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ANGIOPLASY SUMMIT 2009
TCT ASIA PACIFIC

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

Customized technique of left main stenting according to anatomical characteristics

Speaker - 12'

Alaide Chieffo and Antonio Colombo

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

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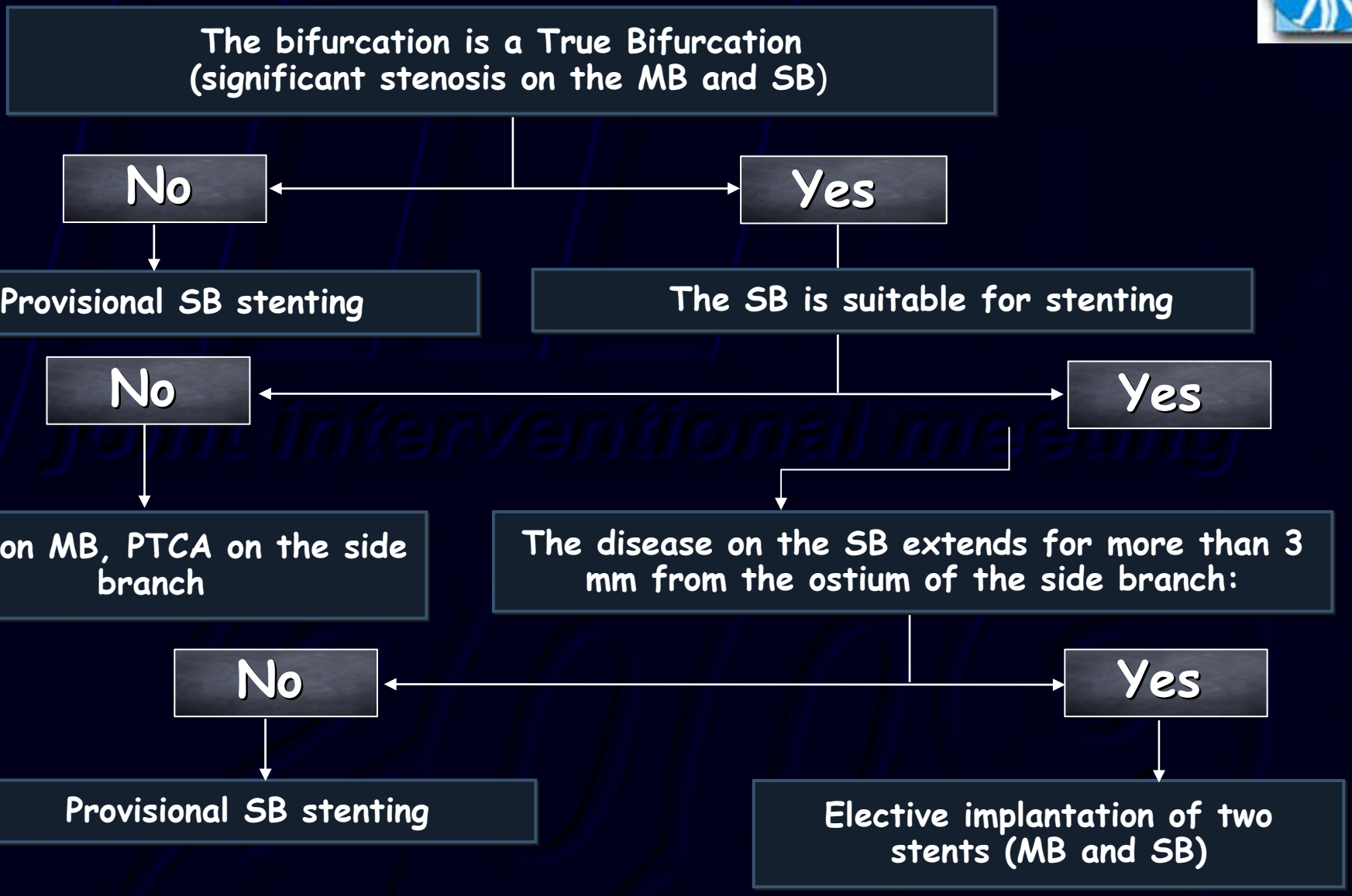
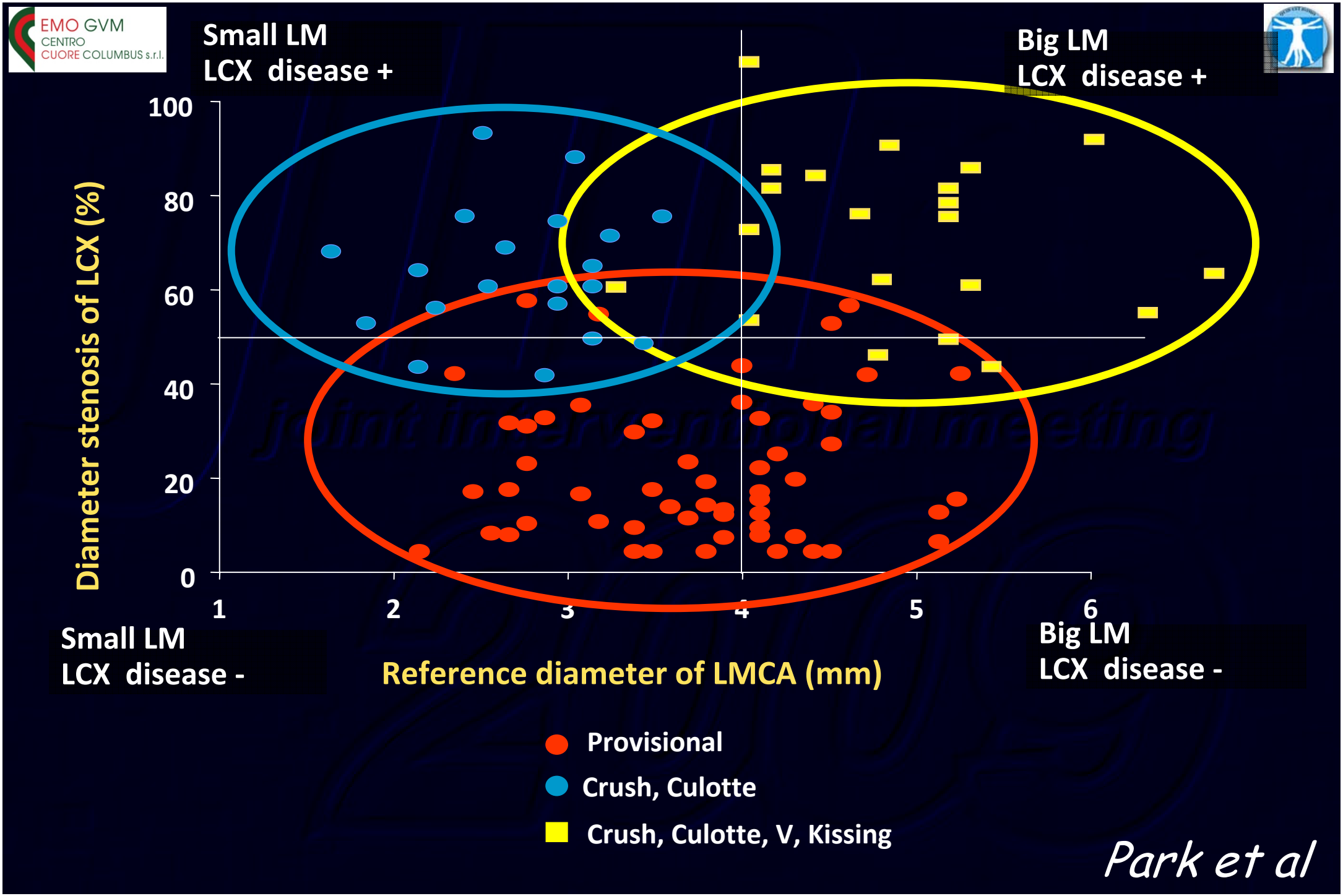
Approach to Bifurcational Lesions Including LM

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Small LM
LCX disease +
Big LM
LCX disease +
100
80
60
40
20
0
Diameter stenosis of LCX (%)
1
2
3
4
5
6
Small LM
LCX disease -
Reference diameter of LMCA (mm)
Big LM
LCX disease -
Provisional
Crush, Culotte
Crush, Culotte, V, Kissing
Park et al

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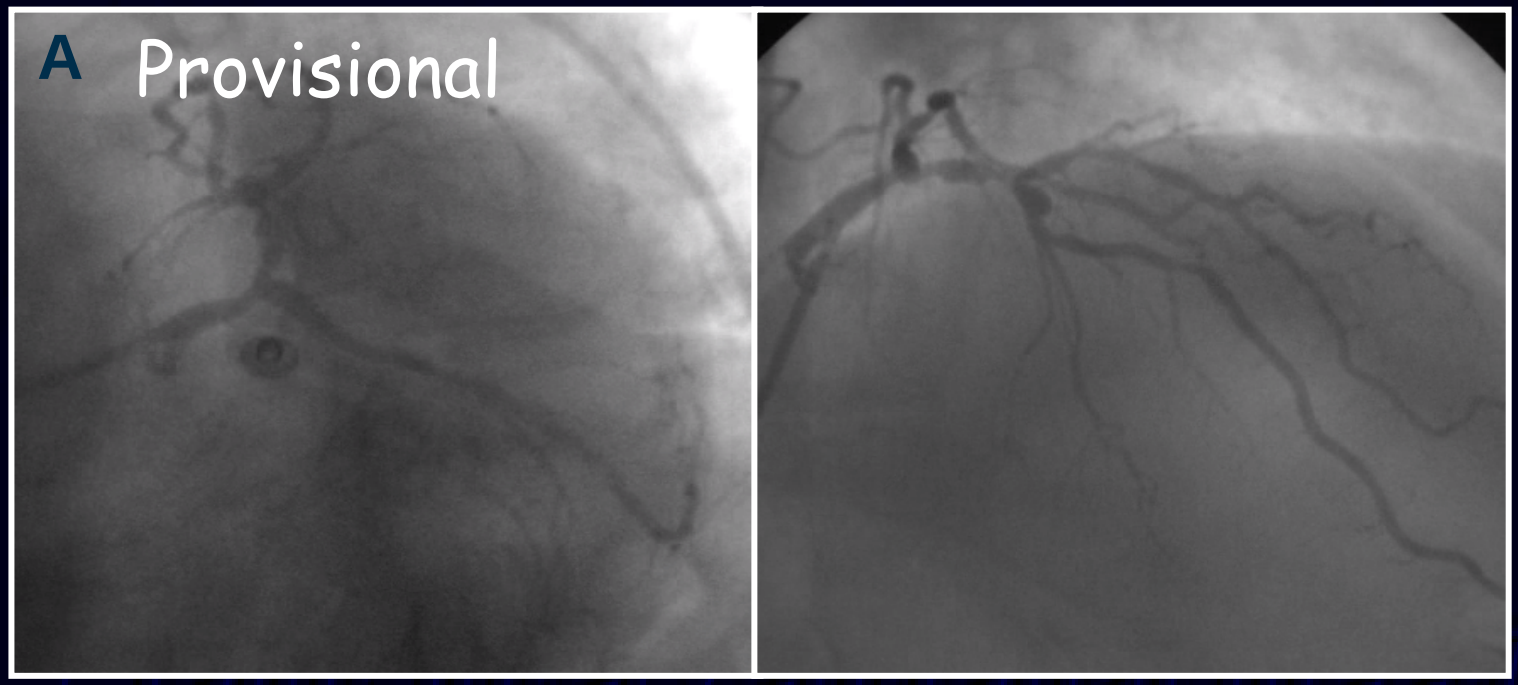

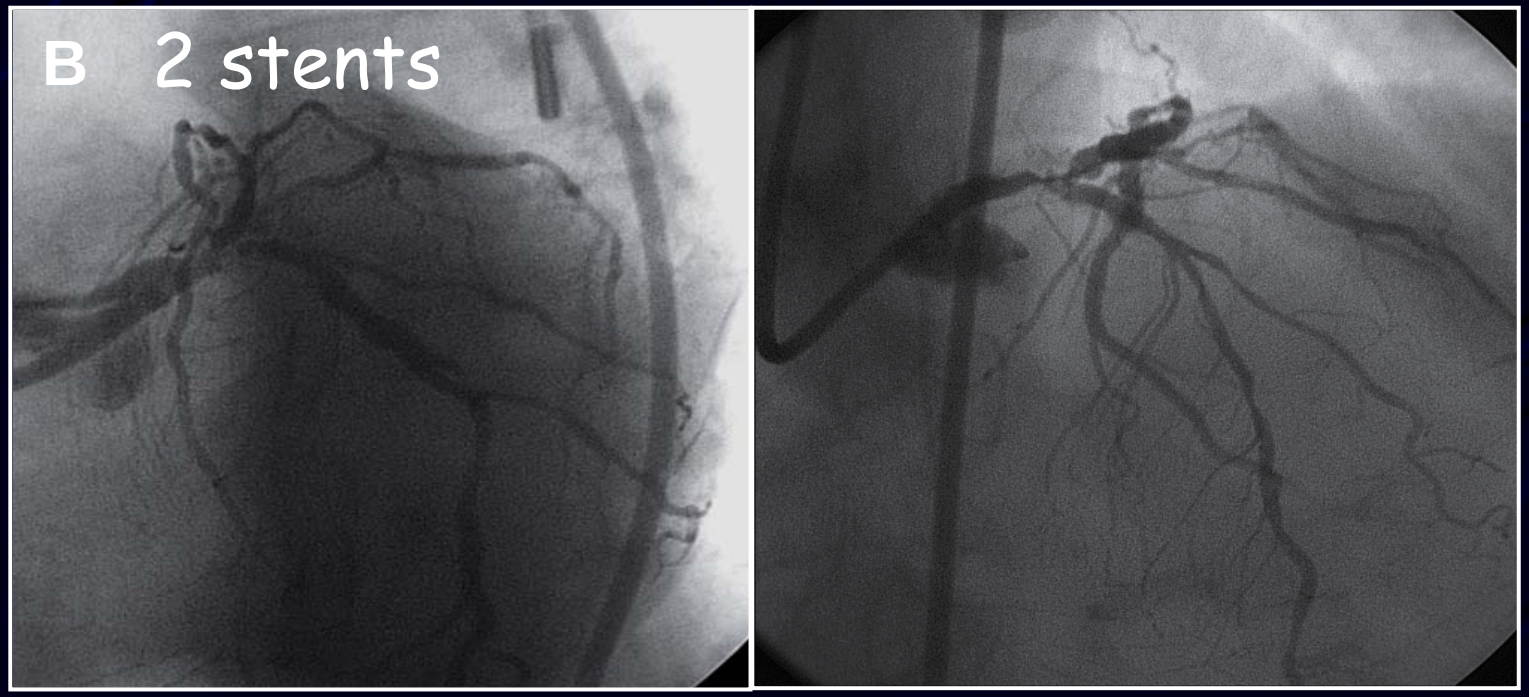

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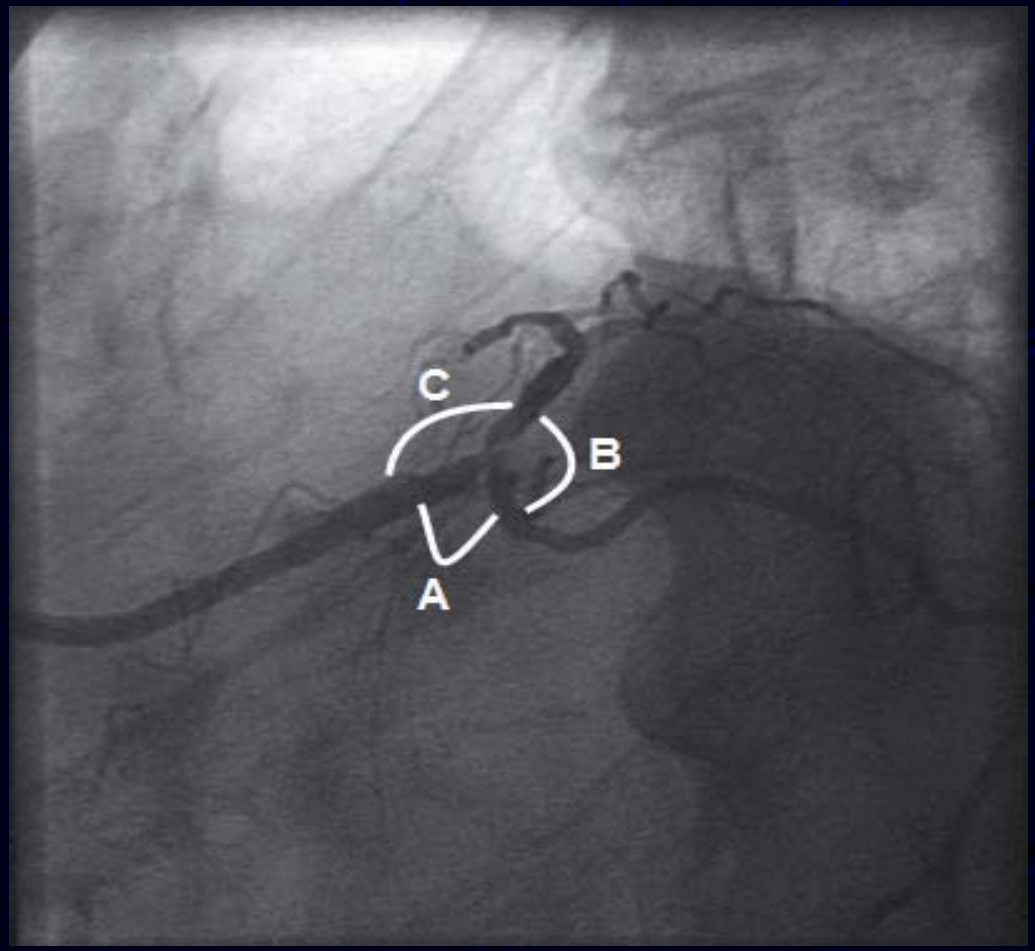
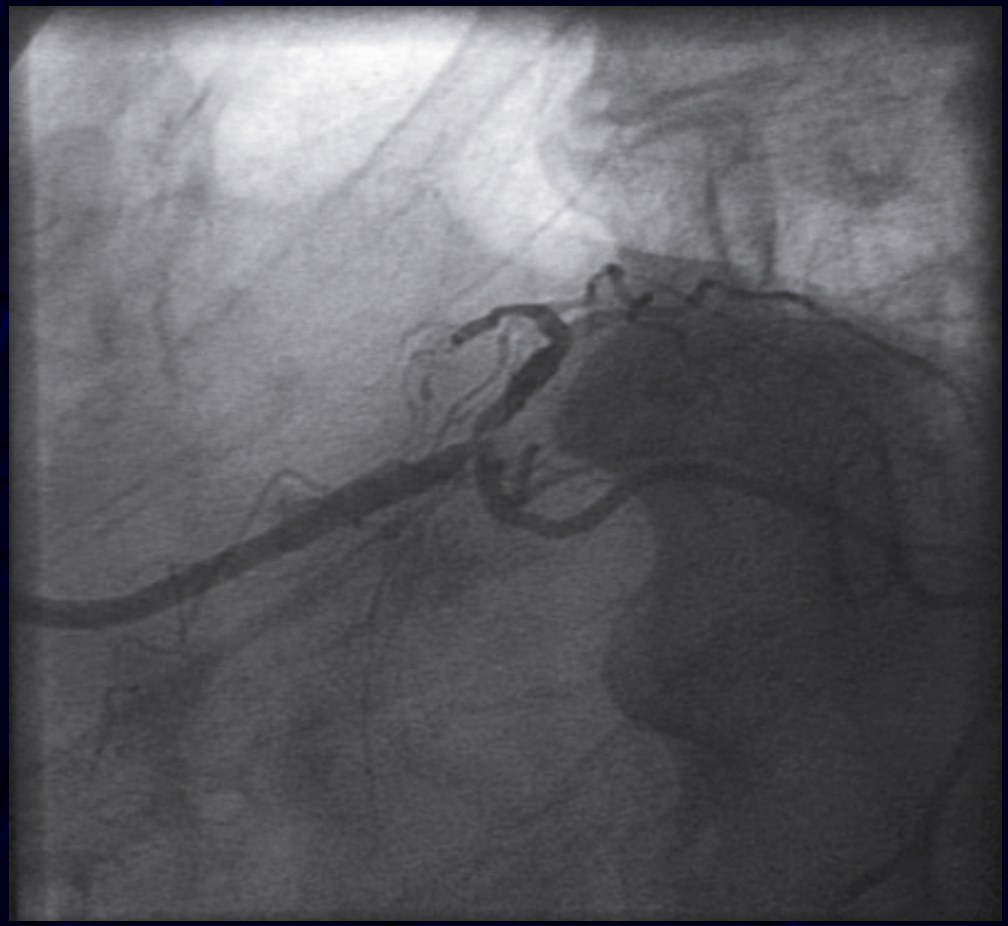
Importance of the angulation of the SB in Choosing the Technique





CKD and ACS

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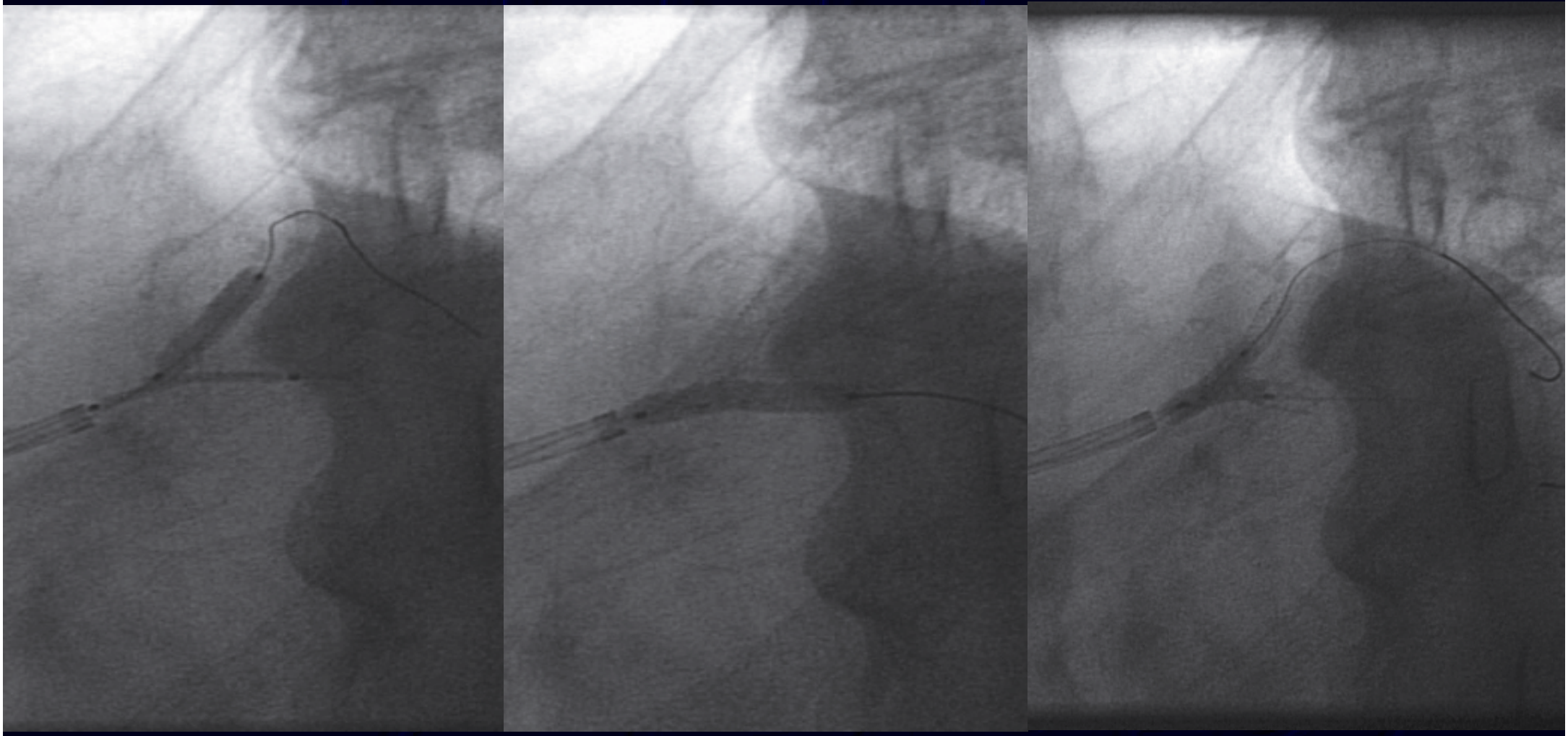
2 Stent Approach



3.0x18mm Endeavor Resolute>>FKI with 2NCB 3.0x12mm

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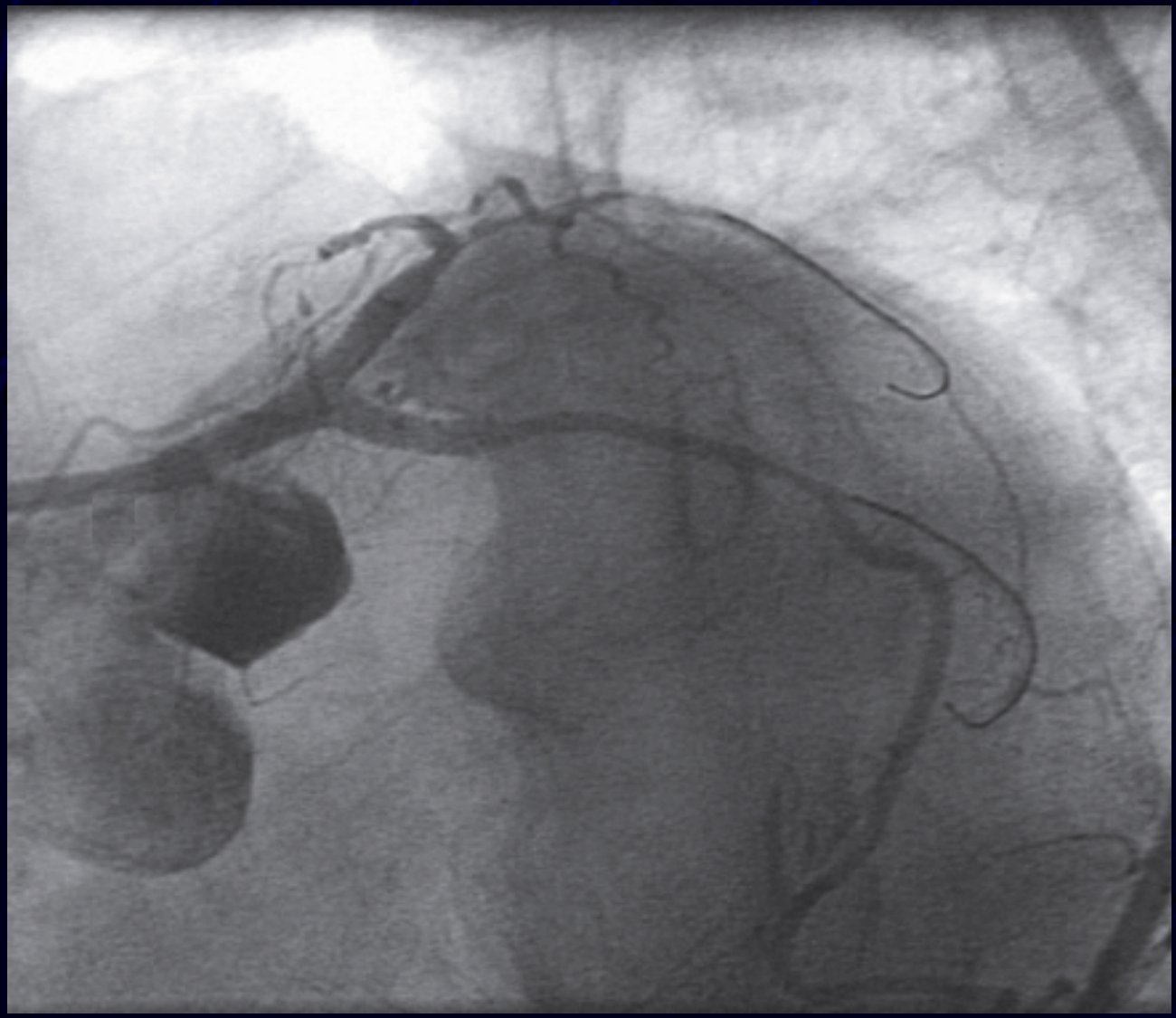
Final Angiogram



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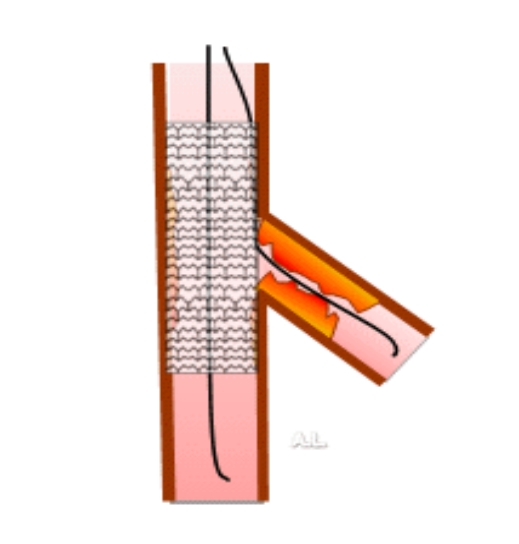
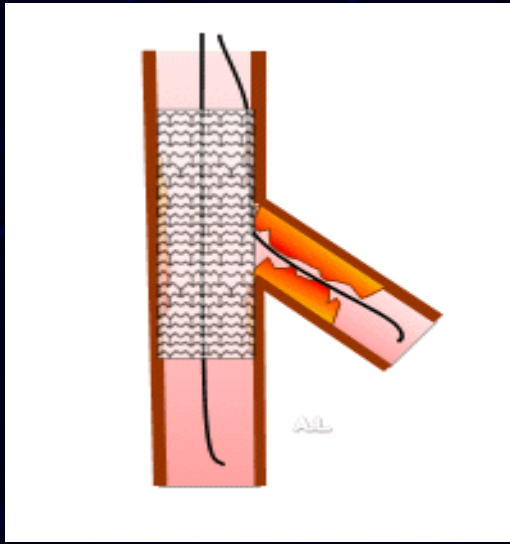
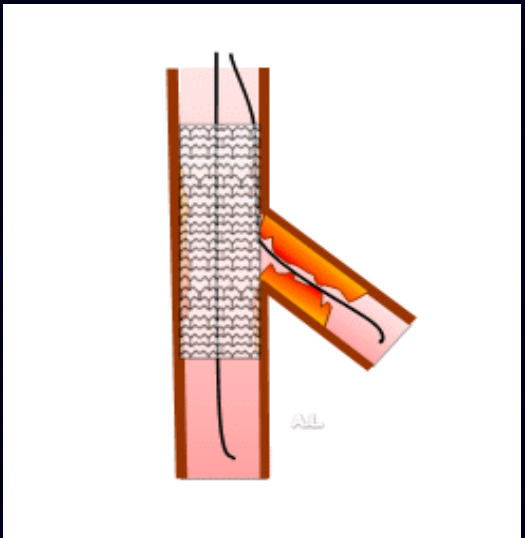
Provisional

When SB has minimal disease or only at the ostium AND when *SB is suitable for stenting*

- *6 Fr guiding catheter (7F if using Xience-Promus)*
  1. Wire both branches
  2. Dilate MB and SB if needed
  3. Stent MB leaving a wire in the SB
  4. Re-wire SB and then remove jailed wire
  5. Kissing balloon inflation
  6. Stent SB only if suboptimal result (TAP, reverse crush, culotte)

Provisional Approach -requiring a 2nd stent in the SB

	TAP	Reverse Crush	Culotte
			
Advantages	Easy to perform No recrossing	Complete coverage of ostium Any anatomy	Complete coverage of ostium
Disadvantages	Struts protruding into MB	Recrossing into SB 3 layers of struts	More labourious Rewiring both branches Double stent layer

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Two Stents

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

- *8 Fr guiding catheter*
  1. Wire both branches
  2. Dilate MB and SB if needed
  3. Perform crush, culotte or V-stent
  4. If crush: rewire SB and perform high pressure SB dilatation (2-step kiss)
  5. Final kissing balloon inflation **always!**

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An approach for LMCA lesions when using 2 stents as intention to treat

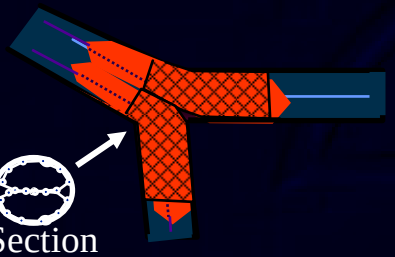
Very short left main

Main branch disease extending proximal to the bifurcation and side branch which has origin with about 90° angle

Main branch disease extending proximal to the bifurcation and side branch which has origin with about 60° angle

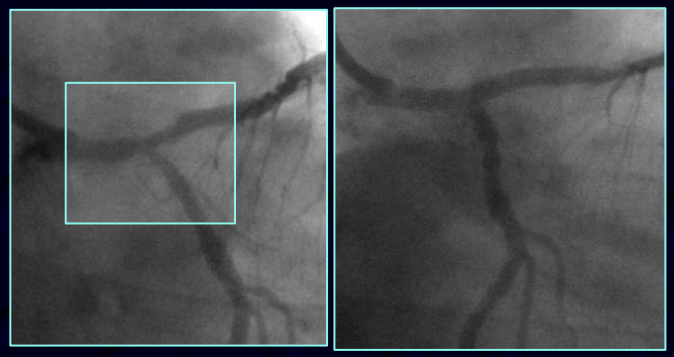
V-Stent

Pre Post

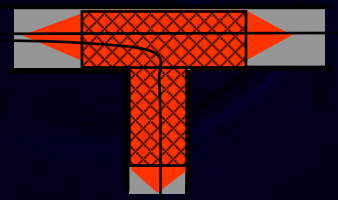


Cross Section

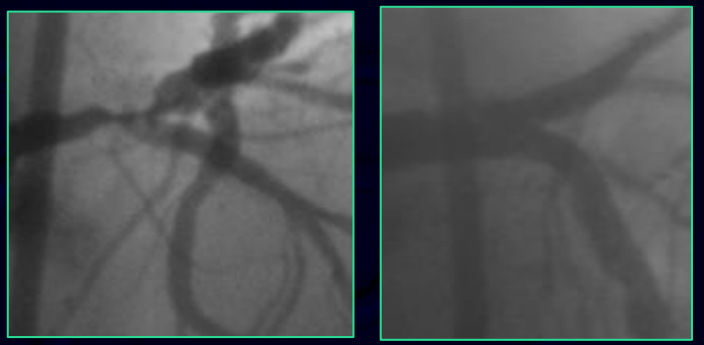
T-Stent



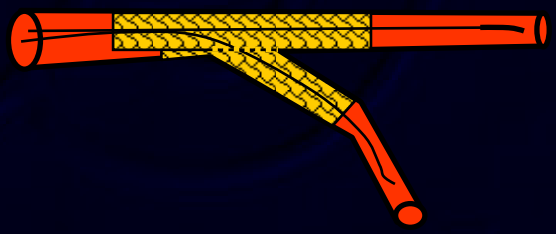
Pre Post



Short-Mini Crush/Culotte



Pre Post



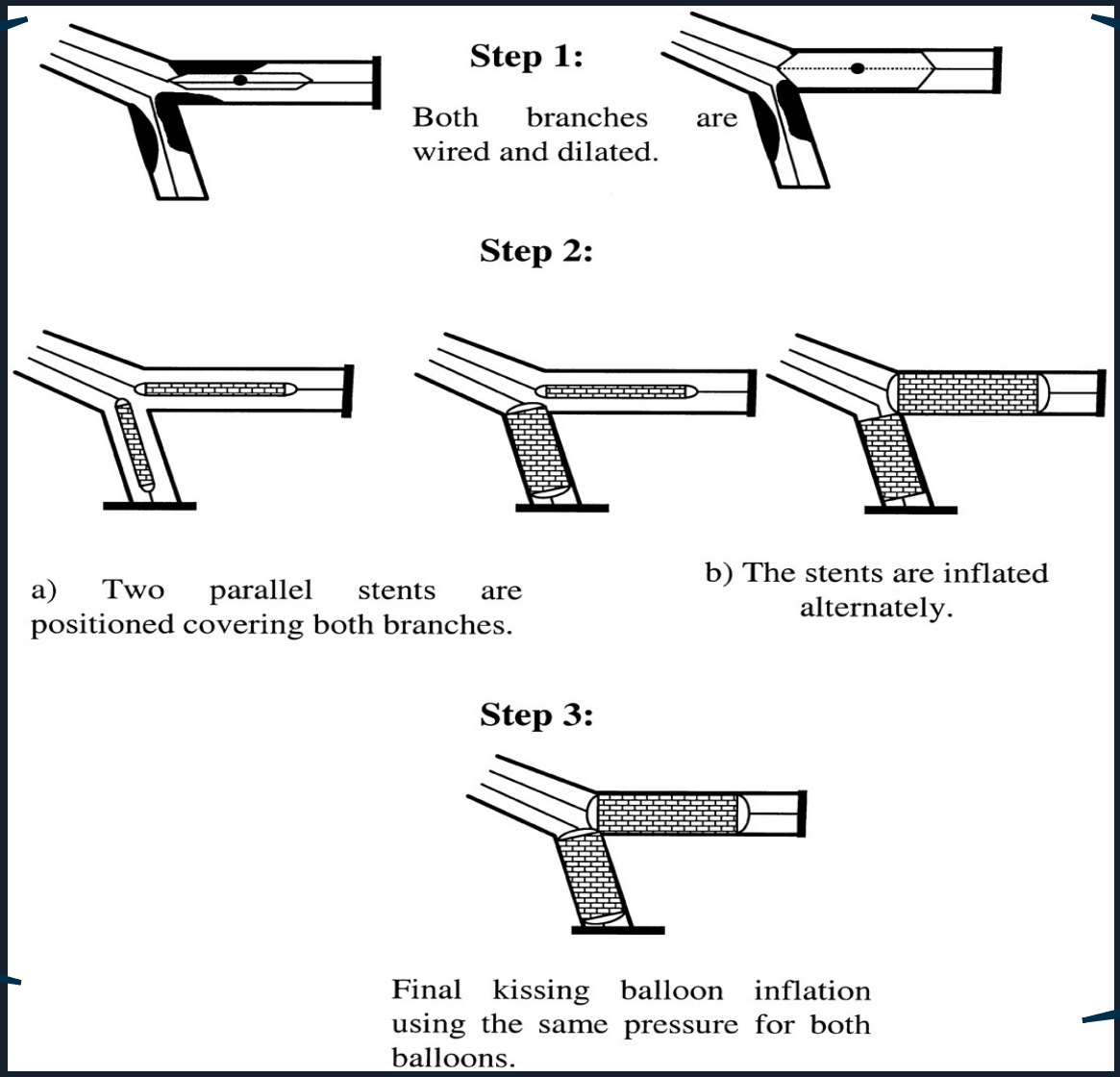
The V Stenting Technique

Applications:

- Left Main
- Large branches
- Angulation < 90°
- No significant disease in the proximal vessel

Considerations:

- Combined stent size should “match” vessel size proximal to the bifurcation



Advantages:

- Both branches are never lost
- No need for re-wiring for FKB

Drawbacks:

- Implantation of stents proximal or distal to kissing stents
- Significant stenosis the proximal vessel

FKB: final kissing-balloon

Iakovou I. et al, *JACC* 2006;46:1446-1455.

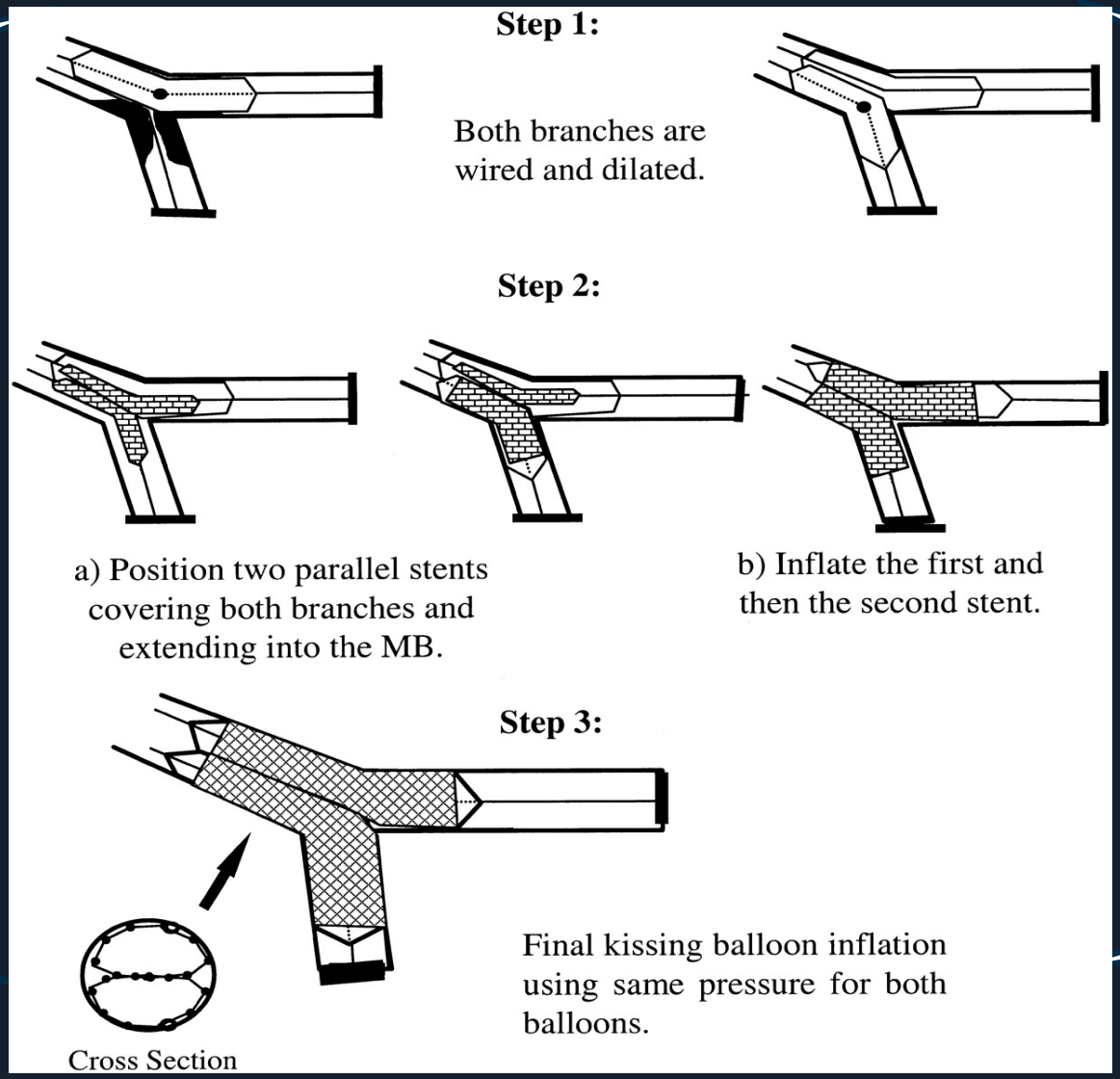
Simultaneous Kissing Stents Technique

Applications:

- Left Main
- Large branches
- Angulation < 90°
- Significant disease in the proximal vessel

Considerations:

- Combined stent size should “match” vessel size proximal to the bifurcation



Advantages:

- Both branches are never lost
- No need for re-wiring for FKB
- Covers proximal lesions

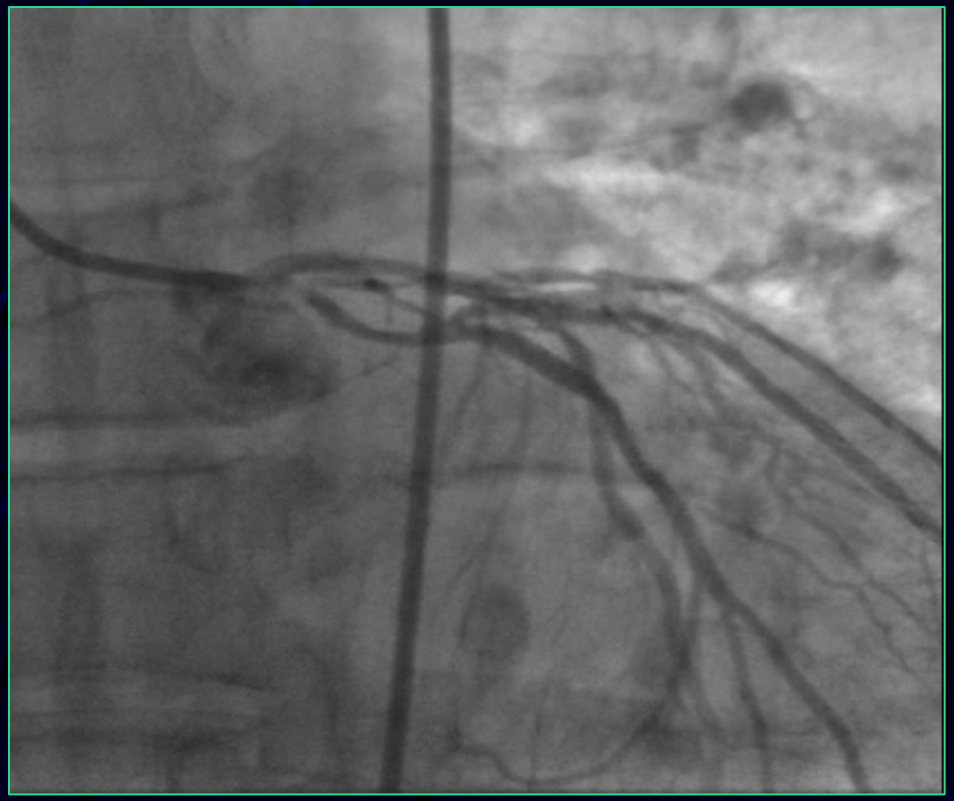
Drawbacks:

- Implantation of stents proximal or distal to kissing stents

FKB: final kissing-balloon

Iakovou I. et al, *JACC* 2006;46:1446-1455.

V stenting



Pt with ACS and hemodinamically unstable

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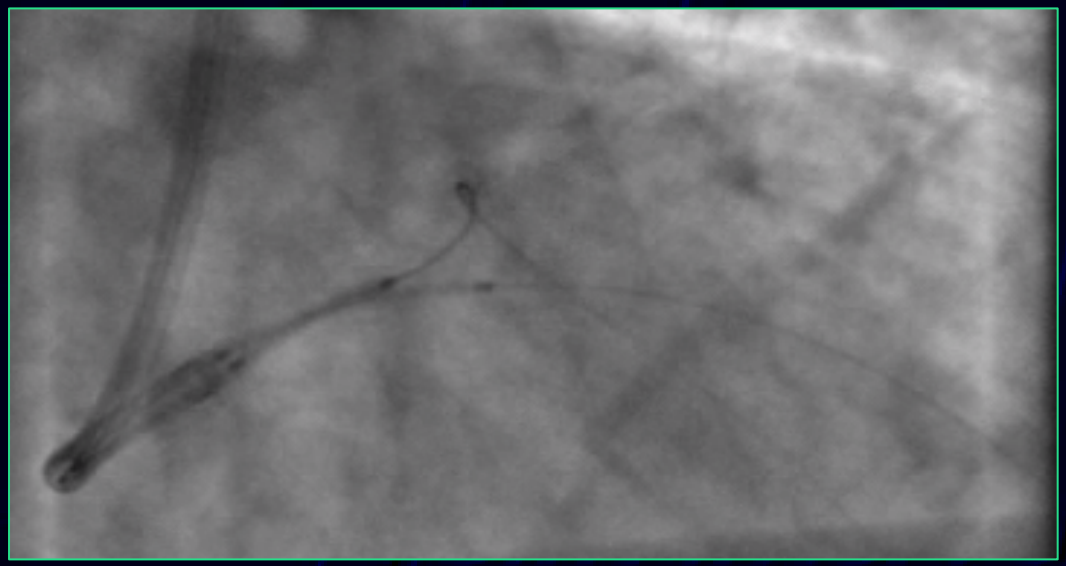

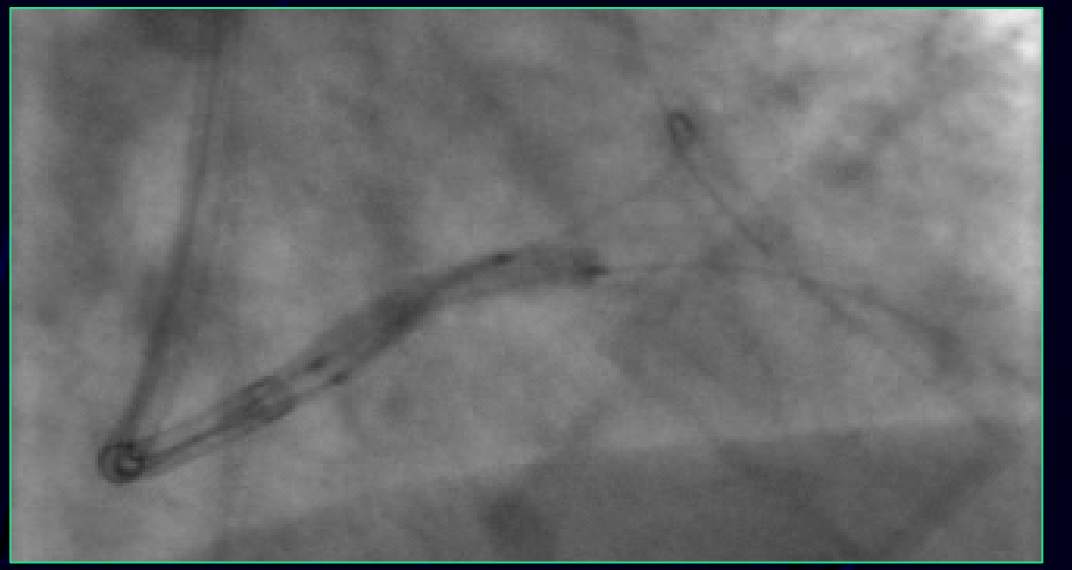

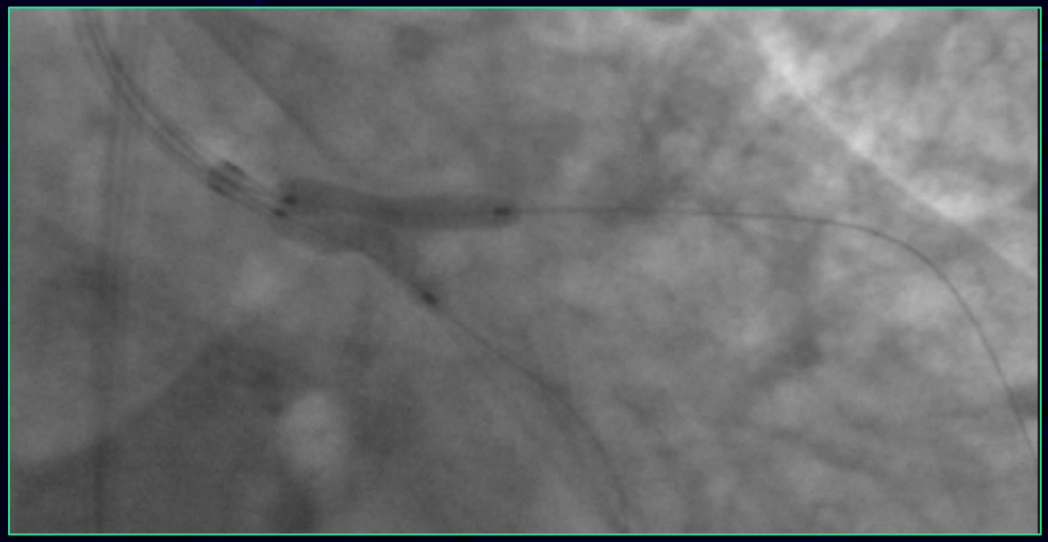

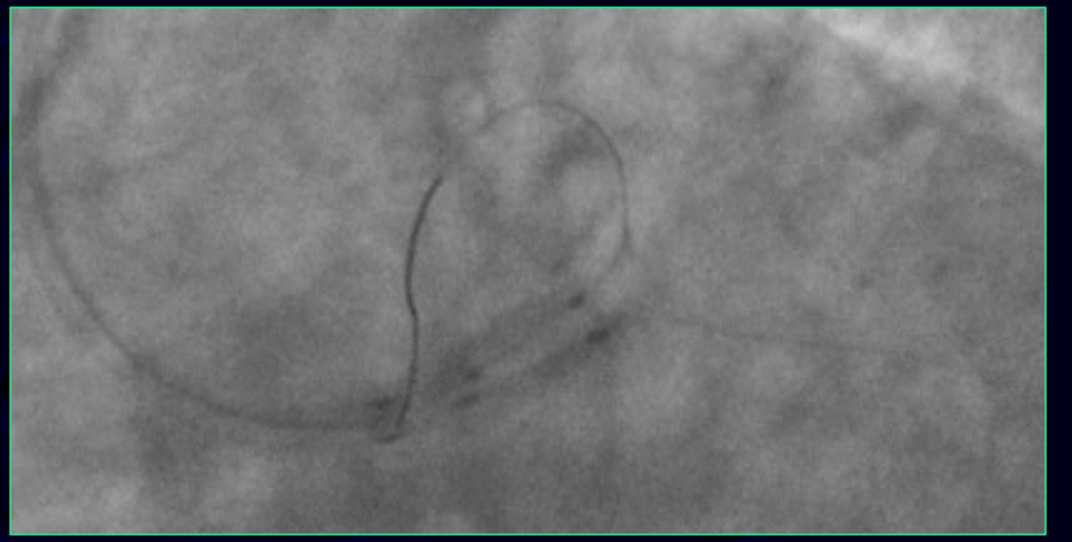

3x16mm (LAD and LCX) Taxus>>>FKB

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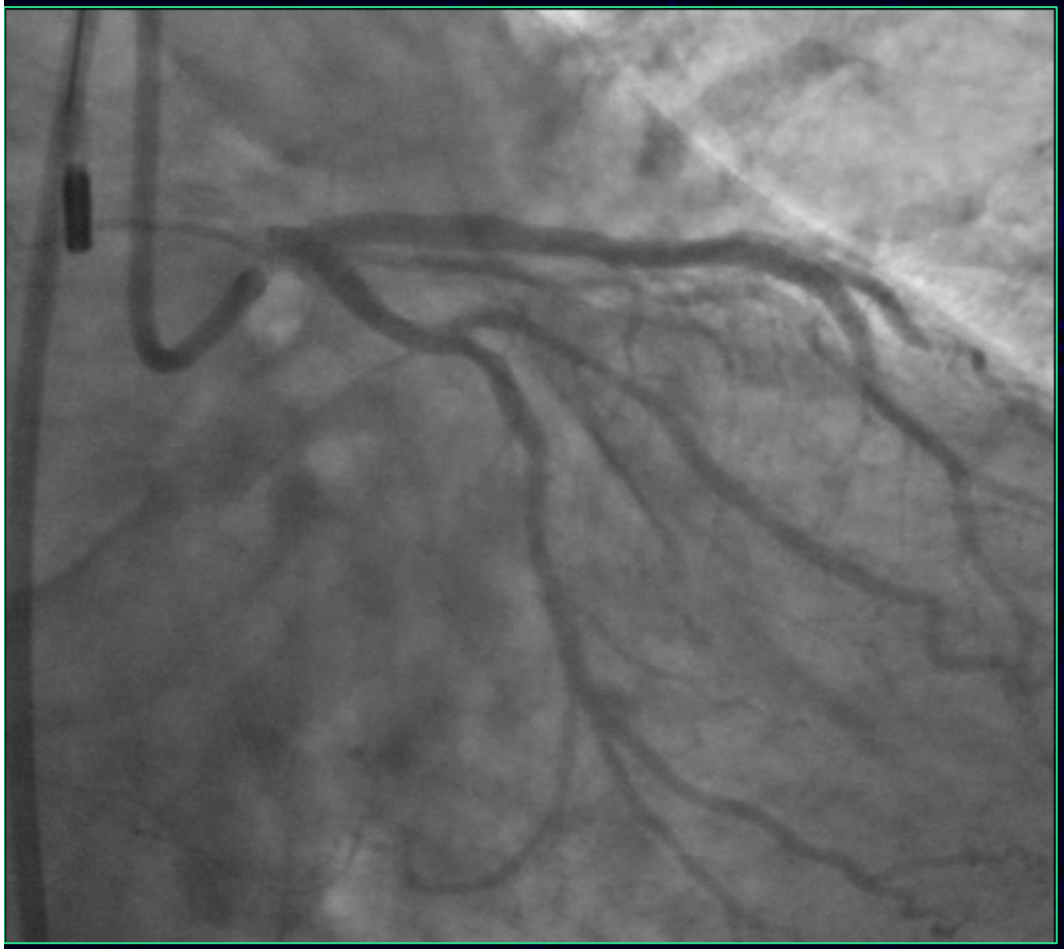
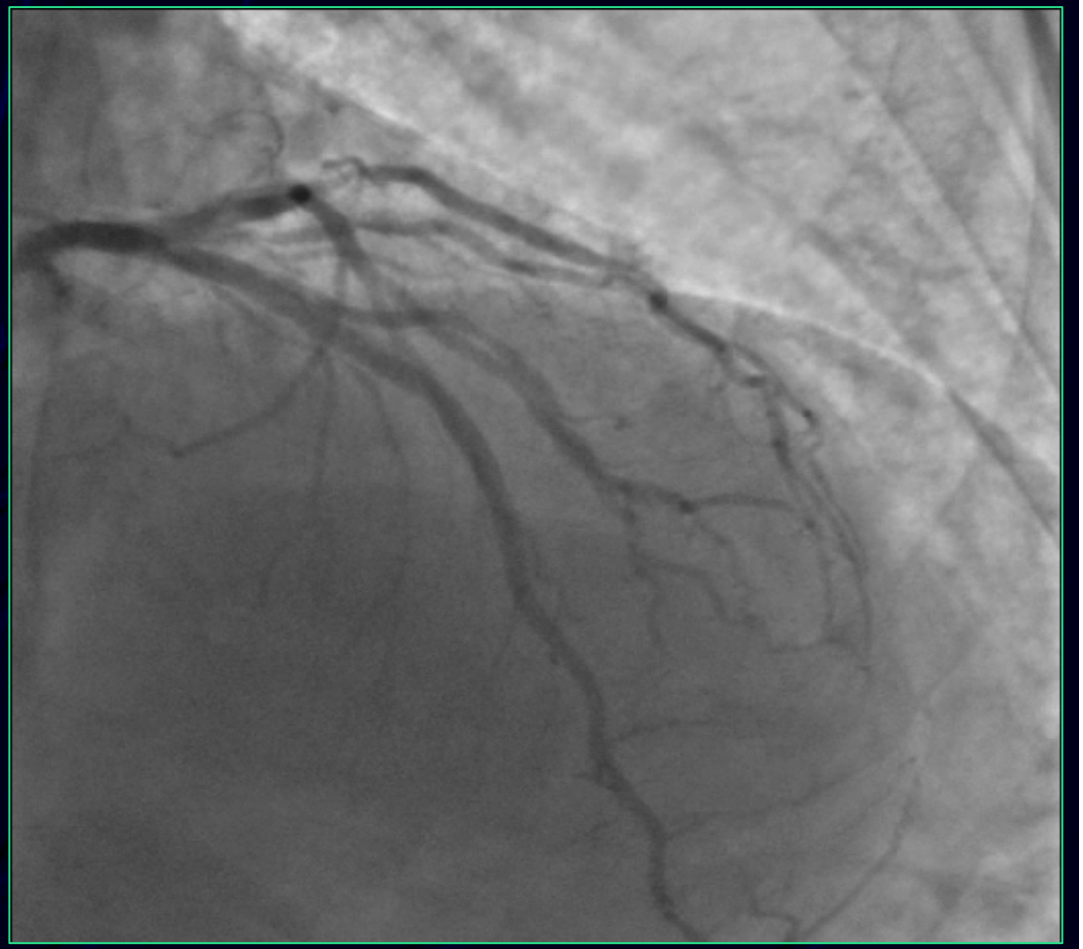
Final Angiograms





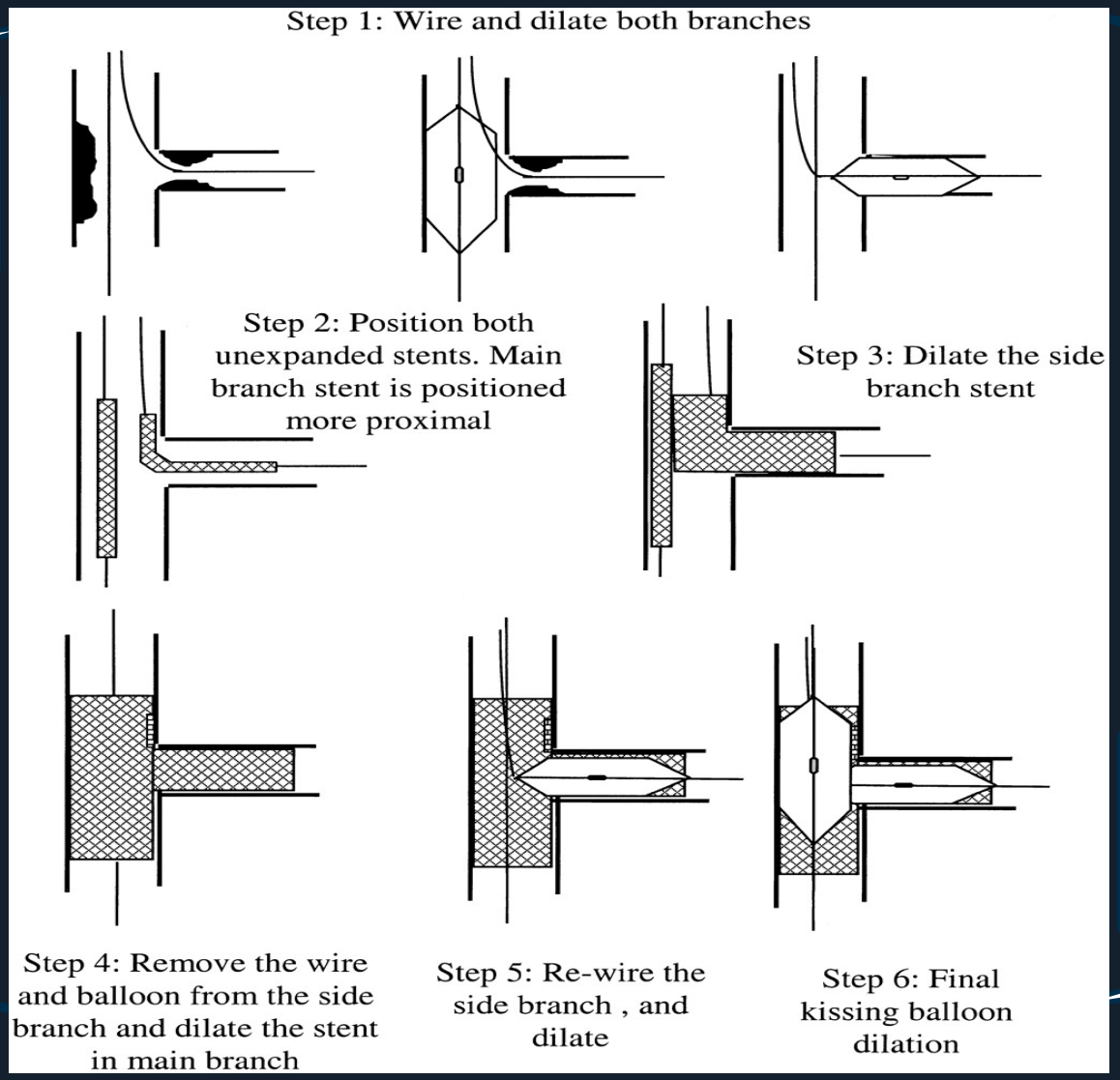
The Crush Technique

Applications:

- All true bifurcation
- Angulation < 75°

Considerations:

- Single high pressure balloon inflation in the SB before FKB may be hepful to optimize stent expansion



Advantages:

- Immediate patency of both branches
- Full coverage of the SB ostium

Drawbacks:

- High metal concentration at the bifurcation *carina,* less with *"Mini Crush"*
- Re-wiring into SB

FKB: final kissing-balloon
SB: side branch

Iakovou I. et al, *JACC* 2006;46:1446-1455.

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Importance of Lesion Preparation and Hemodynamic Support

Severe calcified lesion in distal LM>
Rotablator 1.5 burr+elective IABP

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Mini Crush - Case 1

Cypher 3x33mm (Cx) e 3.5x18mm (LAD)

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Final Angiogram

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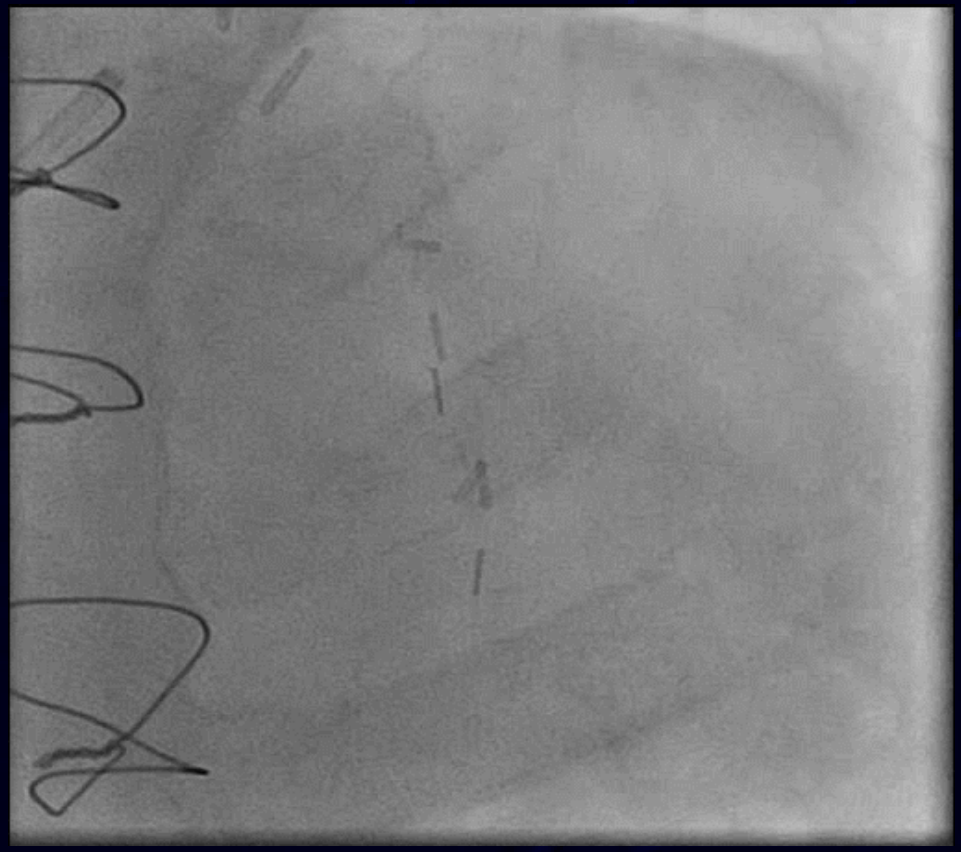
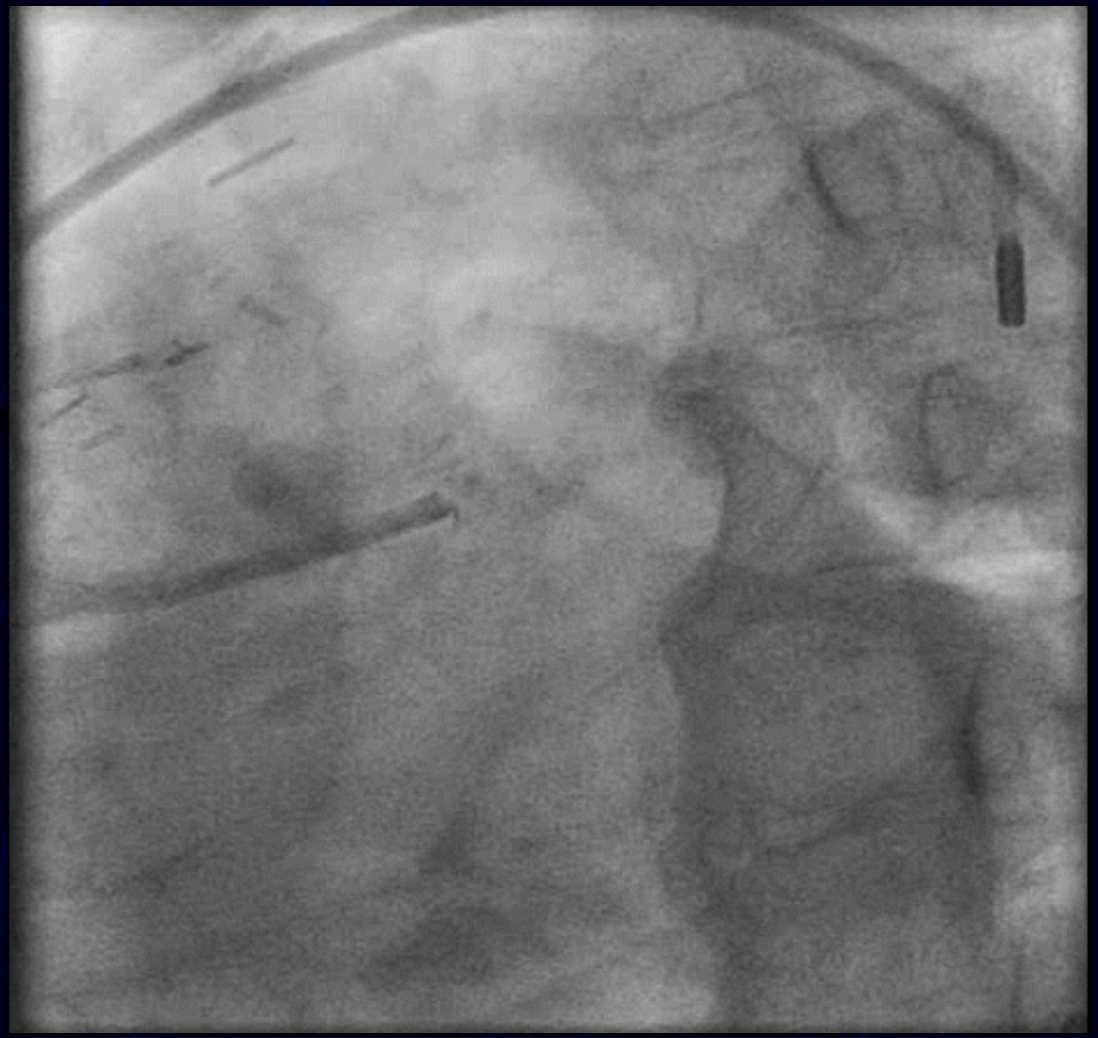
Mini Crush Case 2





Elective IABP Implantation

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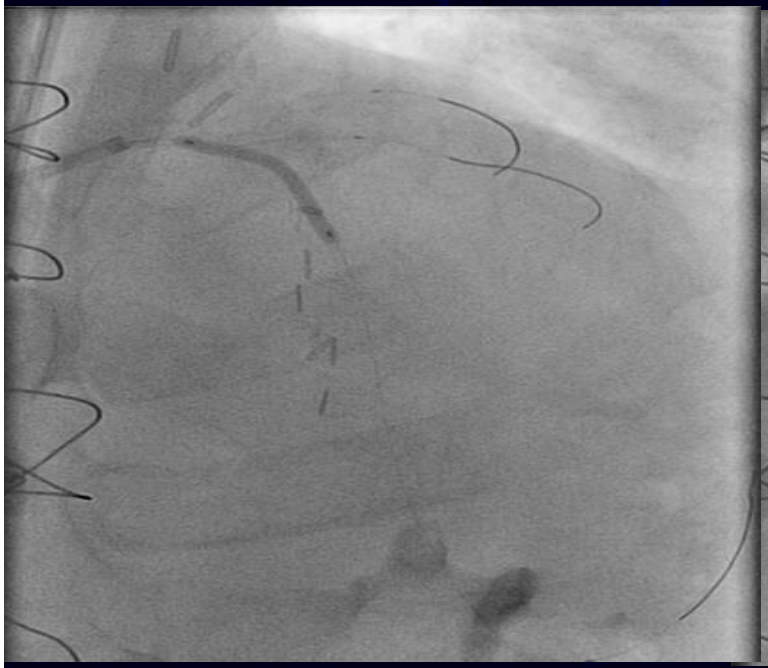
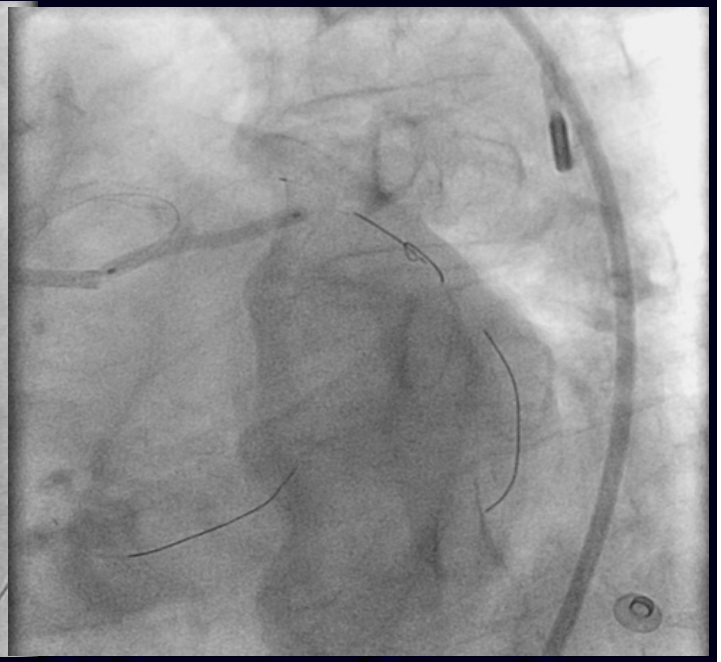
PRE-DILATATION



LAD

DIAG



LM-CX

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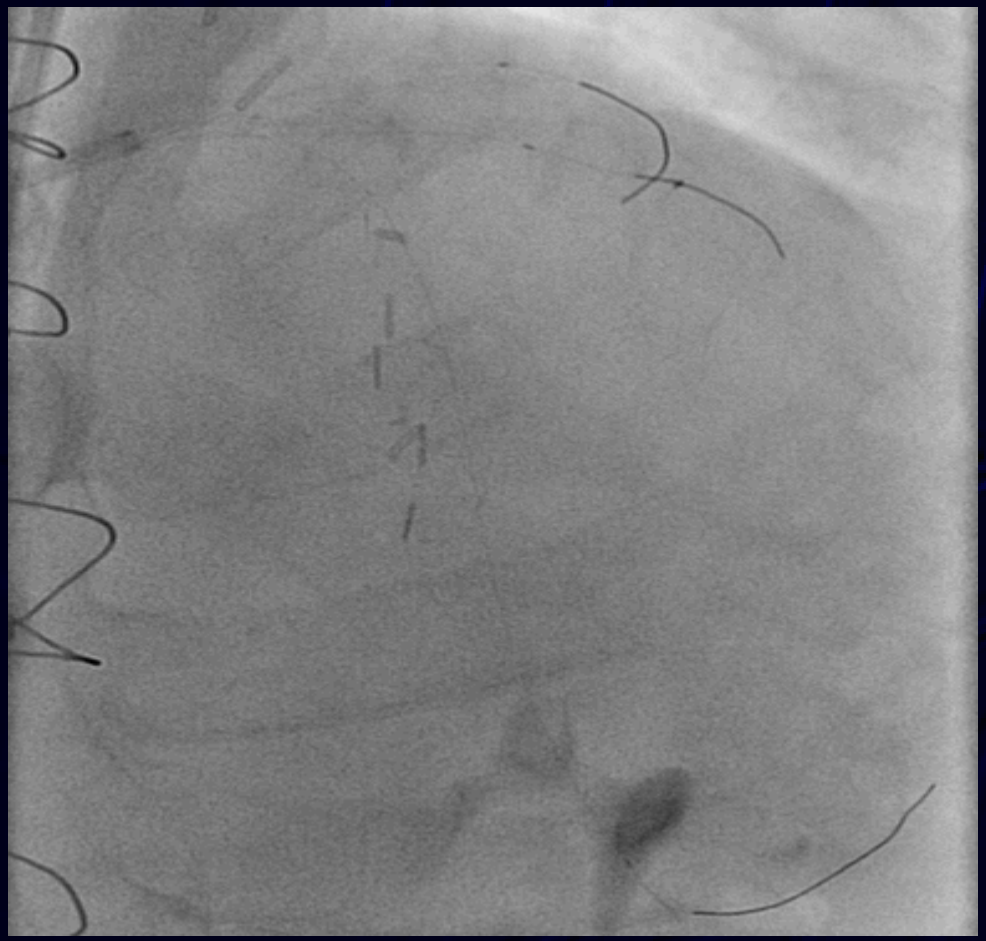
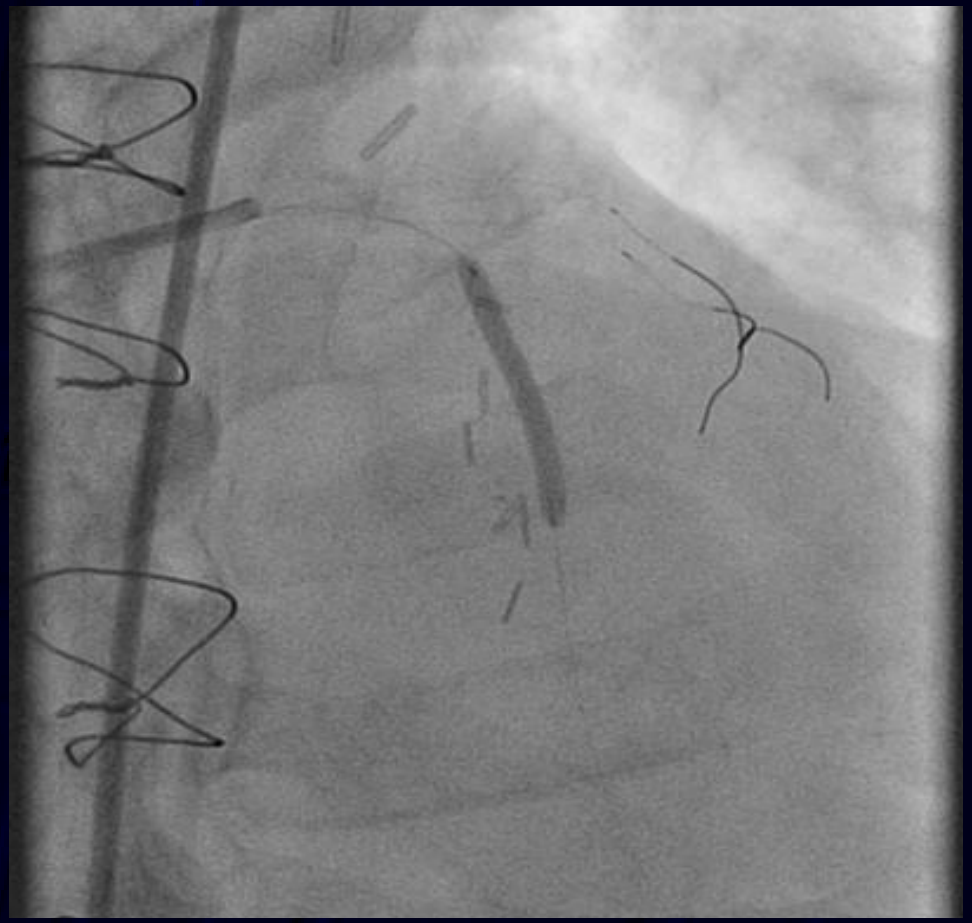


After pre-dilatation



Taxus 2.75x32mm

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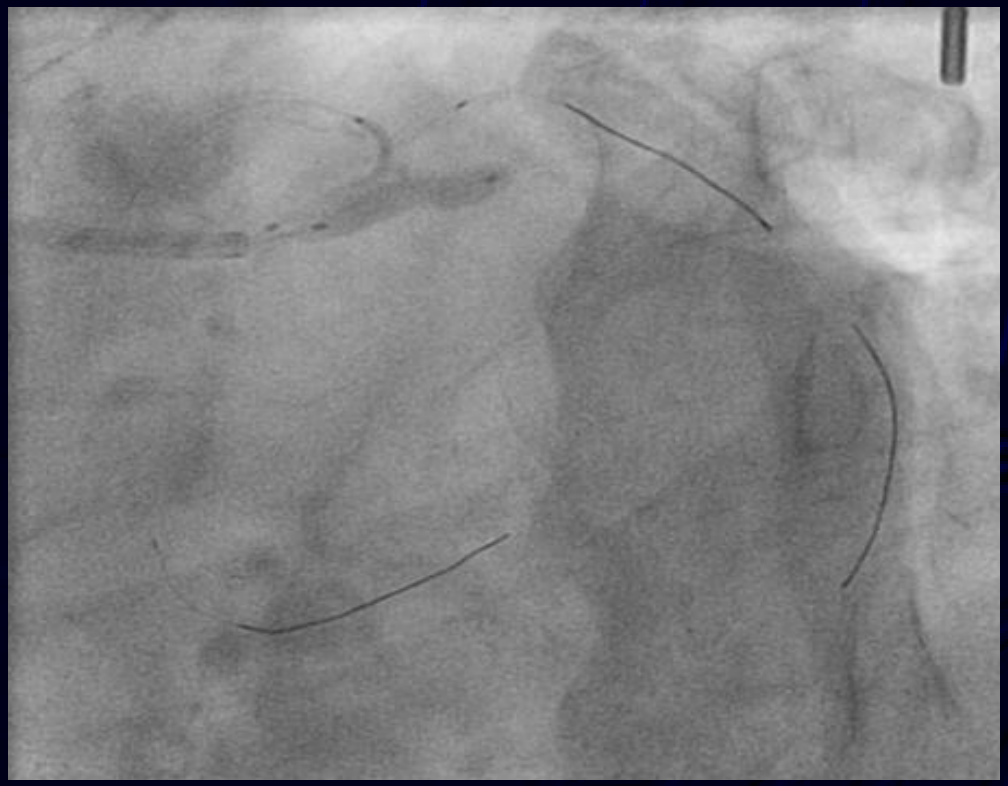
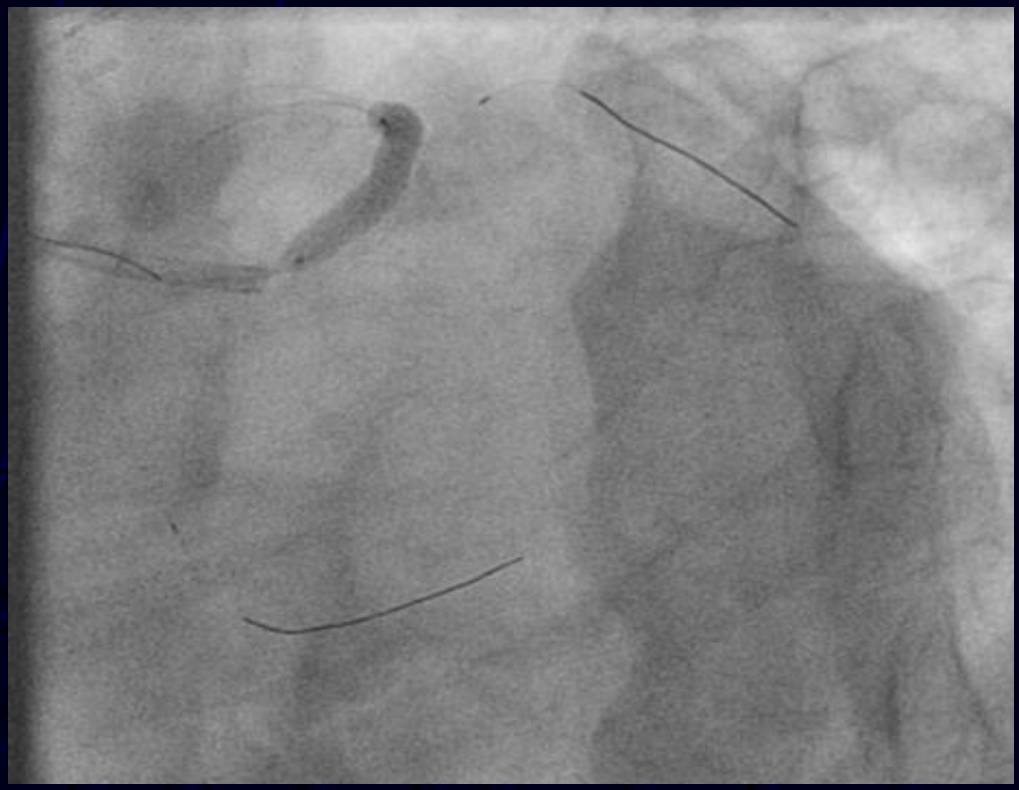
CRUSH



Taxus 3.5x16mm



Taxus 3.5x32mm

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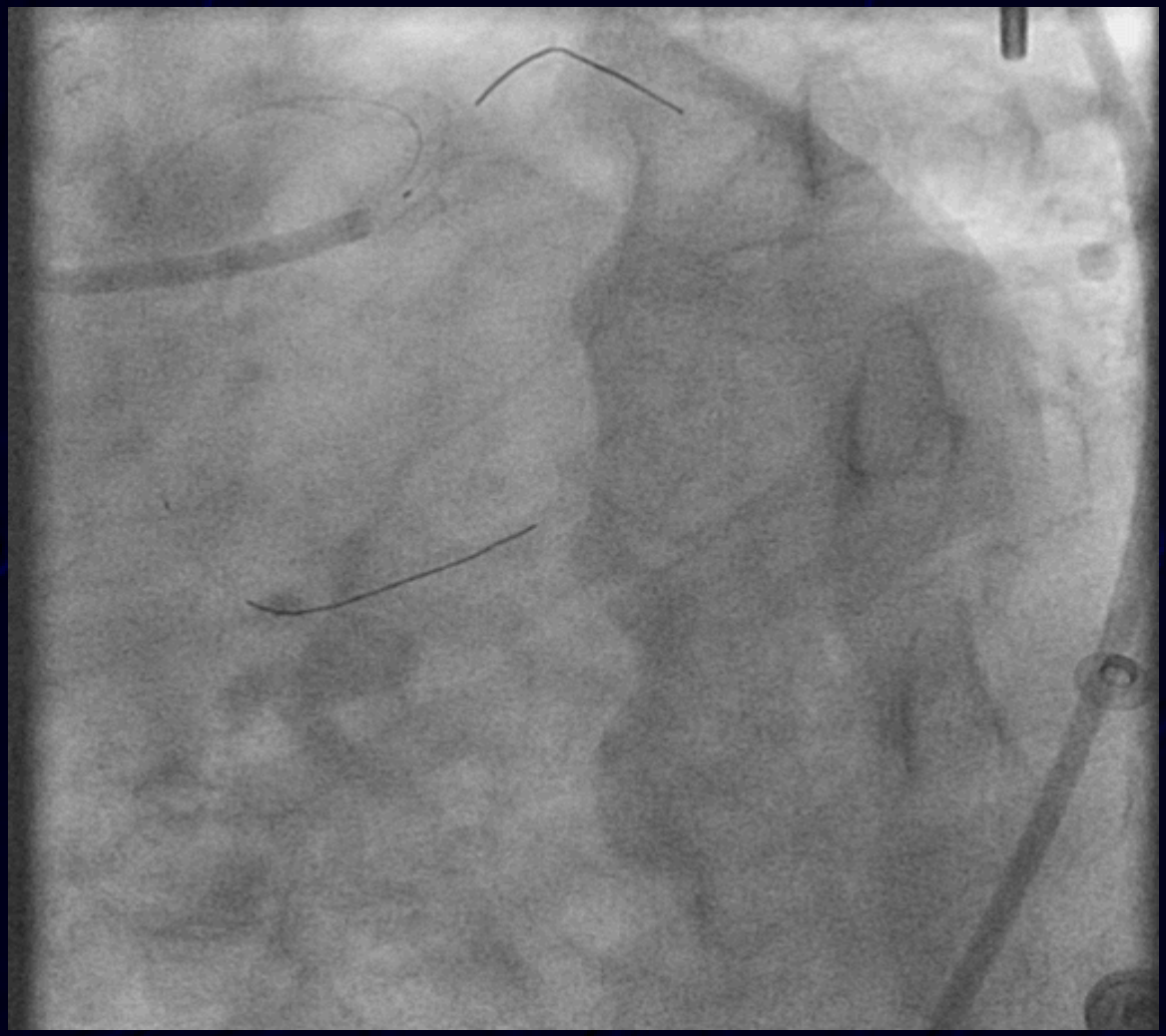
2-STEP FKI



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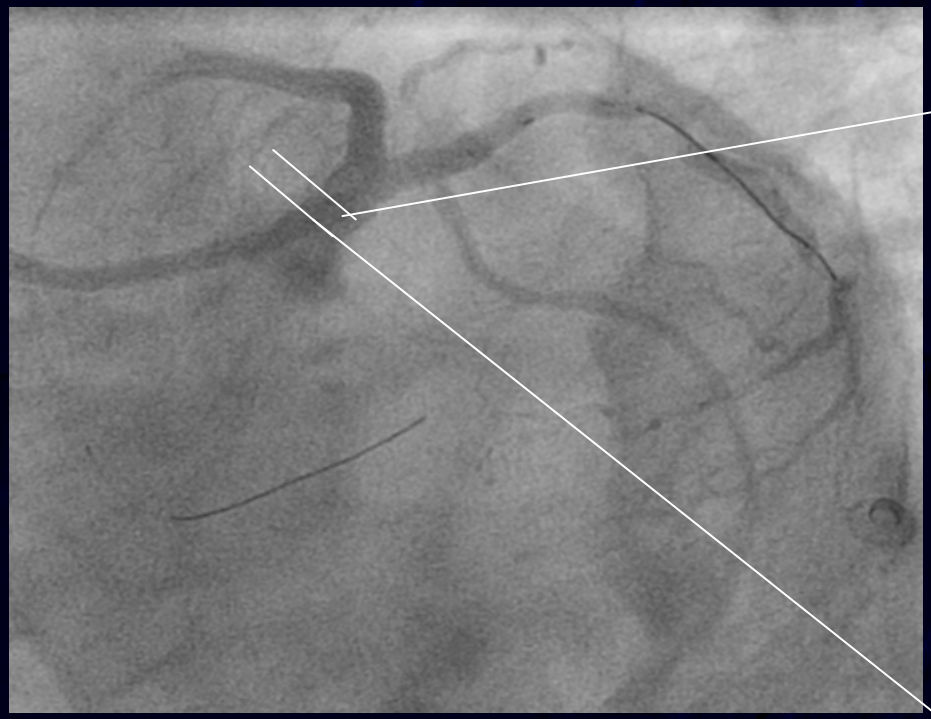

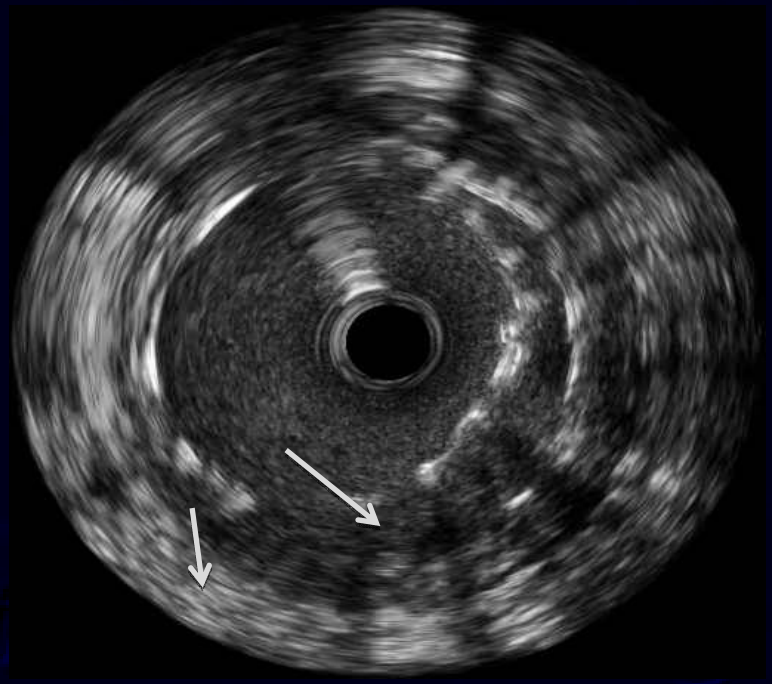

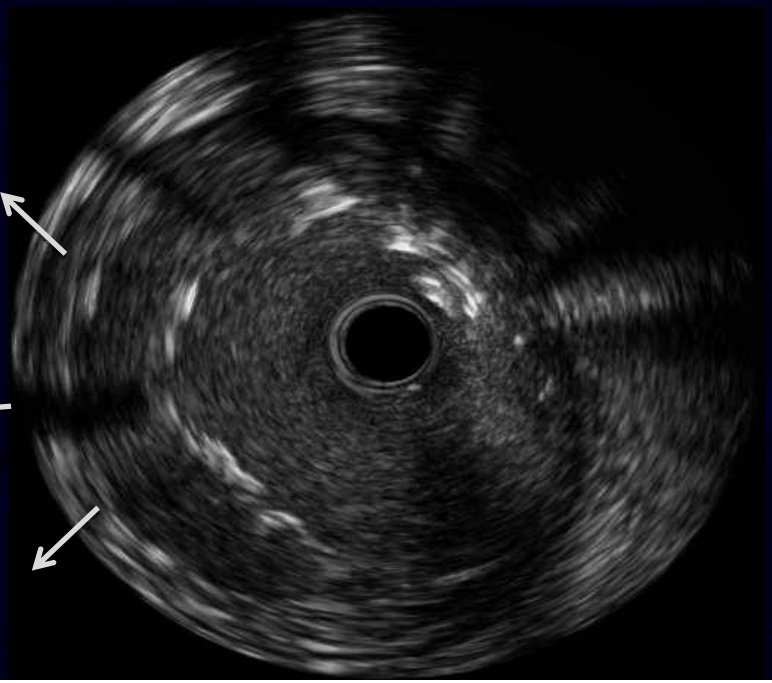

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FKB with NCB

LAD: Quantum 4.0x15mm at 18 atm
Cx: Quantum 3.5x12mm at 18 atm

Maverick 4.5x20mm at 20 atm

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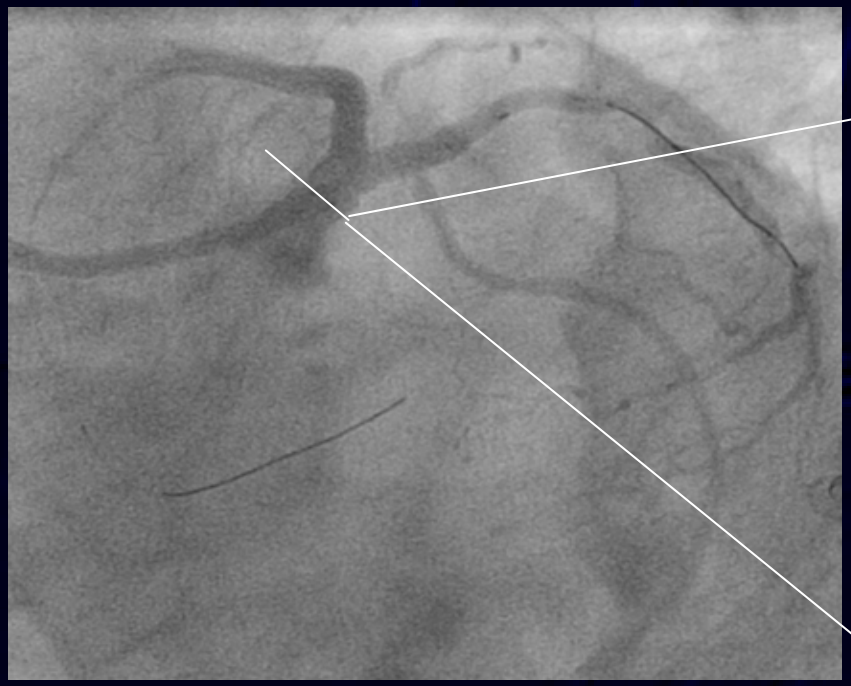

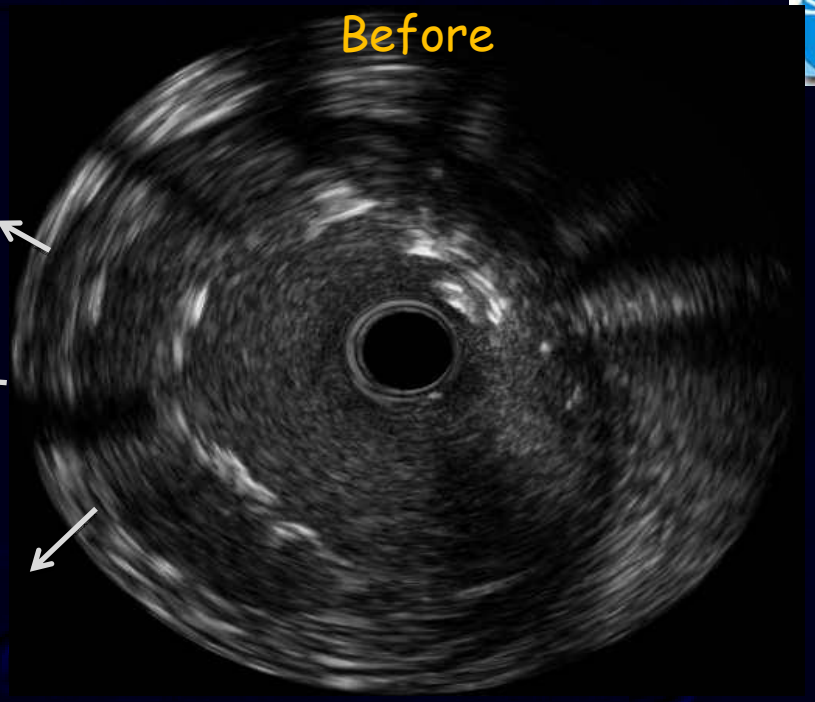

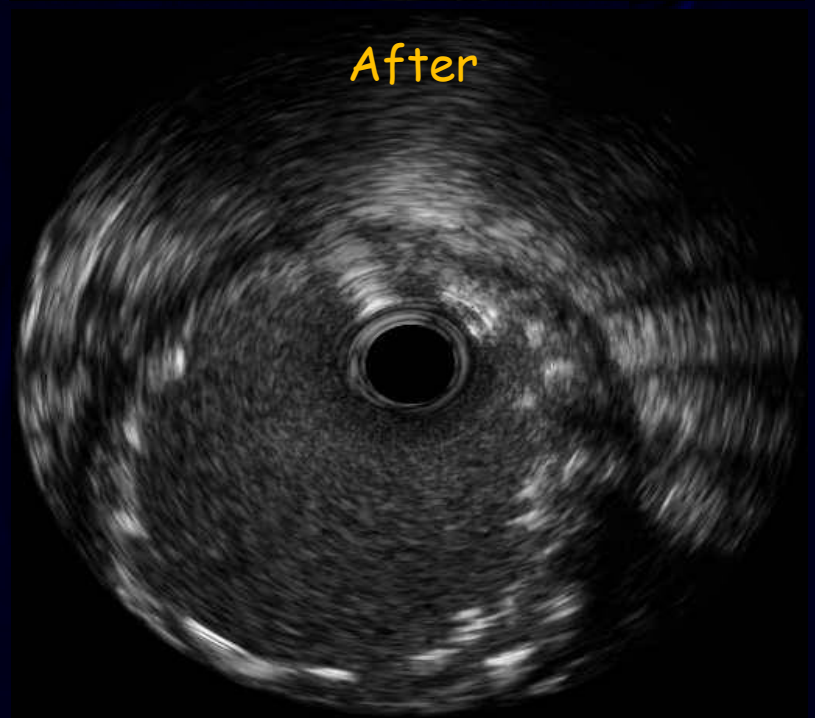

IVUS guidance during DES Left Main PCI associated with reduction in mortality;
HR=0.43; CI, 0.21-0.87
(SJ Park; MAIN-COMPARE Registry)

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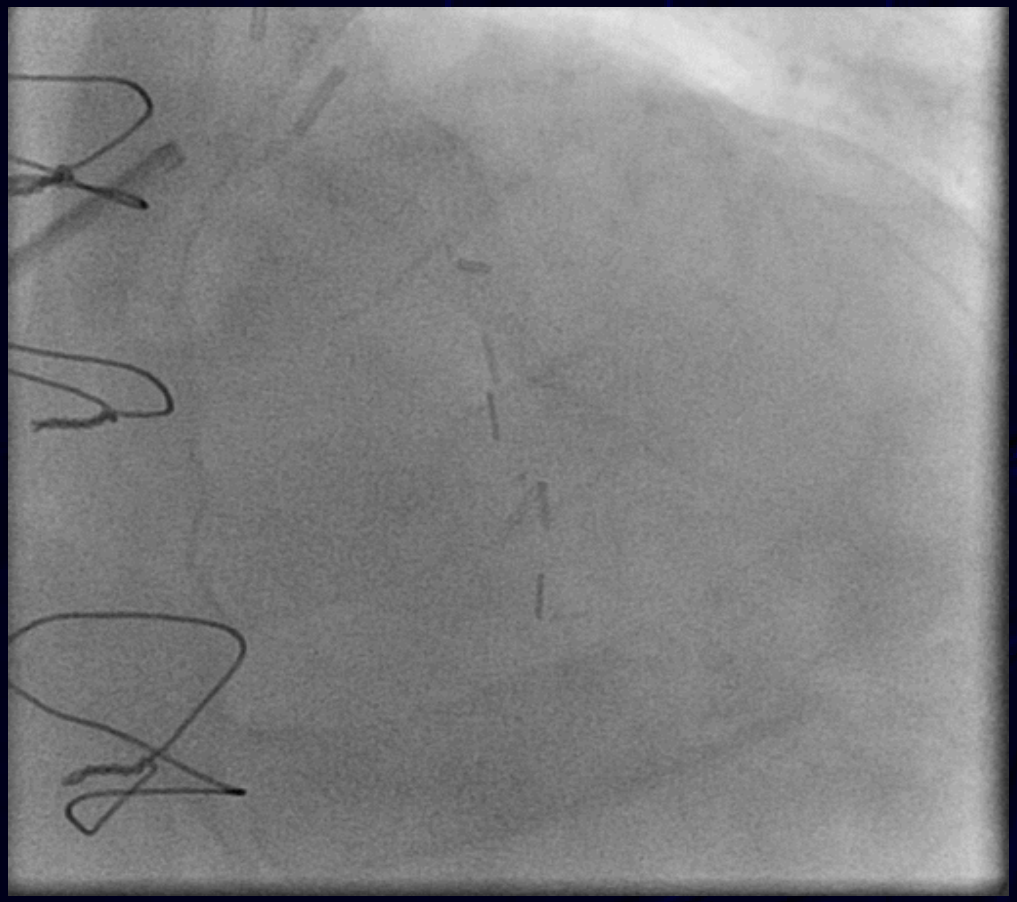
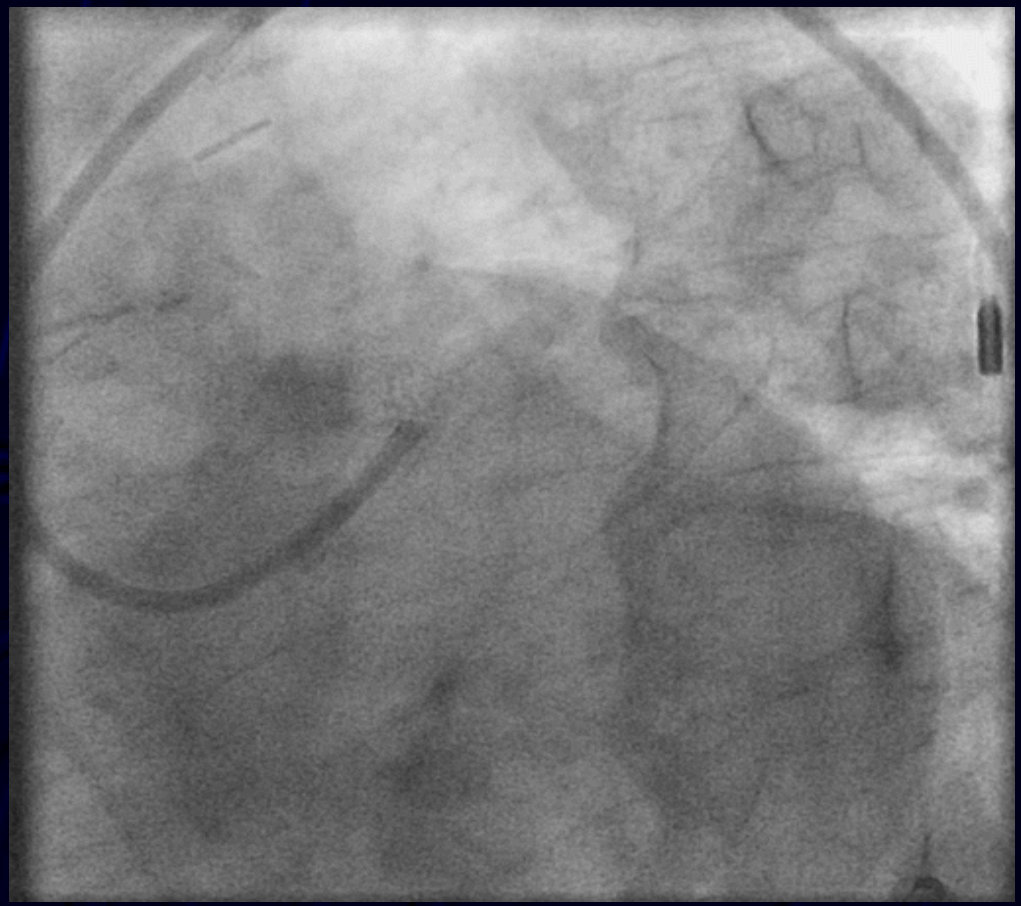
FINAL RESULT





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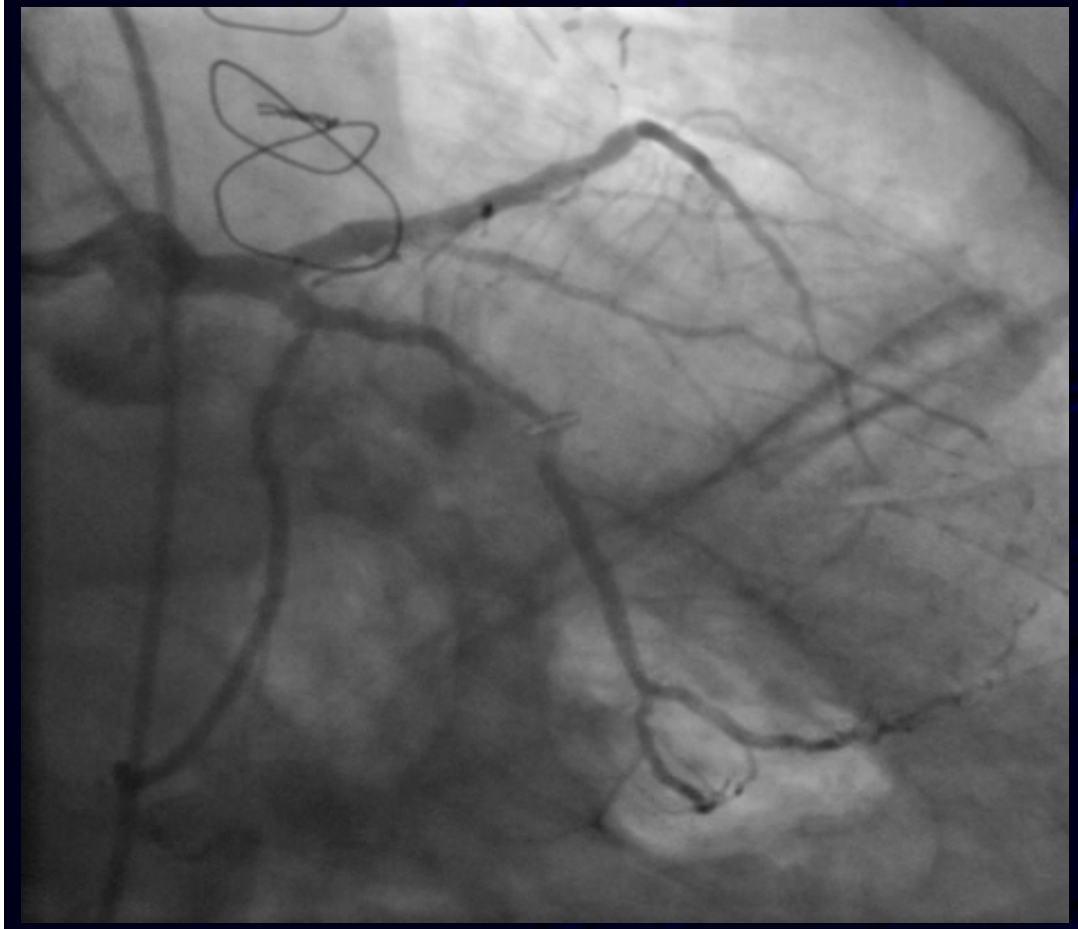
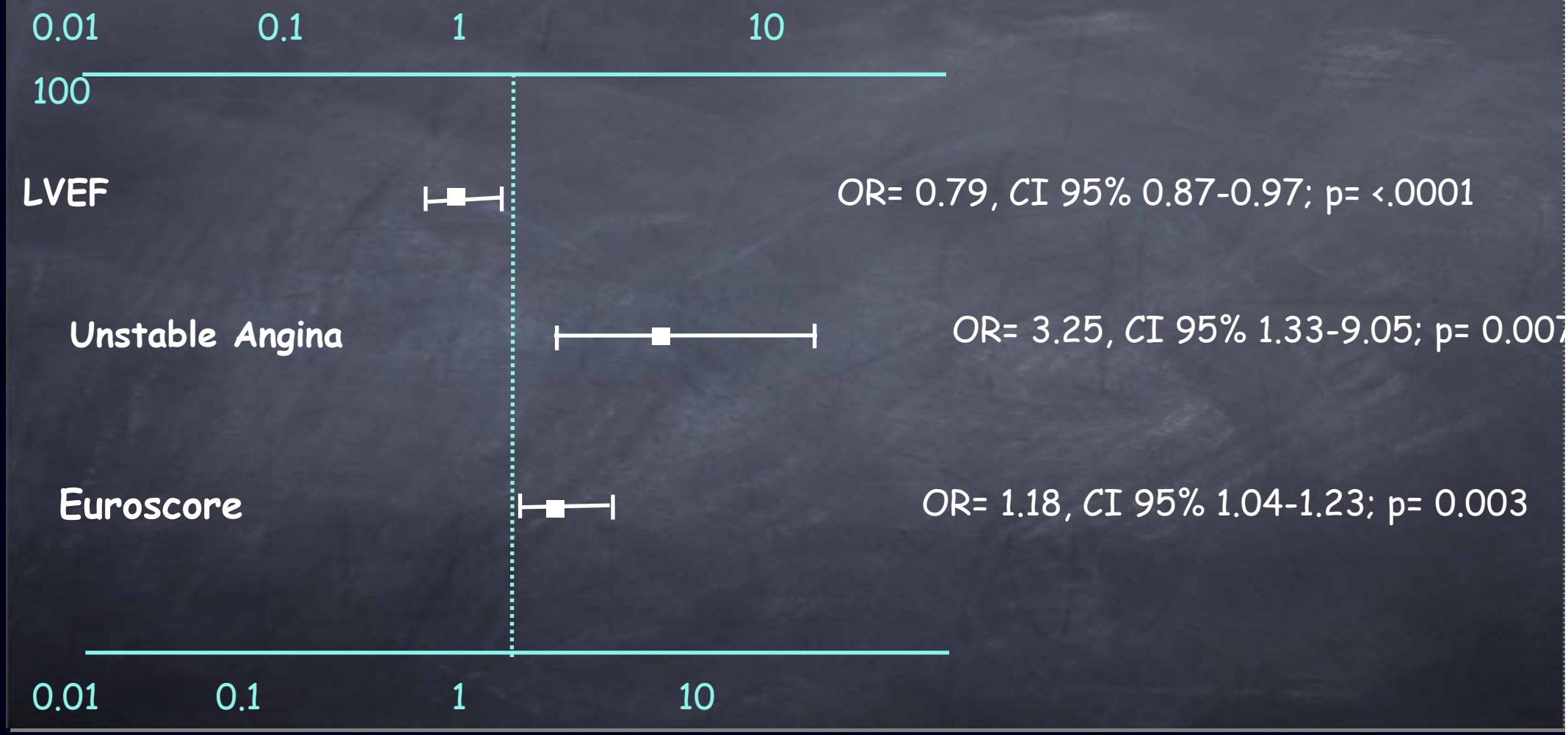
6 Month Angiographic follow-up



Correlated to Cardiac Death at Conditional Univariate Analyisis



At unconditional analysis >>IVUS guidance (OR=0.93, CI 95% 0.16-0.93; p=0.03)

Chieffo et al Eur Heart J 2008 Jun 18

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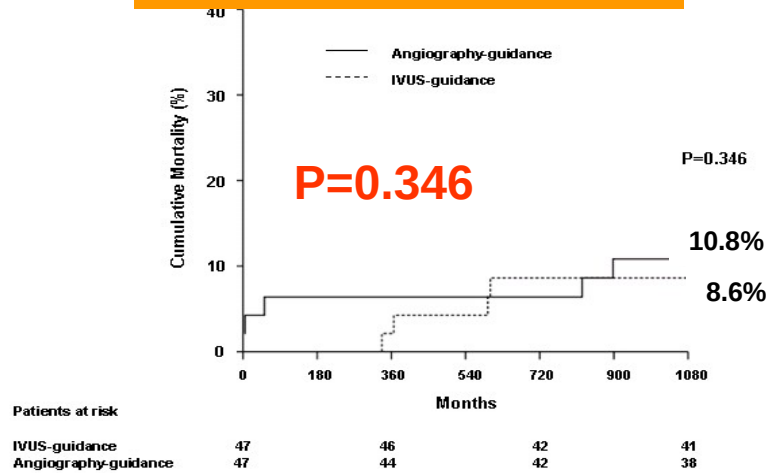
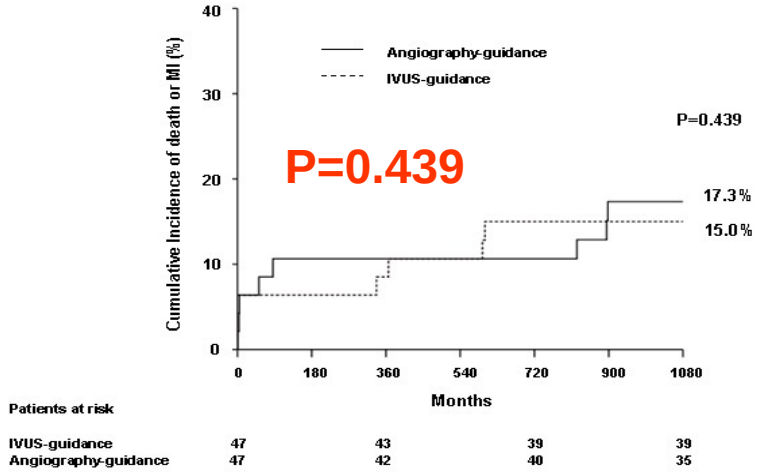
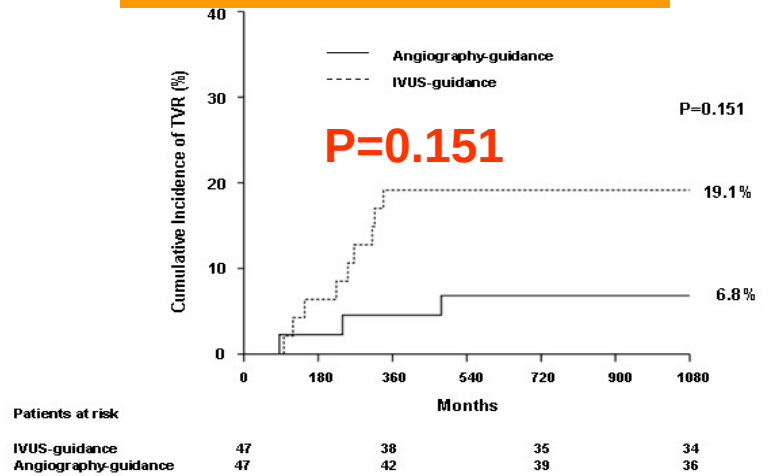
Death



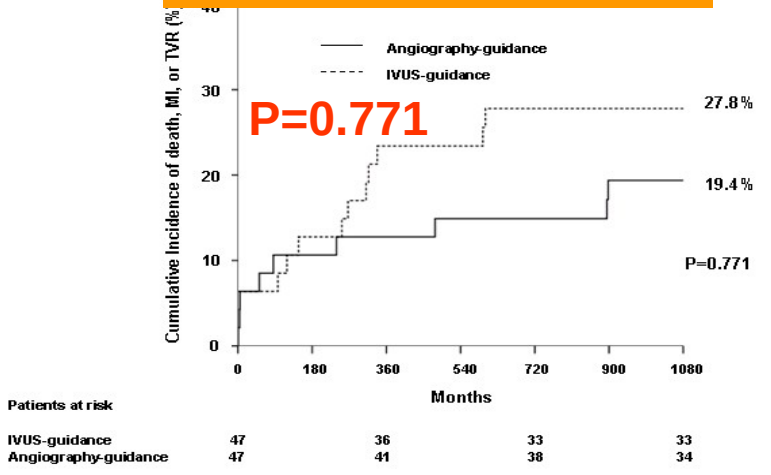
Death or MI



TVR



Death/MI/TVR



Park et al

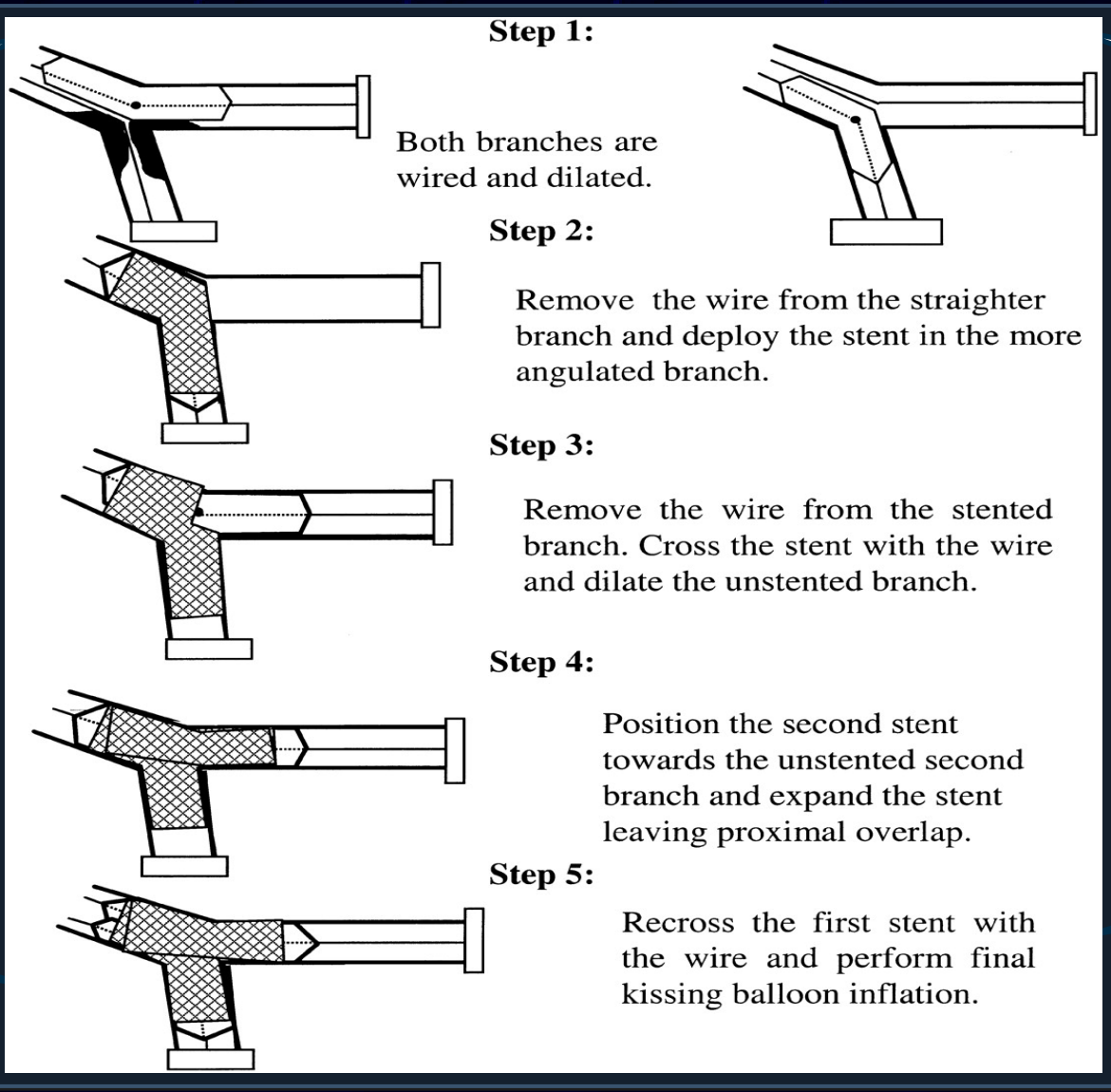
The Culottes Stenting Technique

Applications:

- Left Main
- Large SB
- Angulation > 75°
- Restenosis in-stent

Considerations:

- Both advancement of 2º stent through metal struts
- Re-wiring for FKB



Advantages:

- Optimized stent expansion both branches
- Suitable for lesions with wide angles

Drawbacks:

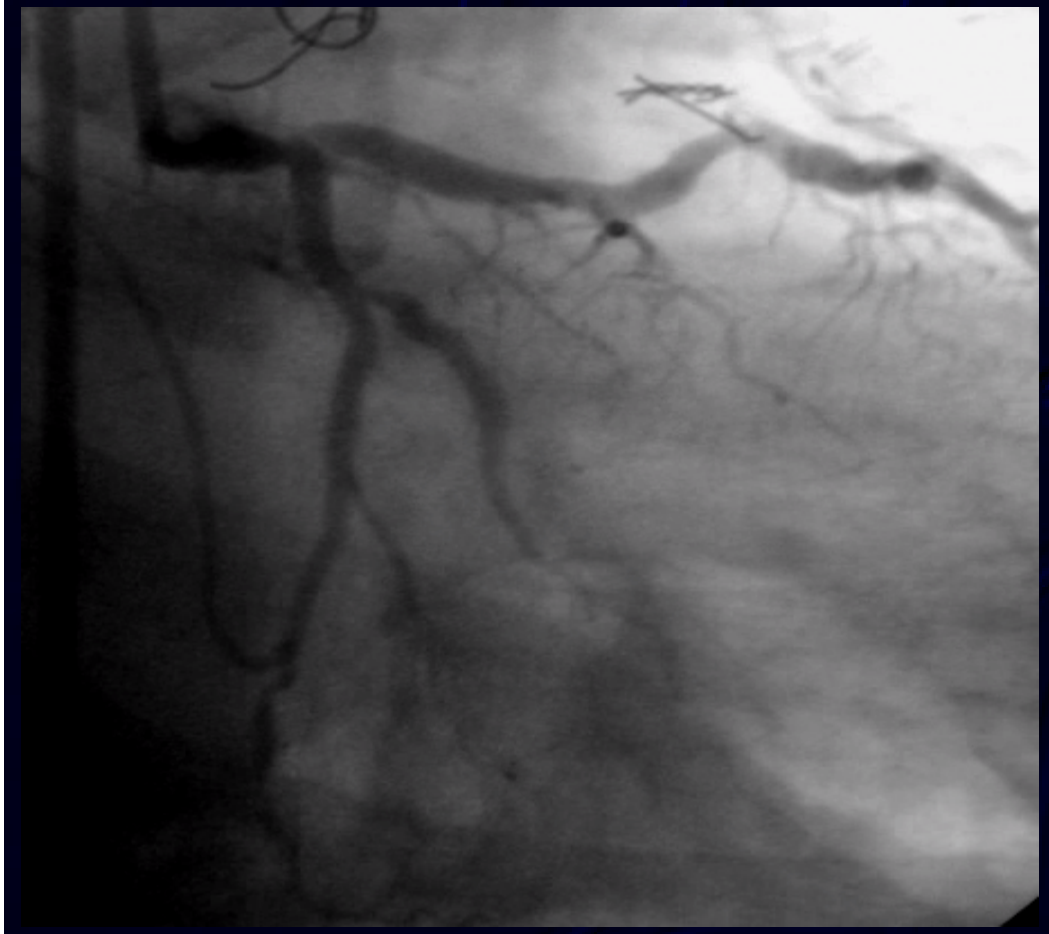
- High metal concentration at the bifurcation *carina*

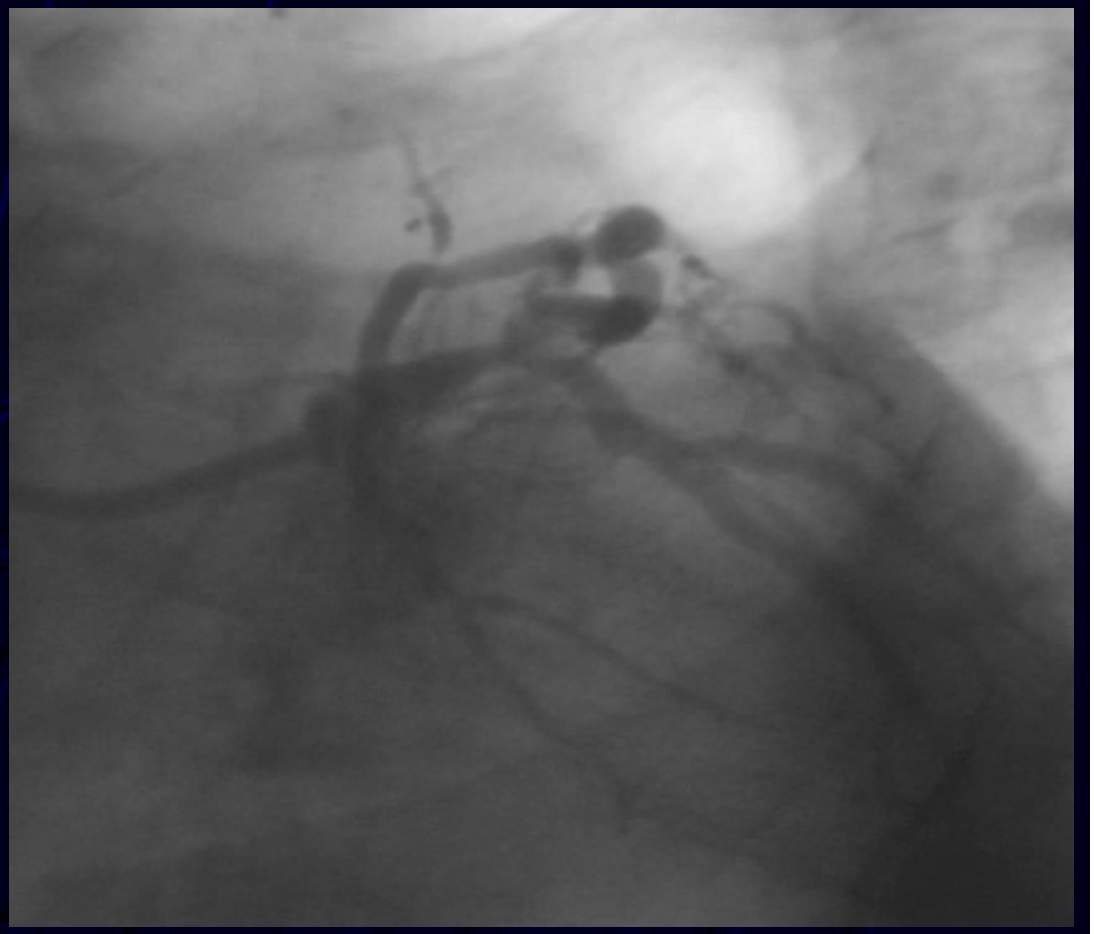
FKB: final kissing-balloon
SB: side branch

Iakovou I. et al, *JACC* 2006;46:1446-1455.

EMO GVM
CENTRO
CUORE COLUMBUS s.r.l.

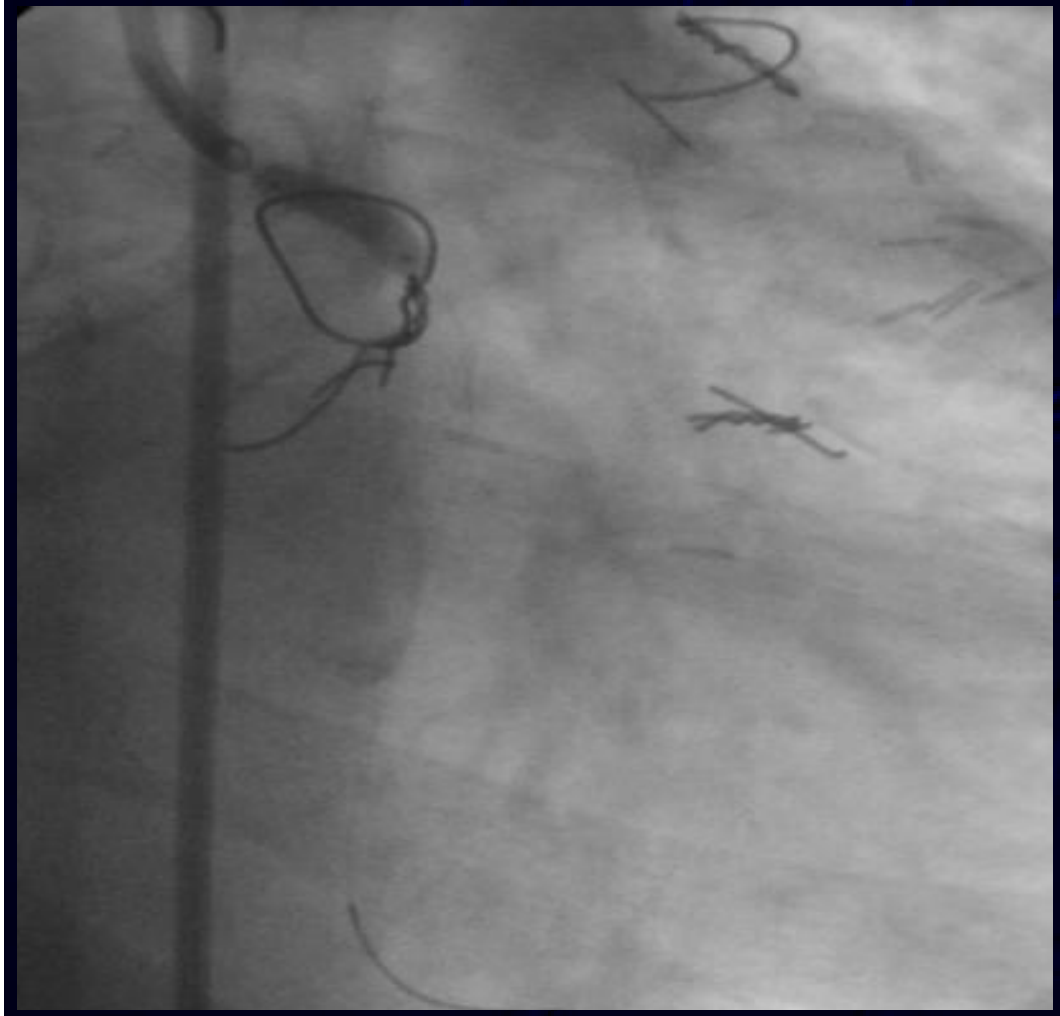
Culotte Technique



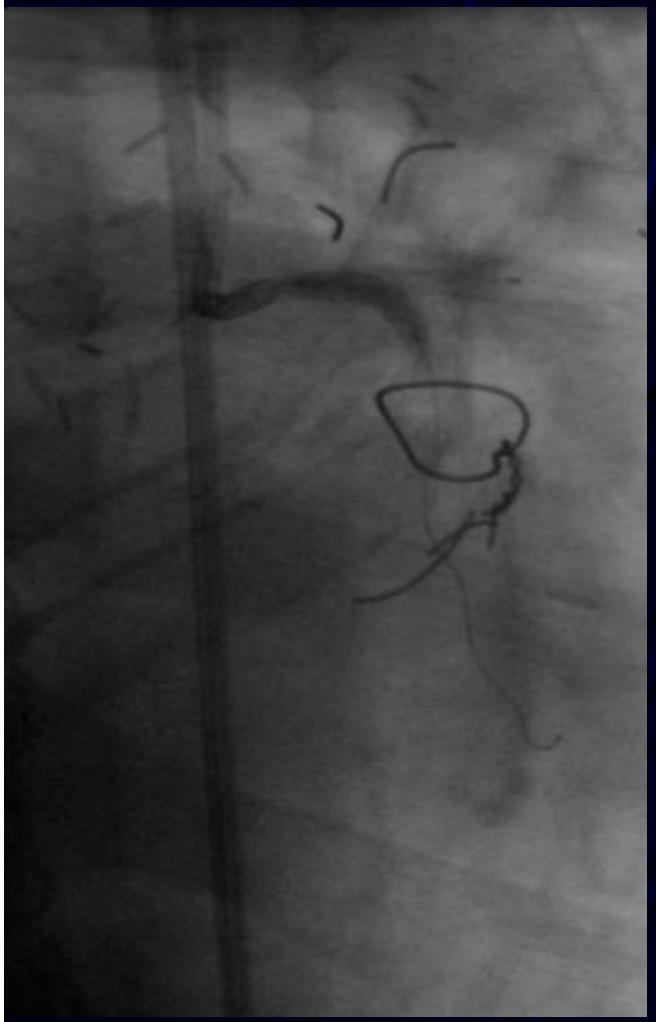
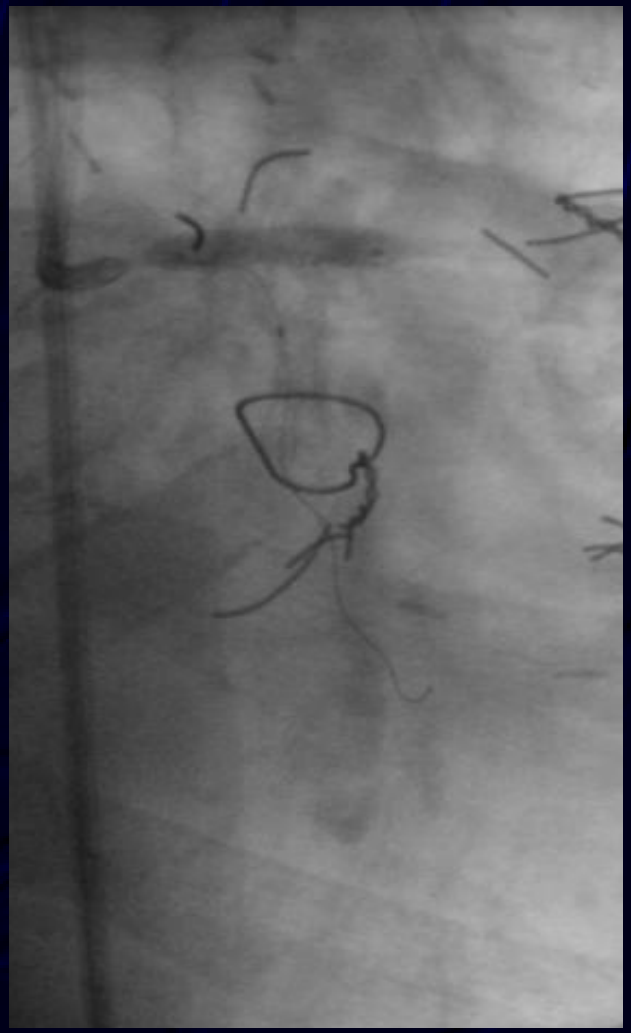
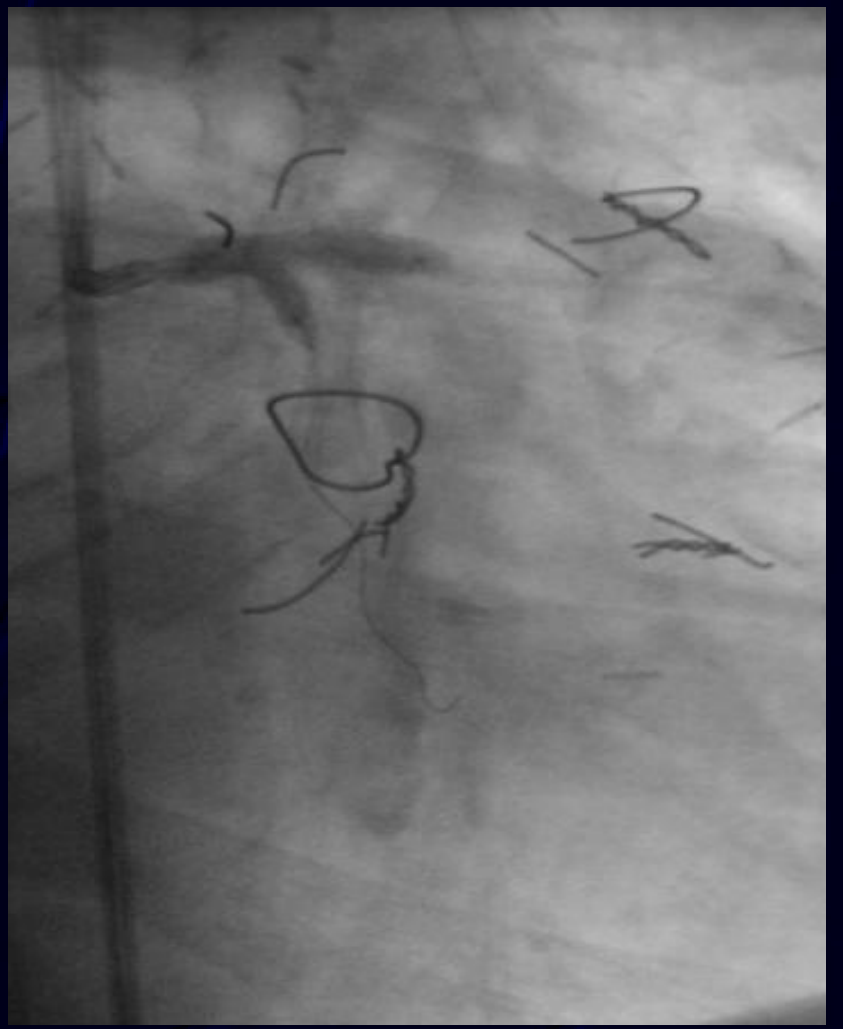


EMO GVM
CENTRO
CUORE COLUMBUS s.r.l.

PRE-DILATATION



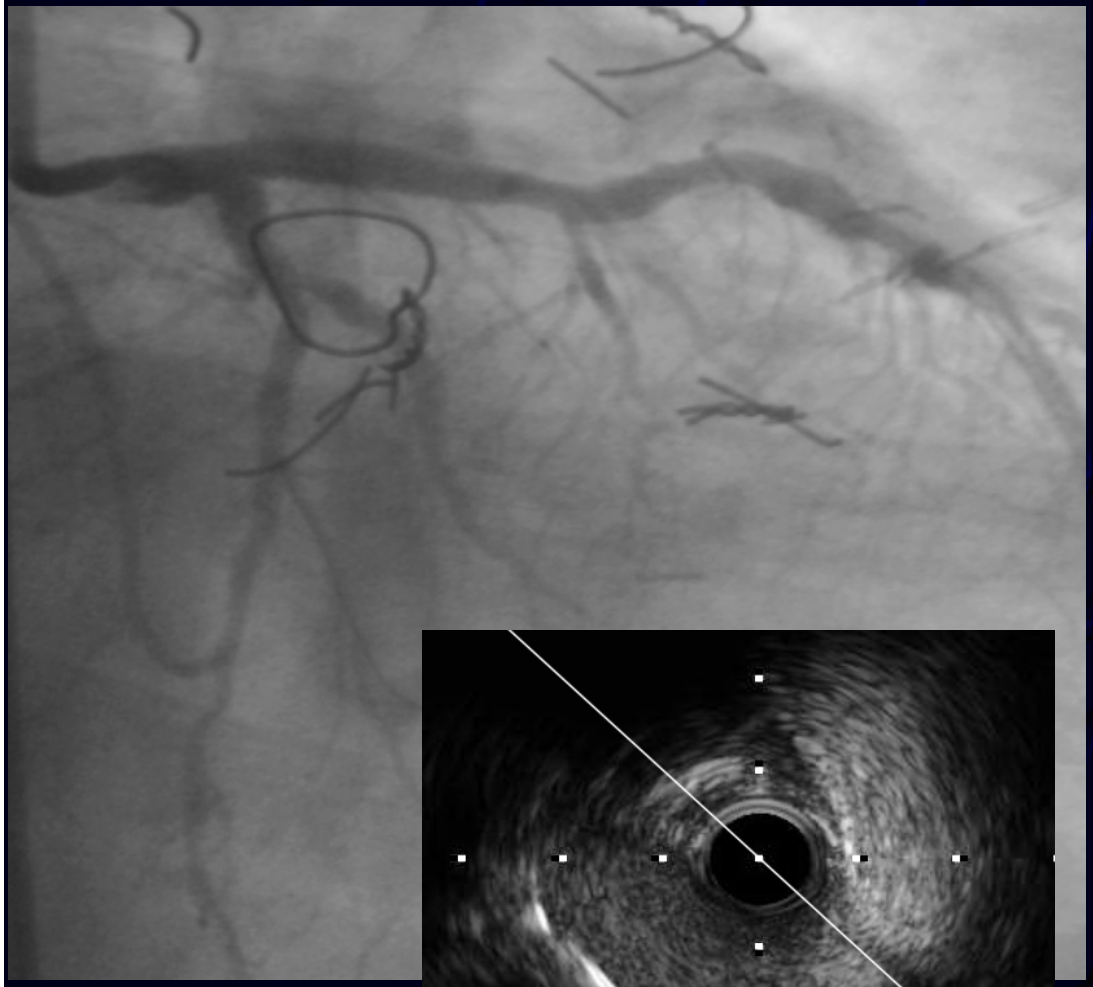
EMO GVM
CENTRO
CUORE COLUMBUS s.r.l.

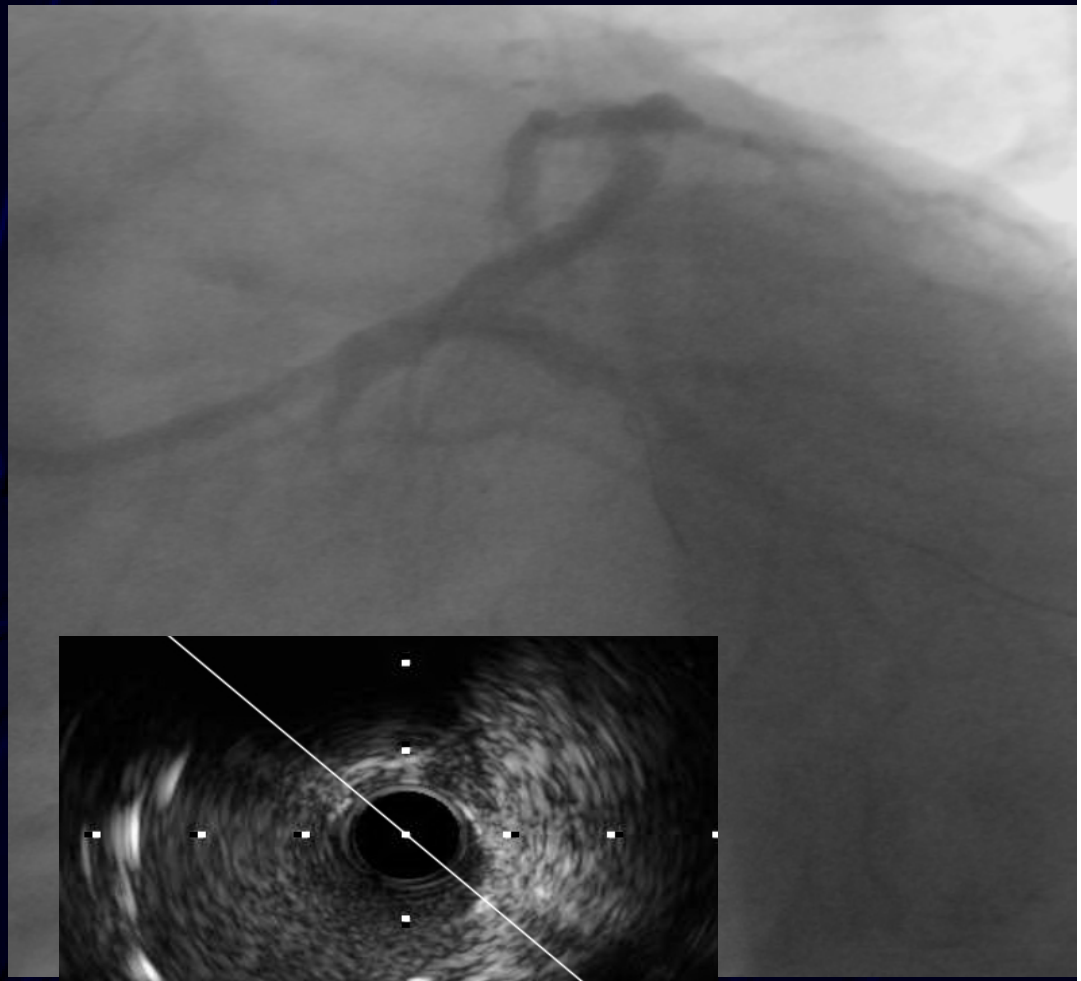




Taxus 3.5x16mm LAD and Cx>>FKB

EMO GVM
CENTRO
CUORE COLUMBUS s.r.l.

Final Result





Conclusions I

- A customized approach considering the size and extent of disease in the SB as well as its angulation is essential when dealing with bifurcation LM.
- A large Circumflex artery with disease extending in the ostium and/or with an unfouvarable angulation might benefit from a 2 stent technique.

Conclusions II

- Good lesion preparation (rotablator in case of severe calcified lesions) and postdilatation with NCB is recommended.
- IVUS guidance is mandatory in bifurcation LM
- Consider also elective IABP implantation in case of complex distal LM stenting