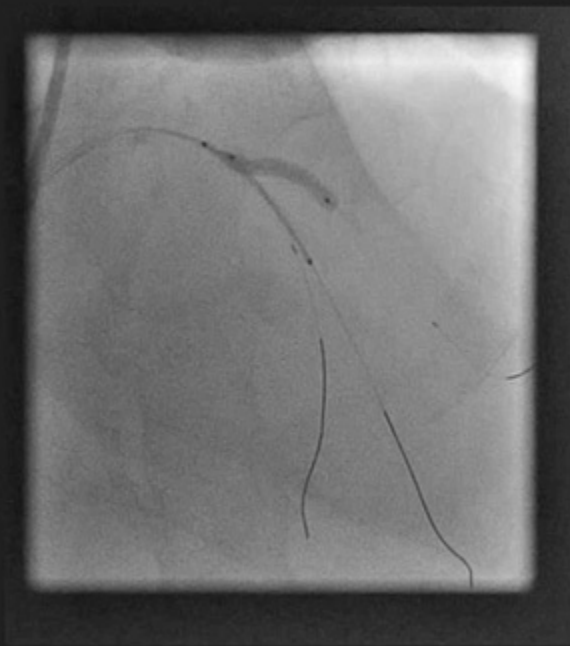
Mini-Crush Case1



Result after pre-
dilatation

Min12870

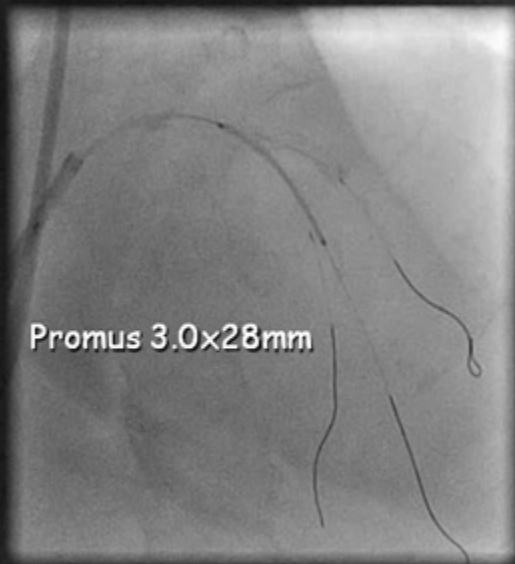
Mini-Crush Case1



Mini-Crush

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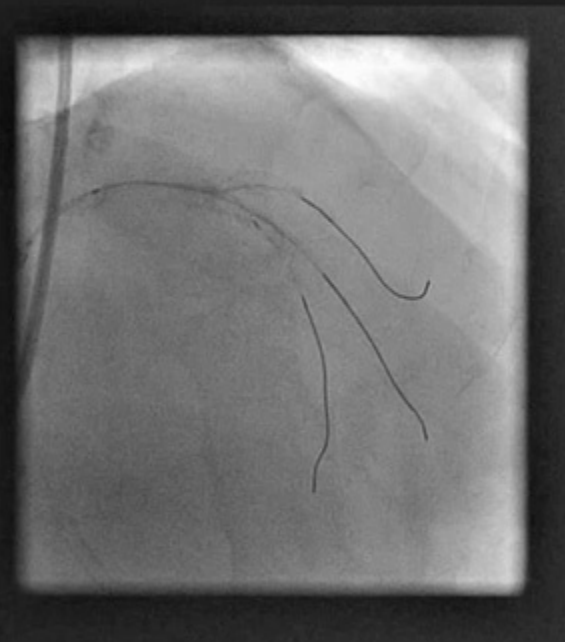
Mini-Crush Case1



Stent on LAD

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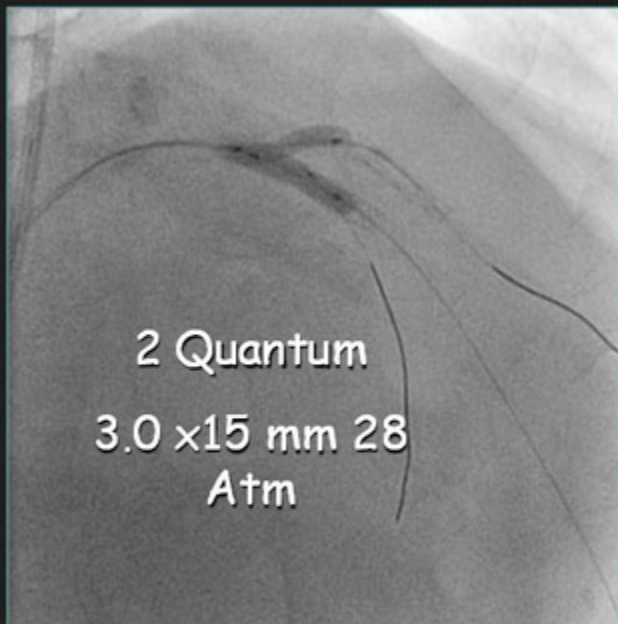
Mini-Crush Case1



After Stent on LAD

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Mini-Crush Case1



Kissing Balloon

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Mini-Crush Case1

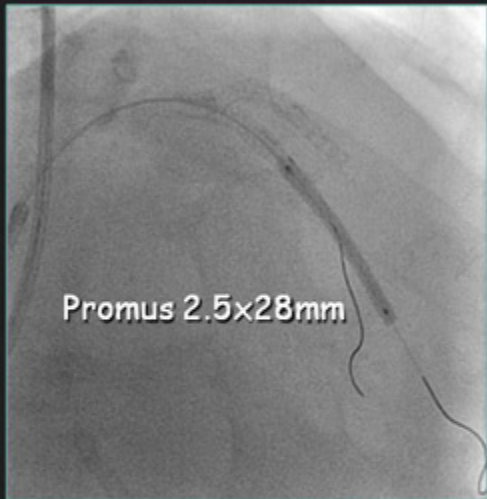


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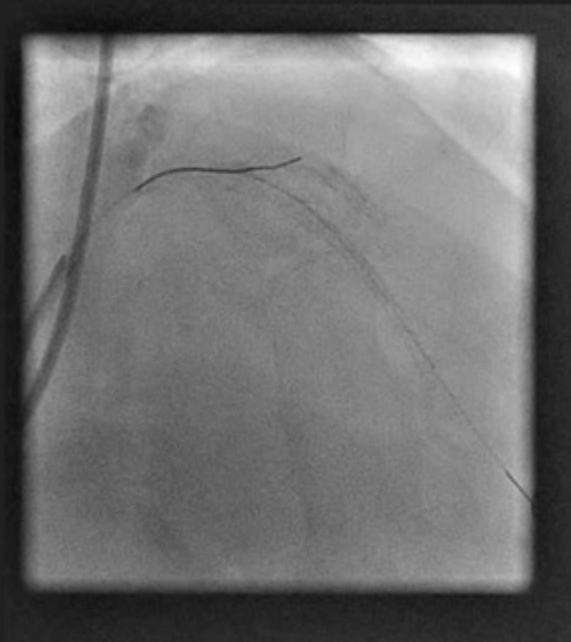
Result post Kissing

Min12870

Mini-Crush Case1



Distal Stent



Final Result

Min12870

Problems with bifurcation lesions



✓ Should I perform kissing inflation?

Absolutely if you have implanted 2 stents and always sequential inflations and then kissing .
In other circumstances if the side branch is relevant and shows an unsatisfactory result:
KISSING IS NOT VERY IMPORTANT IN
ALL PROVISIONAL

✓ What is " Keep It Open"? : When you are only concerned about side branch occlusion regardless of residual stenosis

European Bifurcation Club Consensus

- *Complex technique: Kissing balloon inflation for carina reconstruction is mandatory in two stent techniques;*
- *Simple technique: Kissing balloon inflations, or pressure wire interrogation, should be used in provisional stenting when an angiographically significant (>75%) side branch lesion remains after main branch stenting;*

NORD-BIF III “Nordic kiss”

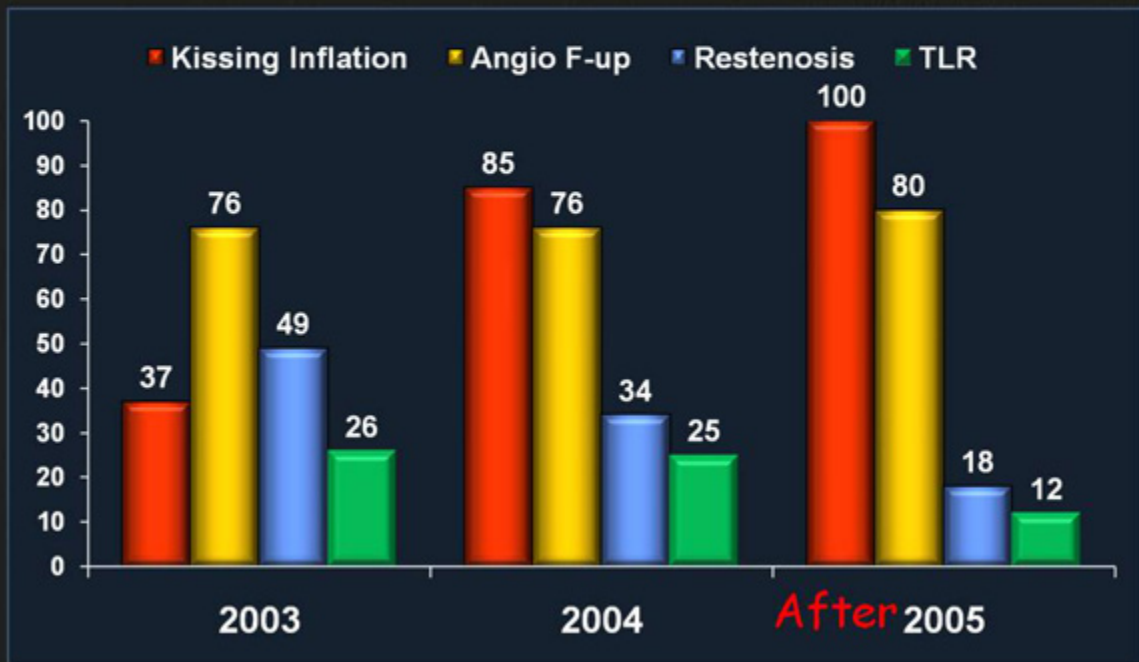
FKB inflation reduced restenosis in the SB: overall from 15% to 8% and in true bifurcations from 20% to 7%



KIO: Keep it Open

- This strategy means to place a guide wire in the side branch with the goal to finish the procedure with flow (TIMI 1,2,or3) in the side branch without any concern for residual stenosis
- When should I plan for KIO? For any side branch which is large enough to be worried about closure and without much concern about residual stenosis and extent of ischemia

Optimal performance of 2 stent techniques important in reducing event rates



1. Guide catheter: do not compromise for a small guide if you do not feel comfortable
2. Provisional not always a must

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A Typical Case for 2 stents



Baseline



**Following
Crush**

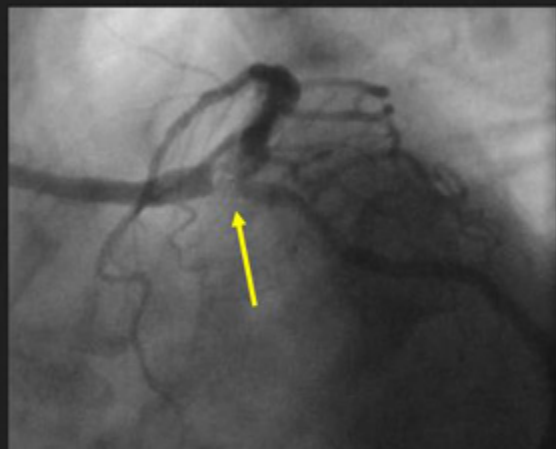
12472/05

3. Lesion preparation

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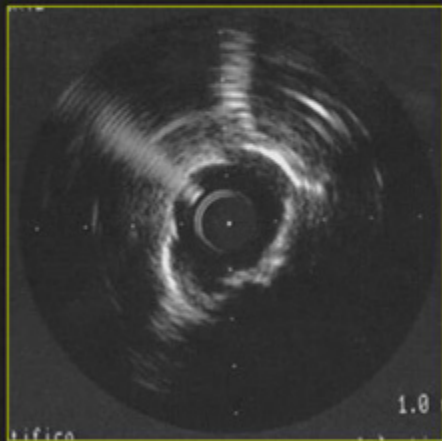
International meeting



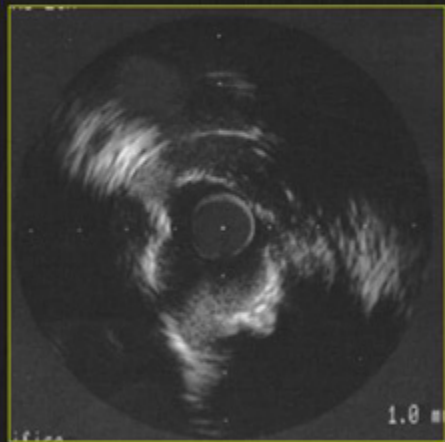
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Rome, Italy

International meeting

IVUS Images Post Rotablator



LAD Os



Cx Os

4. If crush 2 steps kiss

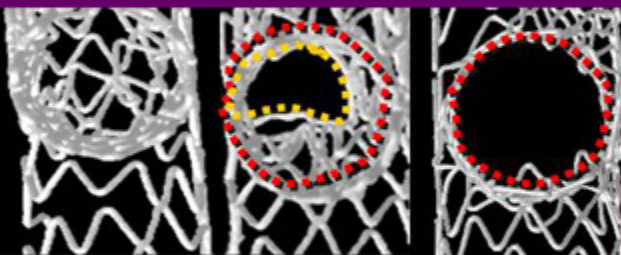
No large registry or randomized trial evaluating crush performed step kissing. The only technique which come close to step kissing is DK crush. Studies with DK crush demonstrated good results with 2 stents

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

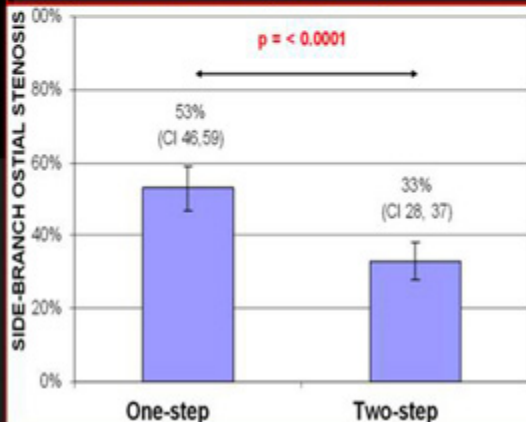
No kissing

One-step
kissing post-
dilatation

Two-step
kissing post-
dilatation



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



Two steps:

- 1) Inflate at high pressure only the SB balloon
- 2) Perform kissing inflation

5. IVUS evaluation: if IVUS cath does not cross the stent perform a better postdilatation

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IVUS-Guided Stent Bifurcation



Baseline

IVUS-Guided Stent Bifurcation

Diag: Xience 2.5x18mm
14atm

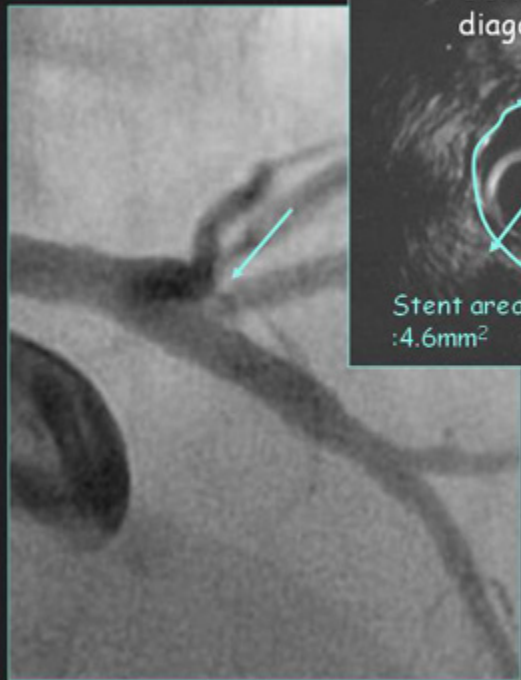
LAD: Xience 3.5x18mm
18atm

Stents in
bifurcation

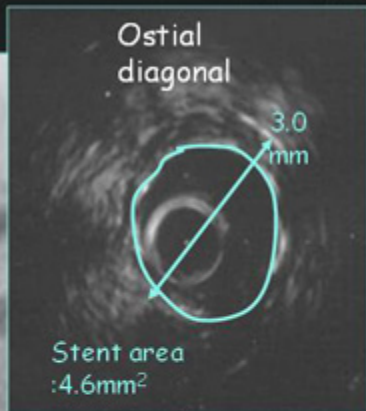


Result after stent

IVUS-Guided Stent Bifurcation



Result after stent

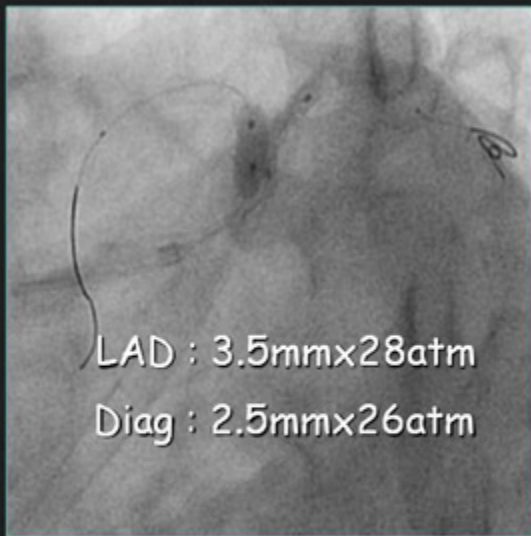


More can be done

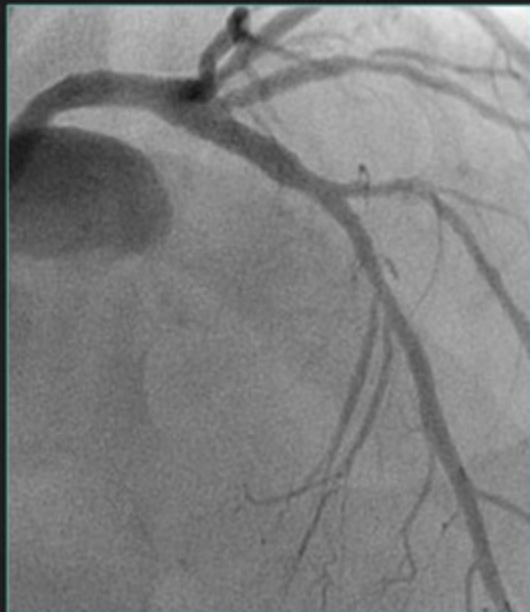


Suggested 3.0 mm balloon for
diagonal post-dilatation
and agreed on 2.5mm very high
pressure

IVUS-Guided Stent Bifurcation



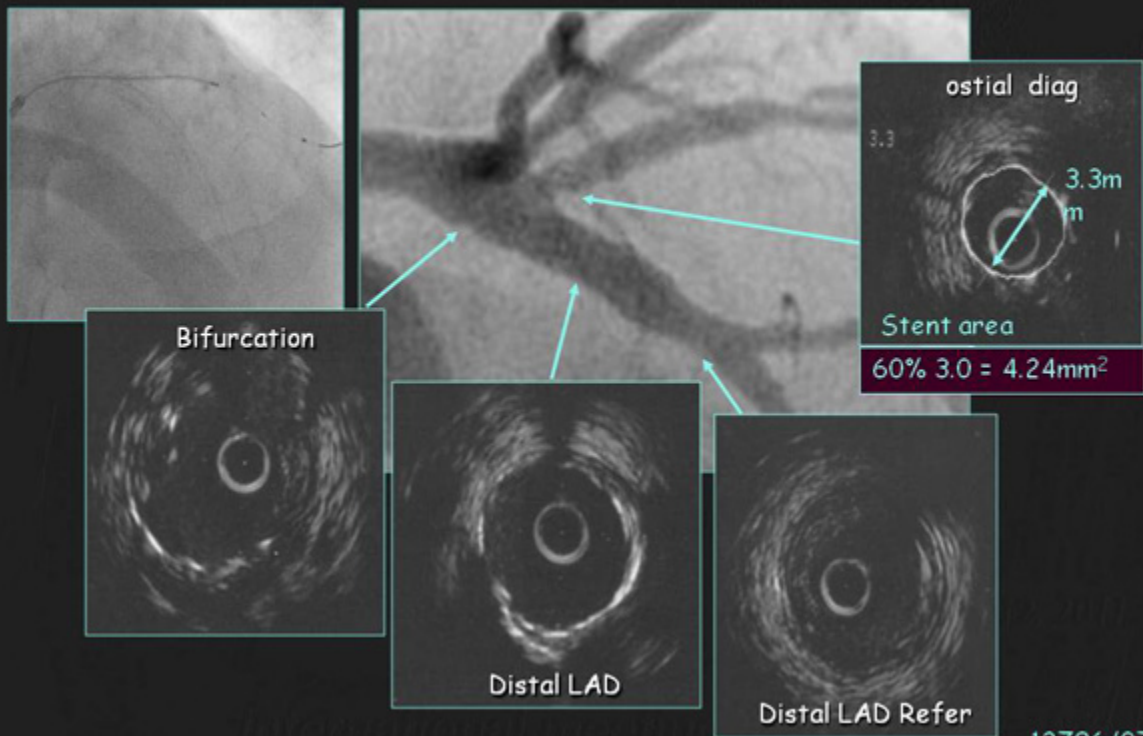
High-pressure
dilatation



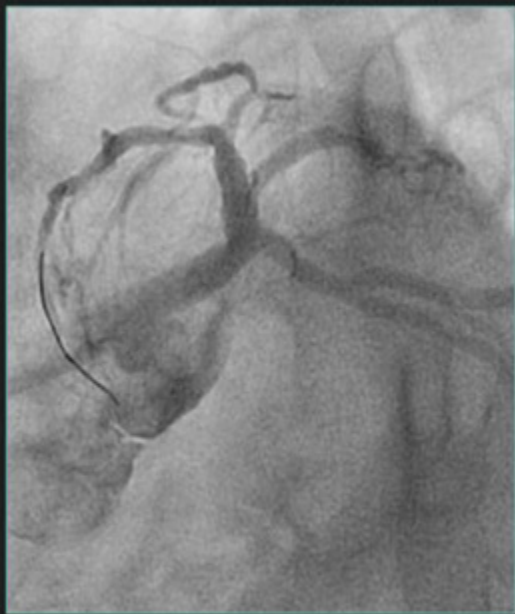
Result post high-pressure
dilatation

IVUS-Guided Stent Bifurcation

Result post high-pressure dilatation



IVUS-Guided Stent Bifurcation



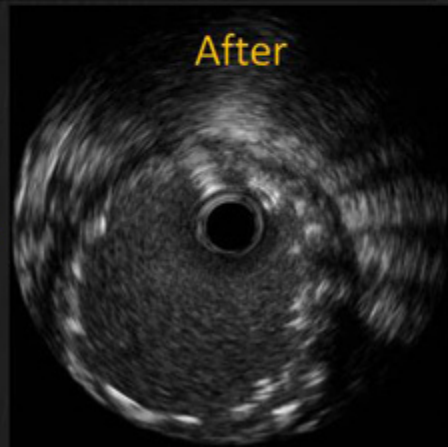
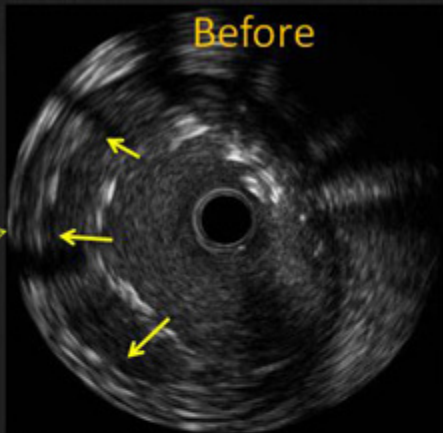
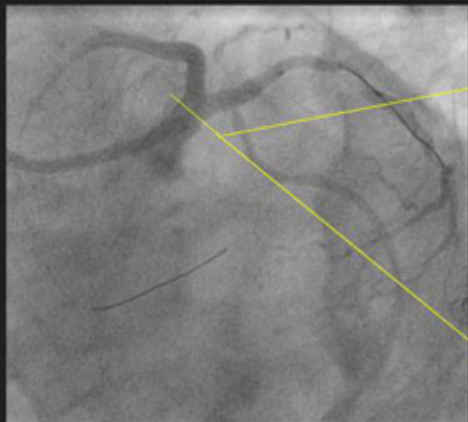
Final Result

IVUS-Guided Stent Bifurcation



9 months Follow-Up

After appropriate
sizing



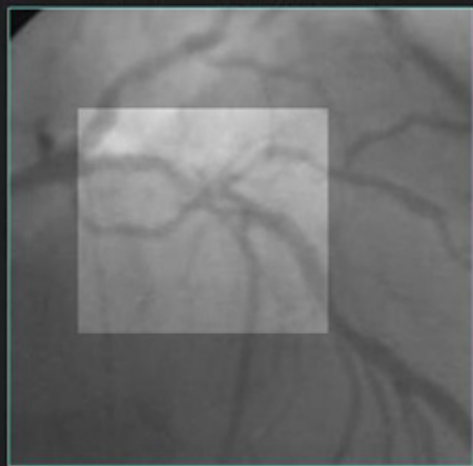
6. The final angio should not look worse than the baseline: keep the side branch open.

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Example of Keep It Open (KIO)



Baseline

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Example of Keep It Open (KIO)

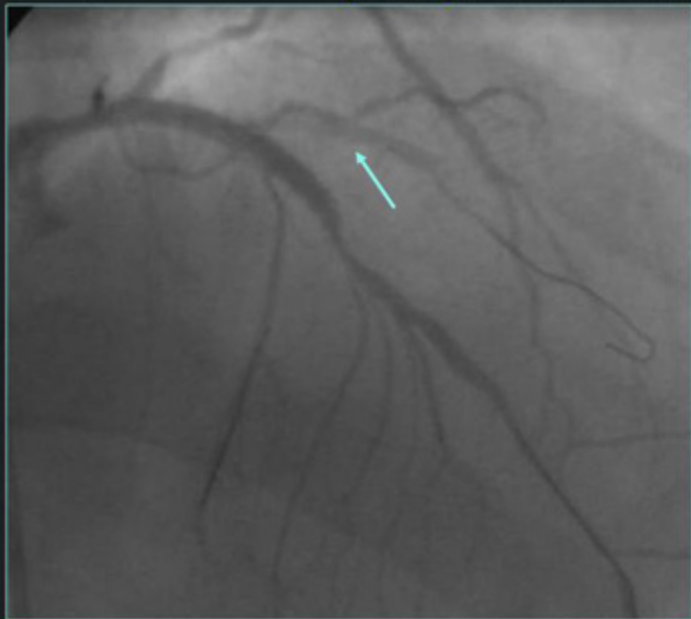


Balloon inflated on SB
(Should not have been done)



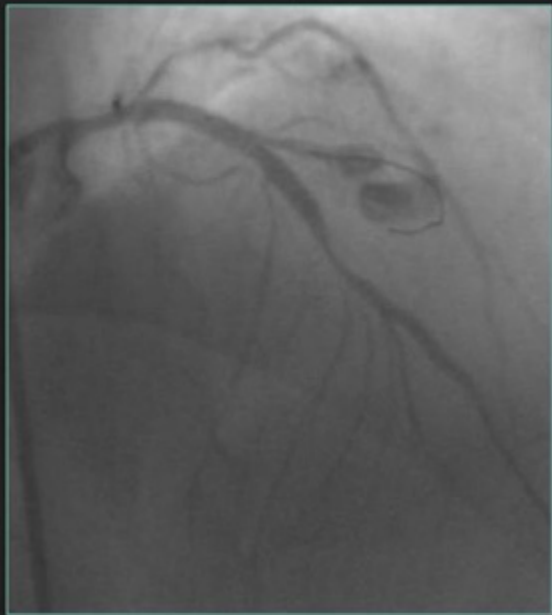
Post Balloon inflation on SB

Example of Keep It Open (KIO)



Stenting of MB
Rewiring of SB with large dissection

Example of Keep It Open (KIO)



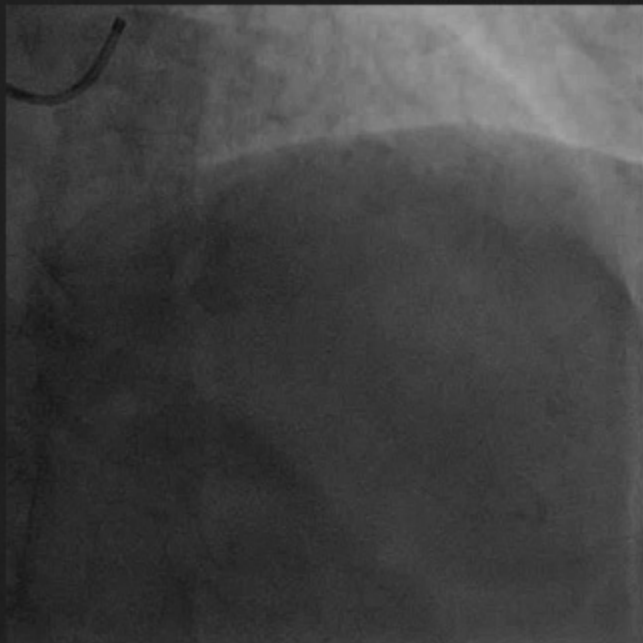
Perforation of SB attempting
to gain true lumen



Final Result after cover
stent on the MB

- 7. When needed, predilatation of the side branch, will direct about the strategy to employ**

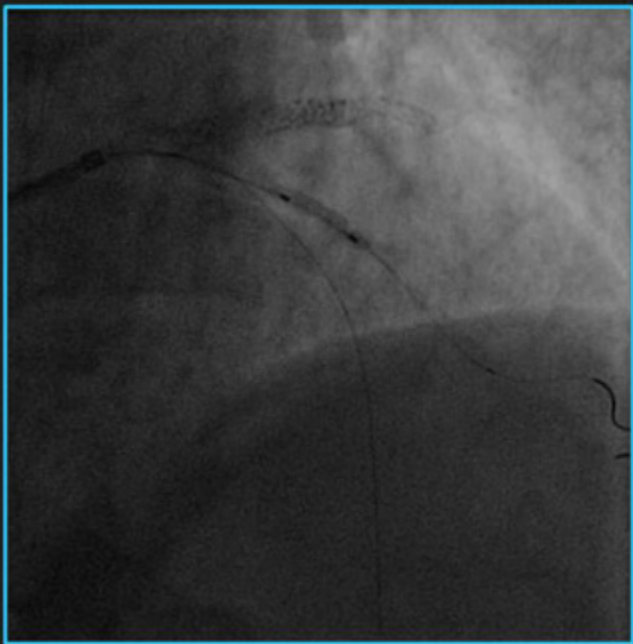
Cross-over to 2 Stents in Bifurcation Lesion



Baseline

67741/12HSR

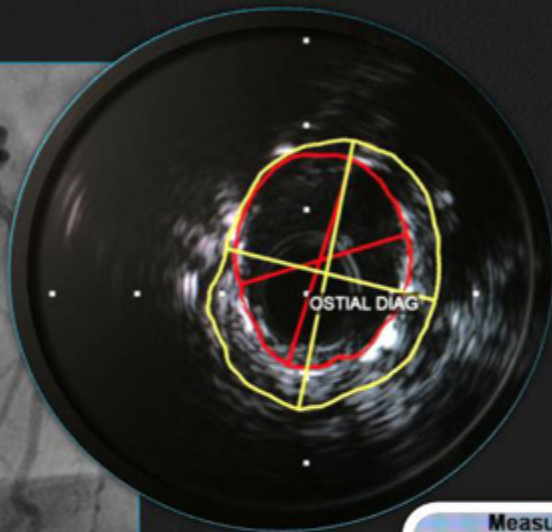
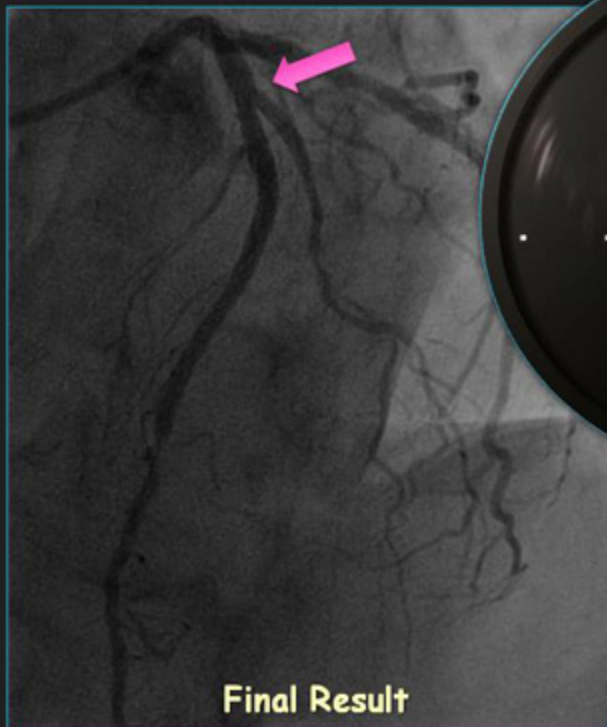
Cross-over to 2 Stents in Bifurcation Lesion



Pre-dilatation of Diagonal

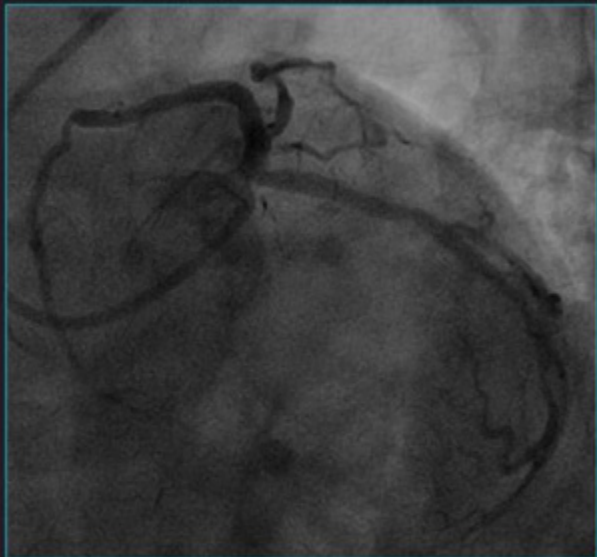
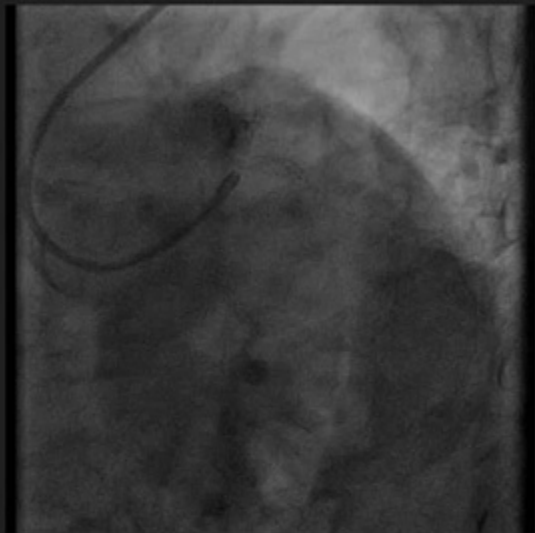
67741/12HSR

Cross-over to 2 Stents in Bifurcation Lesion



Measurements			
A1	A	4.09 mm ²	Area 38%
		2.05 mm / 2.56 mm	
A2	A	6.60 mm ²	
		2.54 mm / 3.26 mm	

Cross-over to 2 Stents in Bifurcation Lesion



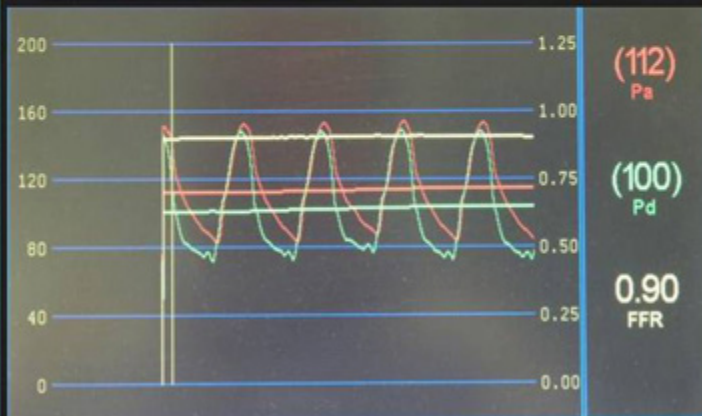
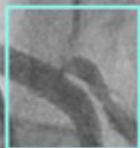
Final Result

67741/12HSR

8. A significant ostial stenosis on the side branch may be functionally not relevant.

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9. The final result is more important than the technique utilized
10. If you feel unsecure about the procedure, call for help or do not perform the intervention

The come into play of new bifurcation stents

PROVISIONAL

SBA: Side Branch Access (DES) :Abbott
(provisional with easy 2 stents cross over)

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2 STENTS

AXESS: Biosensors

Sideguard: Cappella

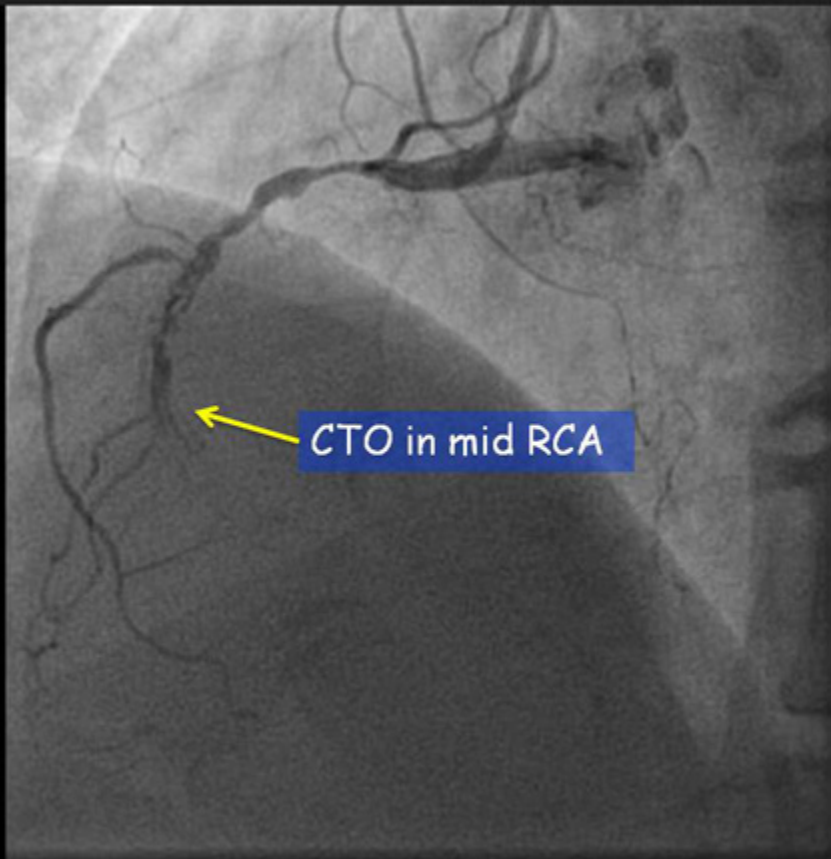
Tryton: Tryton Medical

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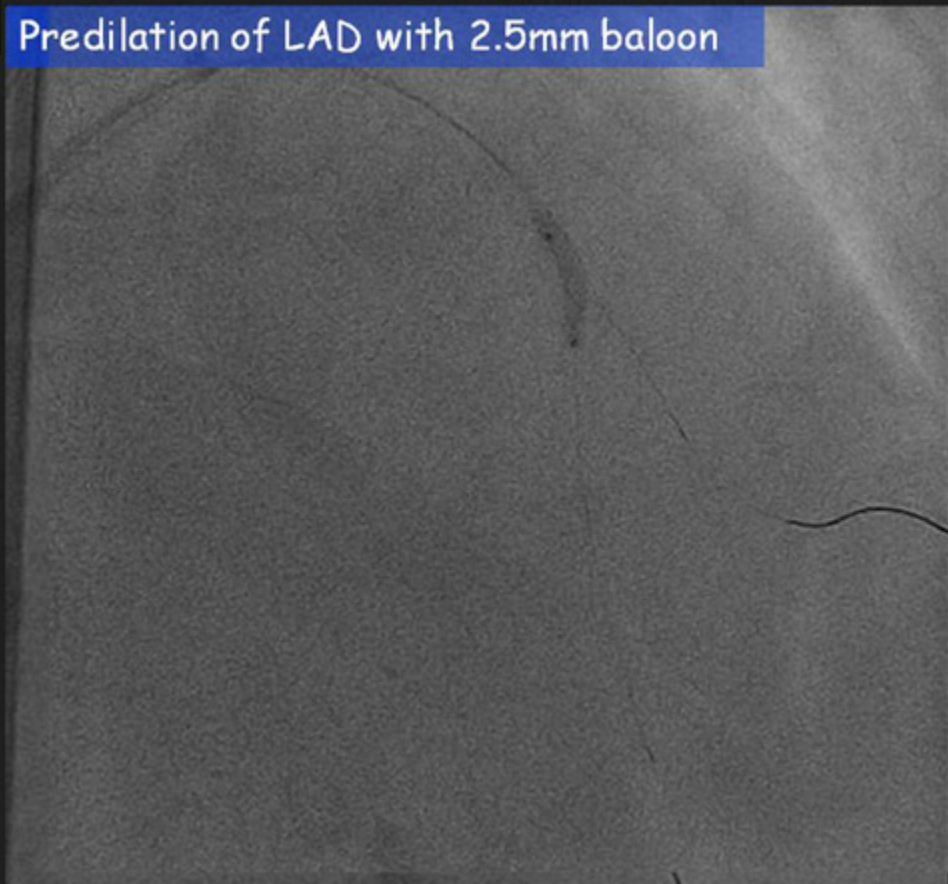
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Bifurcation lesion in mid LAD: Medina 0-1-1





Predilation of LAD with 2.5mm balloon

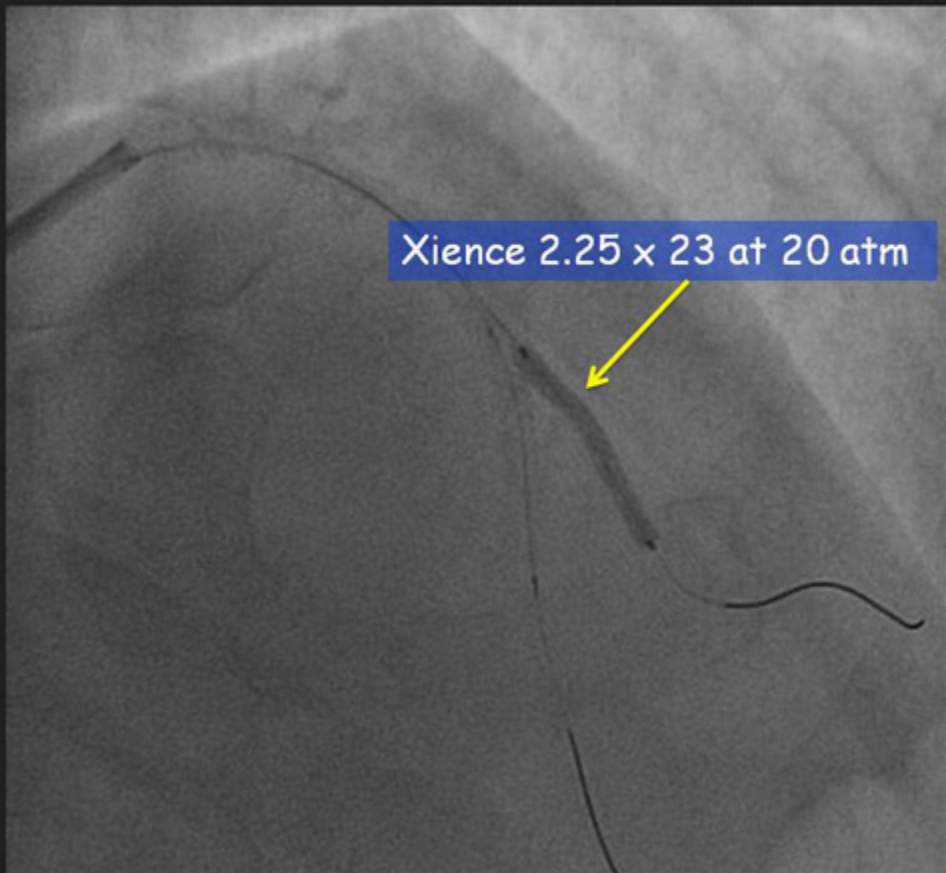


Positioning of Xience SBA

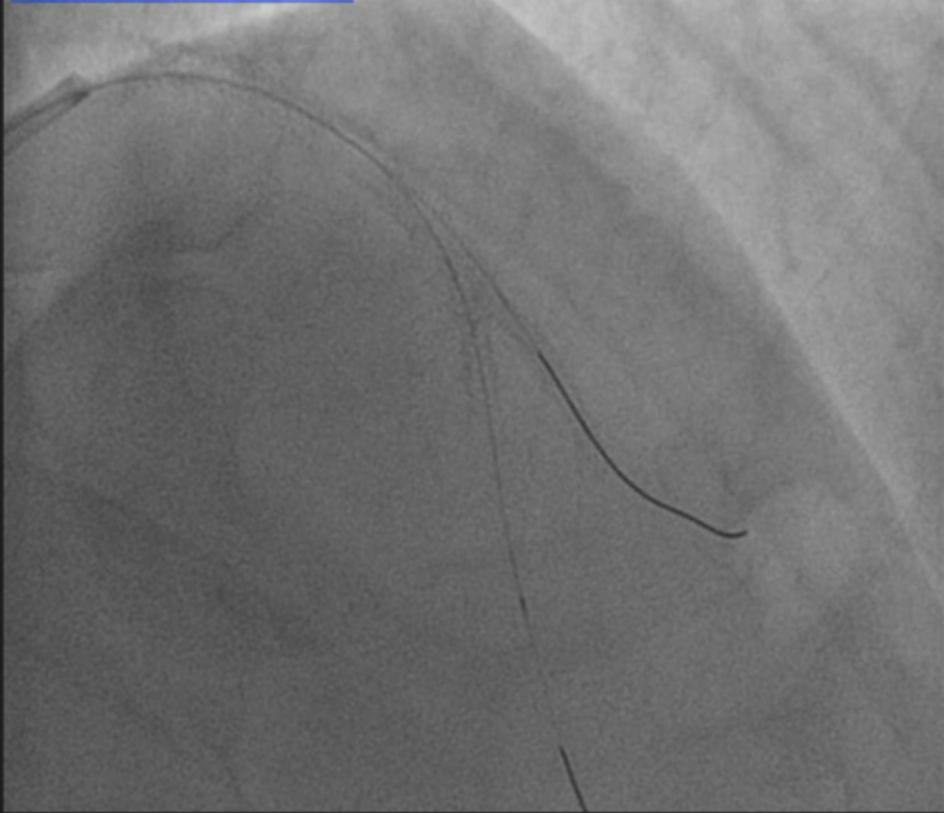


Implantation of Xience SBA 3.0/2.5 x18 at
12atm

Xience 2.25 x 23 at 20 atm



Final angiogram



IVUS showed excellent result

