Culotte Technique

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Disclosures of Conflict of Interest

Speaker's name: Andrejs Erglis

☑ **I have the following** potential conflicts of interest to report:

☑ Research contracts (Abbott Vascular, Boston Scientific)
☑ Consulting, Speakers Bureau (Abbott Vascular, Boston Scientific, Medtronic, Cordis J&J, Biosensors)
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☐ Other(s)

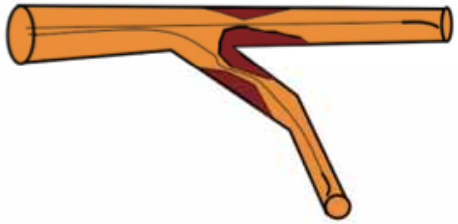
☐ **I do not have any potential conflict of interest**

Culotte: How to Do It?

Suitable for lesions where:

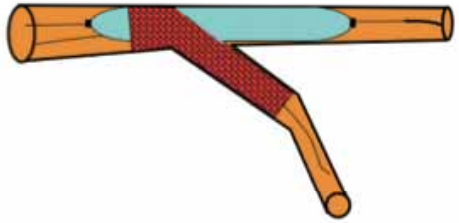
- *the ostium of the SB is diseased,*
- *irrespective of angulation*
- *the 2 vessels are of similar diameter*

1. Wire both branches and predilate if needed.

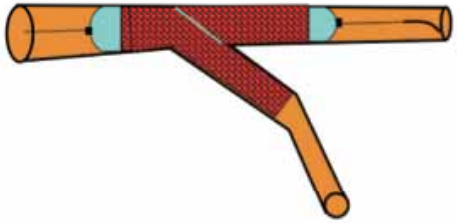


2. Leave the wire in the straighter branch (MB) and deploy a stent in the more angulated branch (SB).

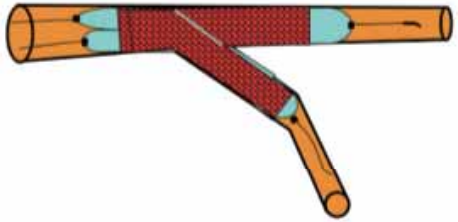
3. Rewire the unstented branch and dilate the stent struts to unjail the branch (MB).



4. Place a second stent into the unstented branch (MB) and expand the stent leaving some proximal overlap.



5. Re-cross the 2nd stent's (MB) struts into the 1st stent (SB) with a wire and perform kissing balloon inflation.



Latib A et al. *EuroIntervention.* 2010;6 Suppl J: J81-J87

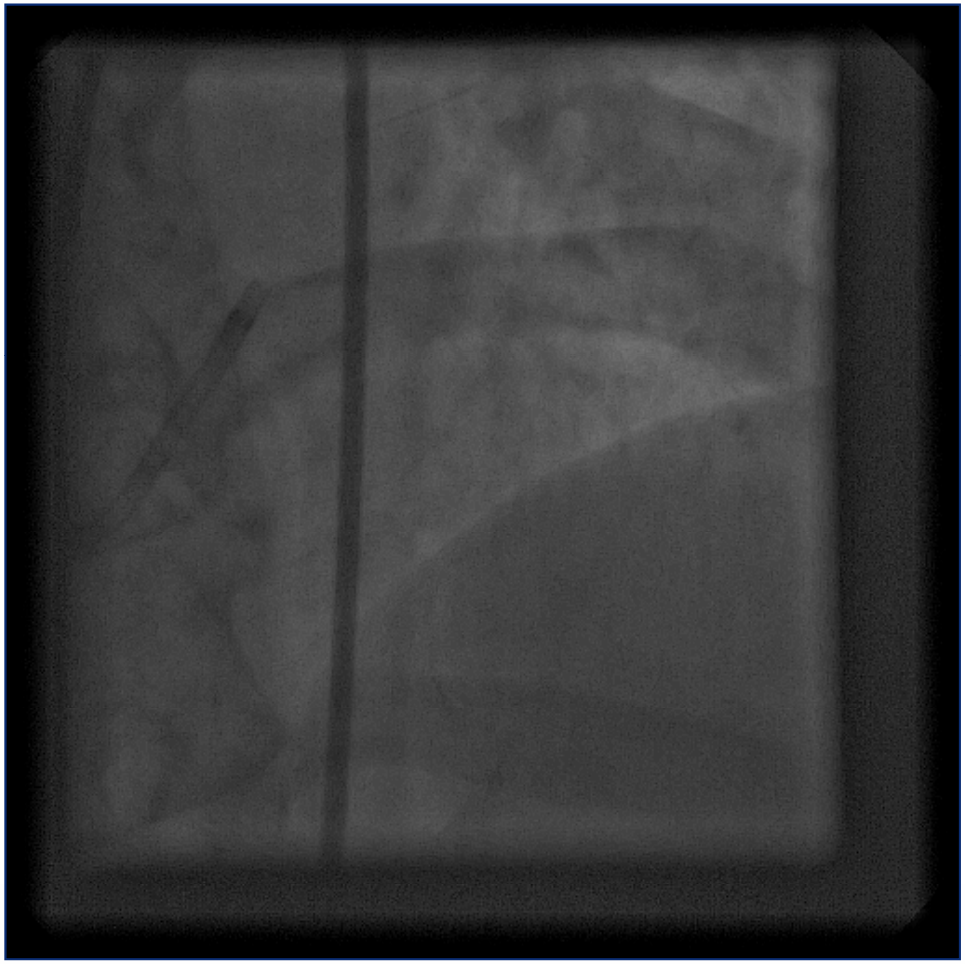
Step-by-Step Approach

- ≥7F guiding catheter
- Wire both branches and predilate if needed
- Intravascular imaging for PCI guiding
- Plaque modificiation with cutting/scoring balloon/ROTA
- Stenting with less protrusion of SB stent into MB
- Optimization:
  - Final kissing (2-step is recommended)
  - Proximal optimisation technique (POT)
- Intravascular imaging for final result optimization

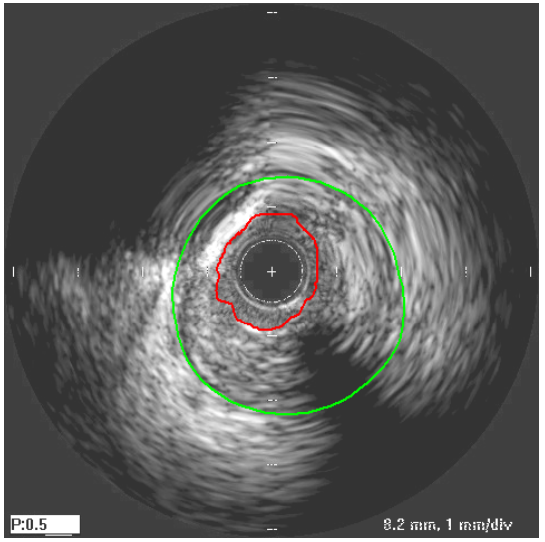
Patient details

- Female, 57 yo
- Cardiovascular risk factors: hypertension, dyslipidemia
- Previous PCI – RCA with BMS implantation (2000)
- Presents with stable angina II-III
- Coronary angio – 90% LAD-D1 bifurcation stenosis

Coronary angio & IVUS

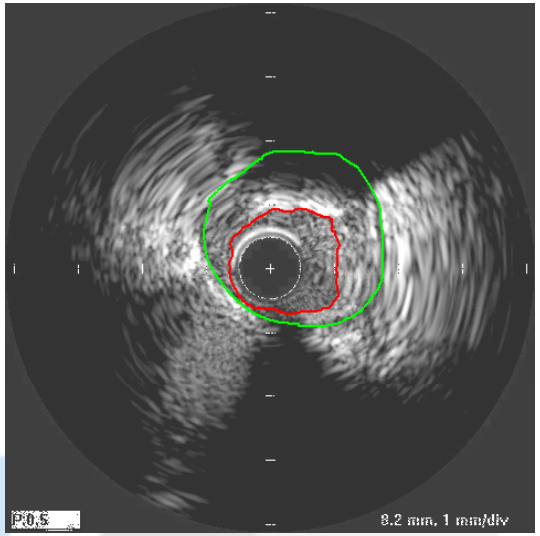


- IVUS MB



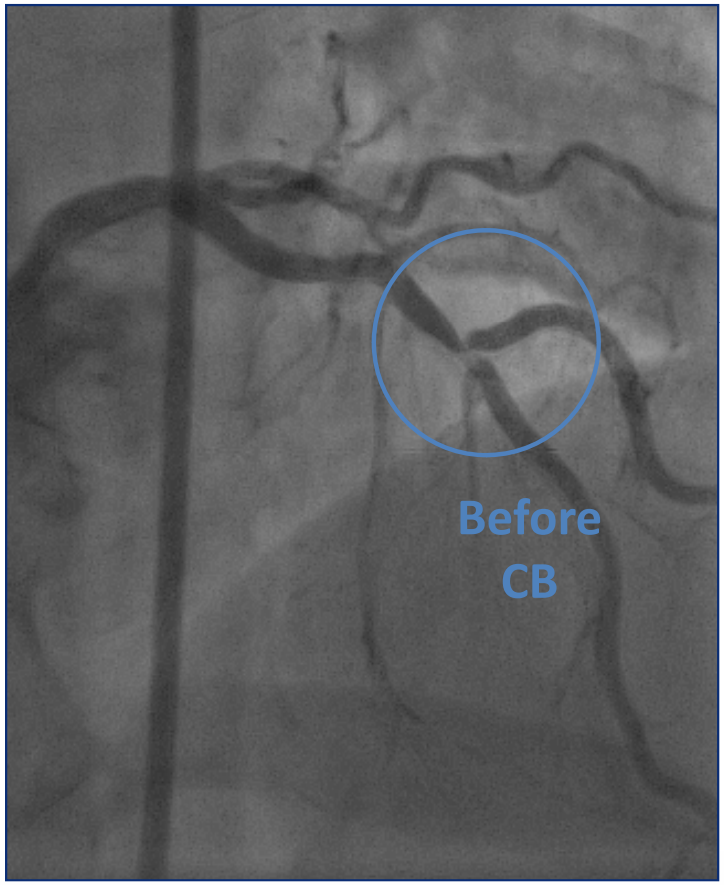
	Vessel	Lumen	Stent	
Area	10.39	2.13	N/A	mm²
Average diameter	3.64	1.65	N/A	mm
Largest diameter	3.68	1.83	N/A	mm
Smallest diameter	3.53	1.47	N/A	mm
Symmetry	0.96	0.80	N/A	
Plaque burden	8.26	mm²		
Perc. plaque	79.53	%	Show diameter lines	
In-stent restenosis	N/A	mm²		

- IVUS SB

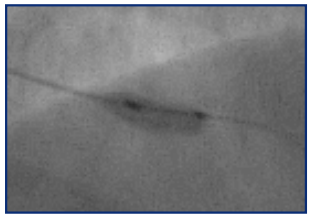


	Vessel	Lumen	Stent	
Area	6.18	2.32	N/A	mm²
Average diameter	2.80	1.72	N/A	mm
Largest diameter	2.96	1.87	N/A	mm
Smallest diameter	2.68	1.57	N/A	mm
Symmetry	0.90	0.84	N/A	
Plaque burden	3.85	mm²		
Perc. plaque	62.39	%	Show diameter lines	
In-stent restenosis	N/A	mm²		

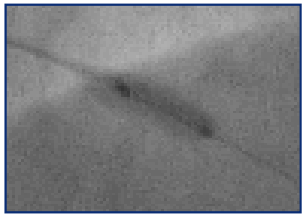
Cutting balloon pre-treatment

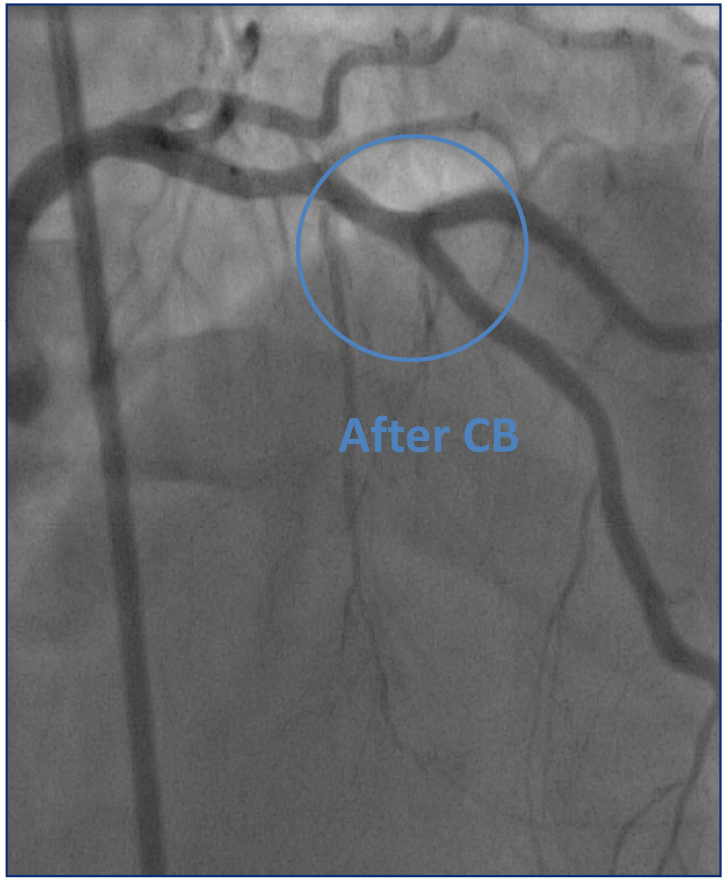


- SB - CB Ultra
  3.5-6 mm



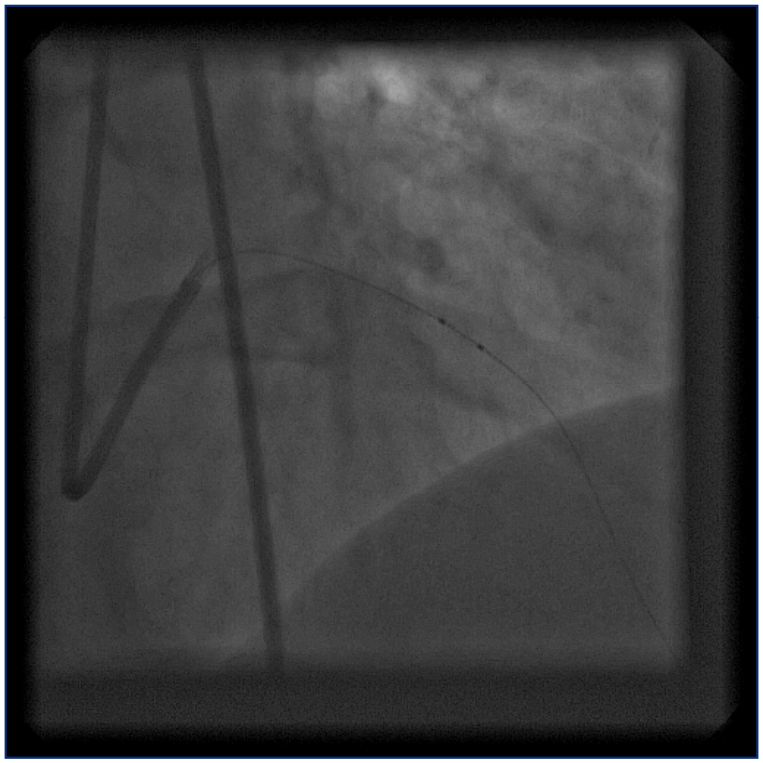
- MB - CB Ultra
  3.5-6 mm



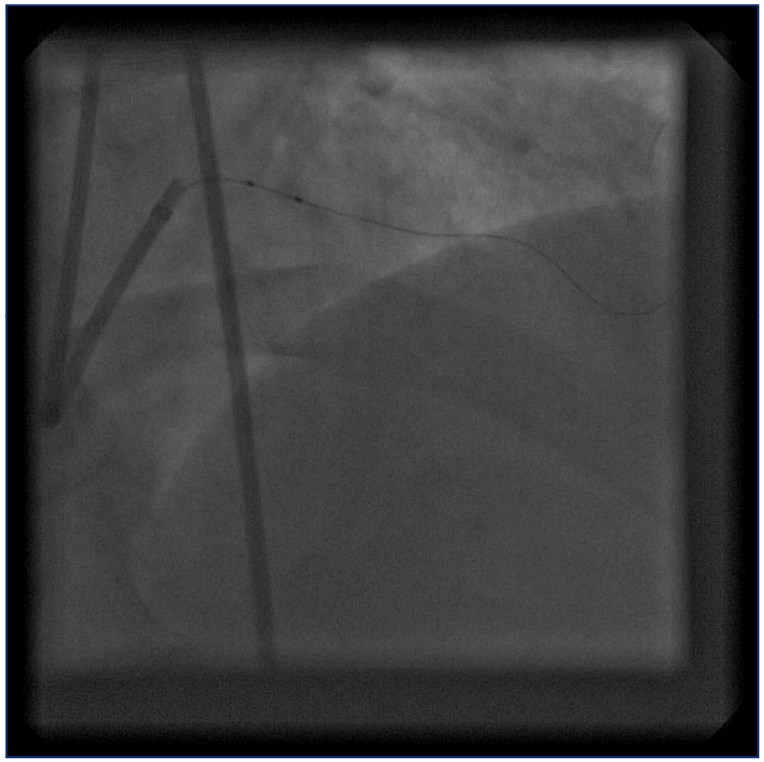


After CB pretreatment angio & IVUS

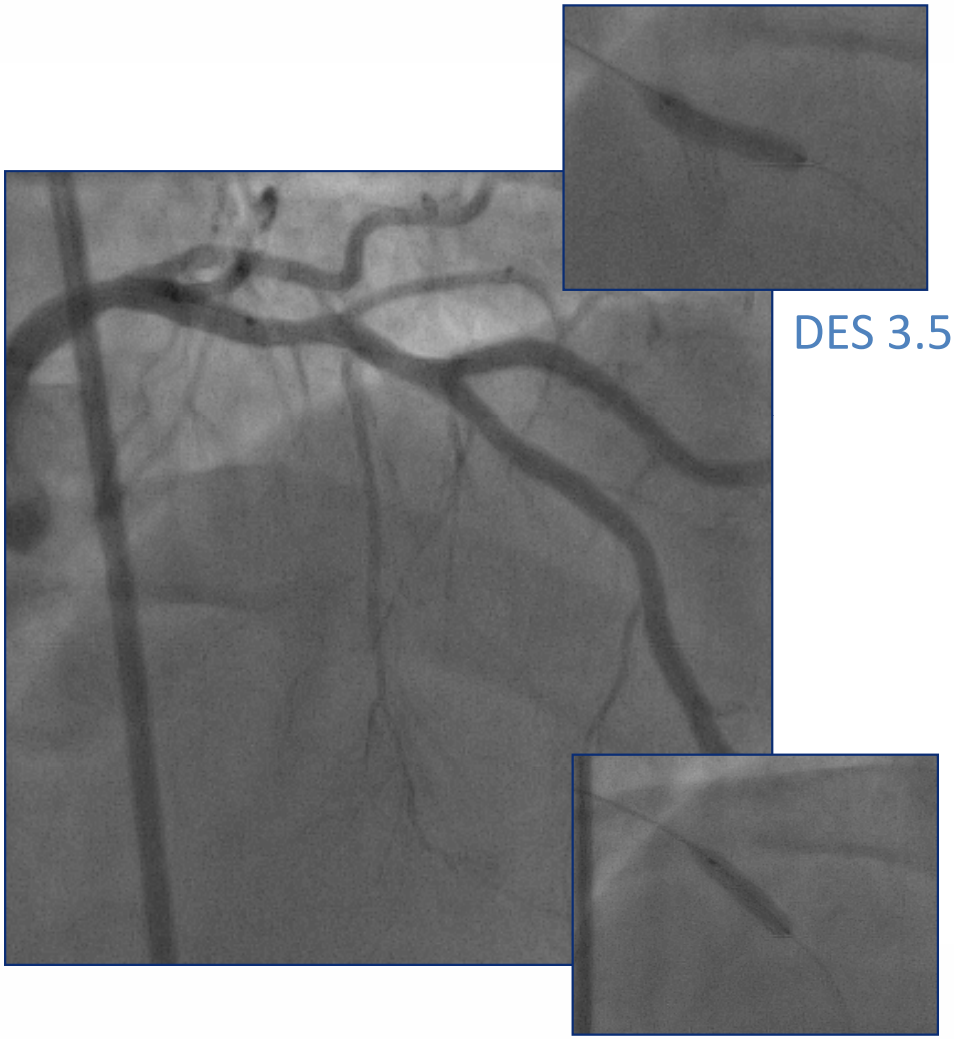
After CB in MB



After CB in SB



Stenting – Cullote technique



DES 3.5-13 mm

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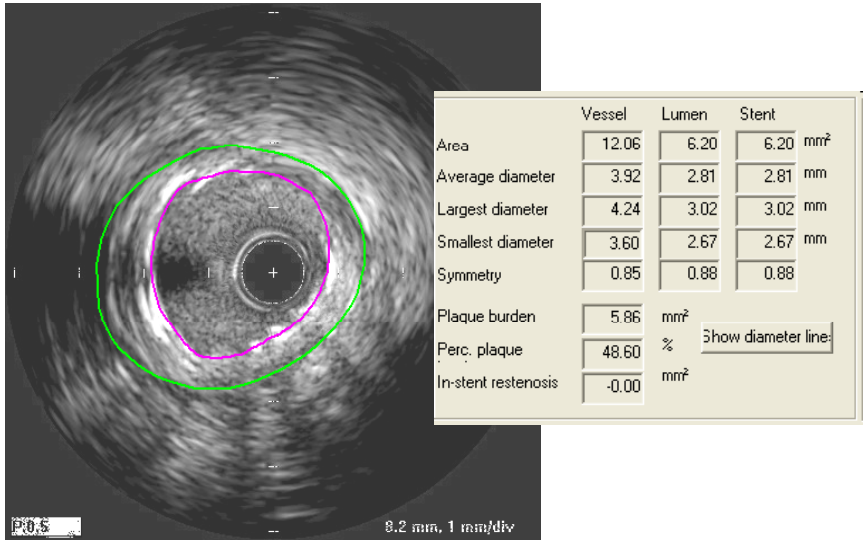
Final “kissing”

2.5-12 in SB

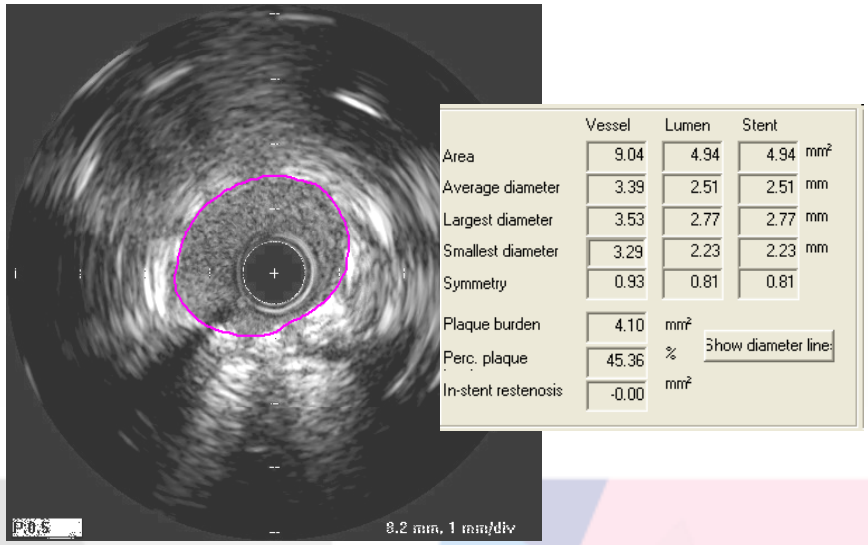
3.0-12 in MB

Final result: angio & IVUS

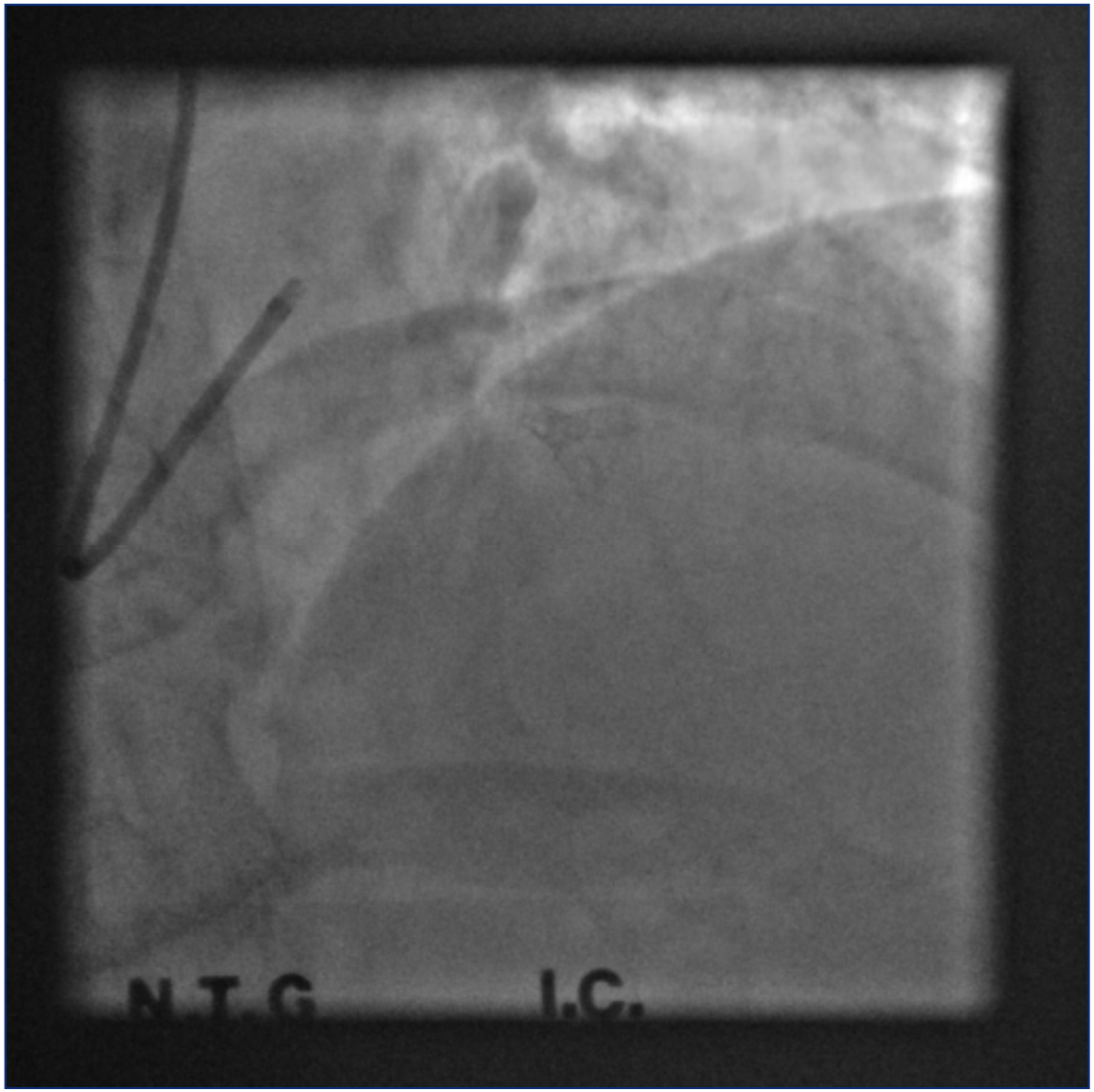
- **IVUS MB**



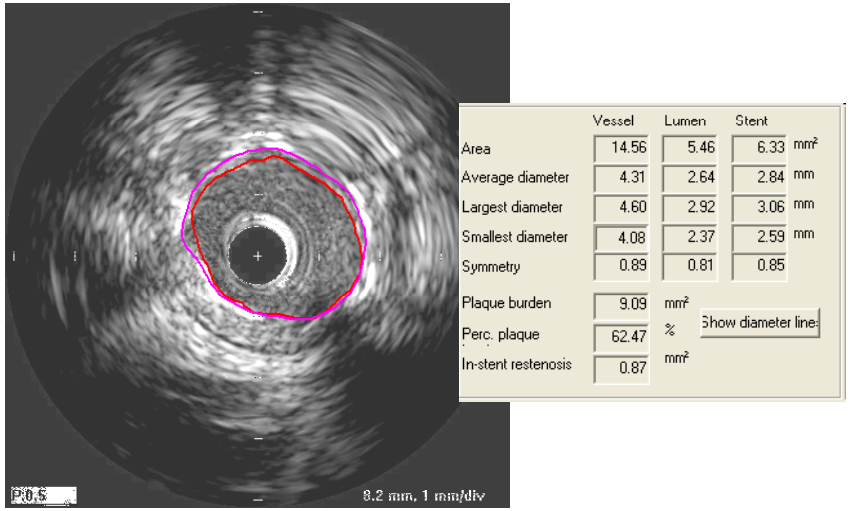
- **IVUS SB**



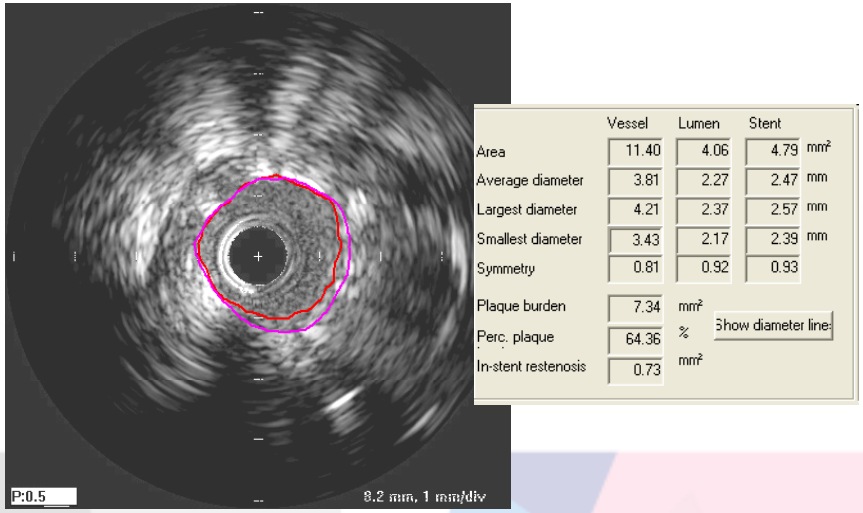
At 8 months follow-up



- **IVUS MB**



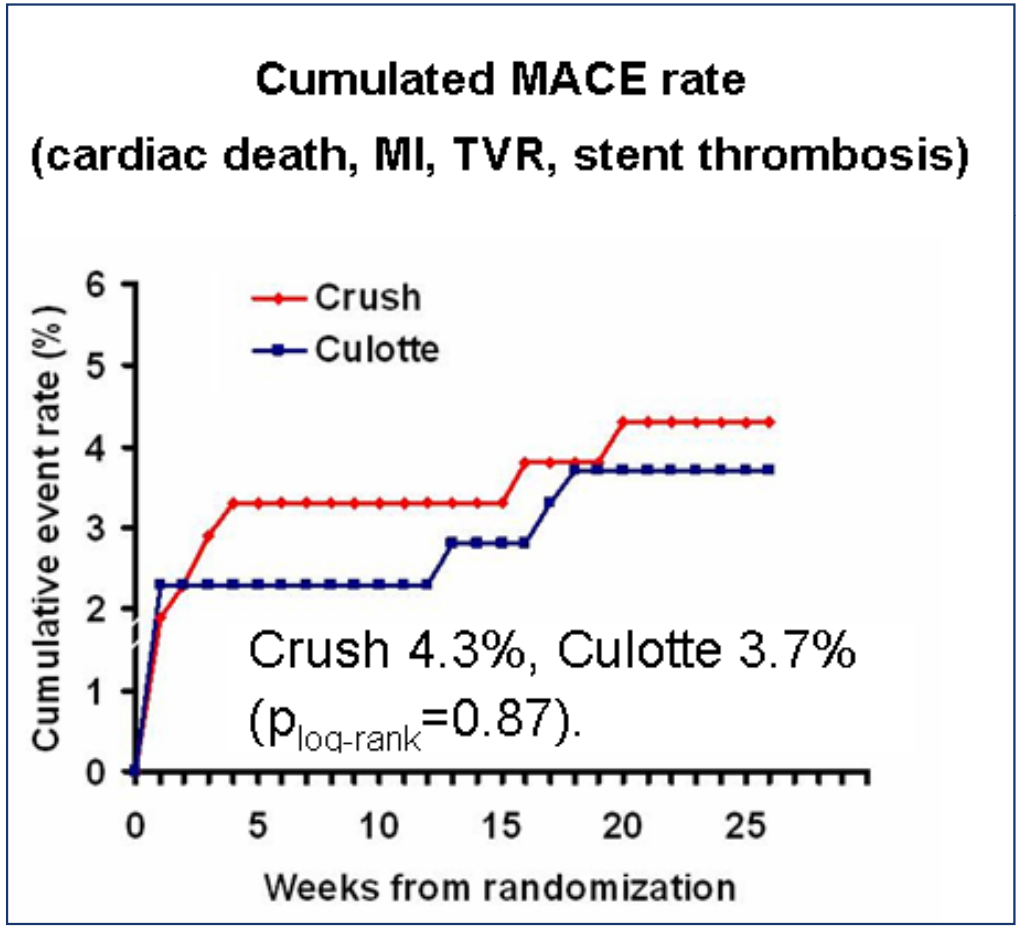
- **IVUS SB**



Culotte vs Crush

Nordic Stent Technique Study *(Nordic II)*

Primary endpoint and individual endpoints



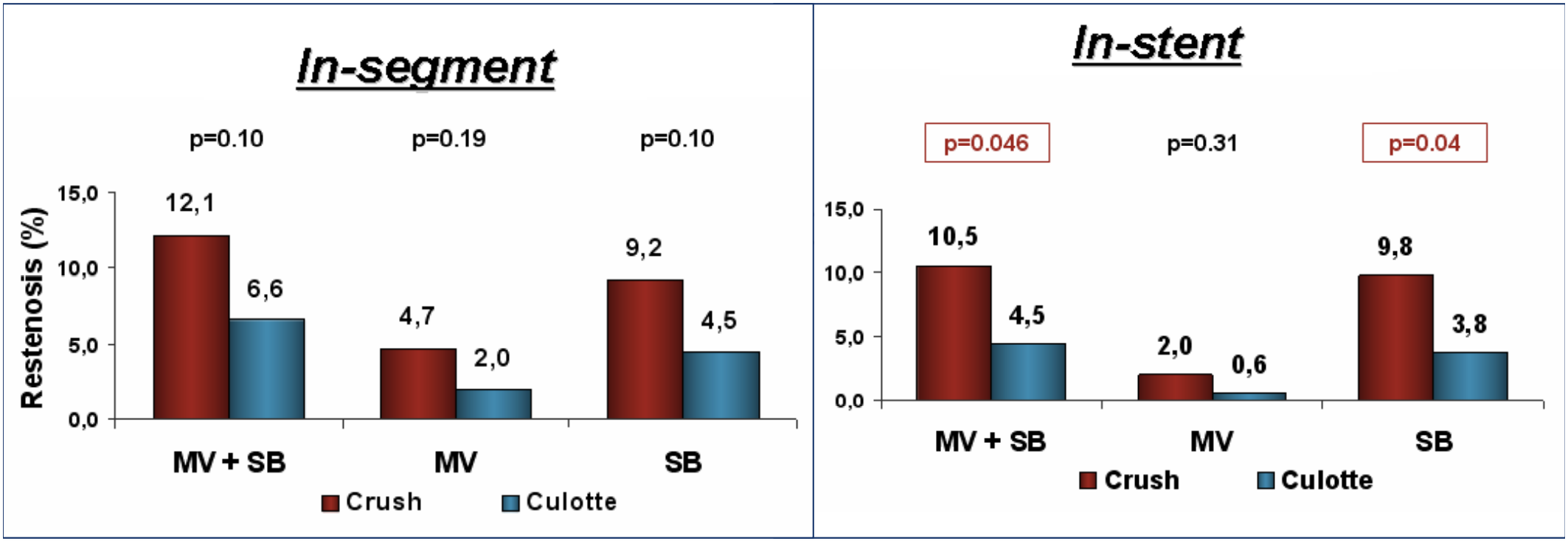
	Crush n=209	Culotte n=215	P
Total death	2 (1.0%)	1 (0.5%)	0.62
Cardiac death	2 (1.0%)	1 (0.5%)	0.62
MI	4 (1.9%)	3 (1.4%)	0.72
ST	3 (1.4%)	4 (1.9%)	0.73
TLR	5 (2.4%)	6 (2.8%)	0.77
TVR	5 (2.4%)	6 (2.8%)	0.77

Erglis et al. *Circ Cardiovasc Interv*. 2009;2:27-34

Culotte vs Crush

Nordic Stent Technique Study *(Nordic II)*

Restenosis rate at 8 months angio follow-up



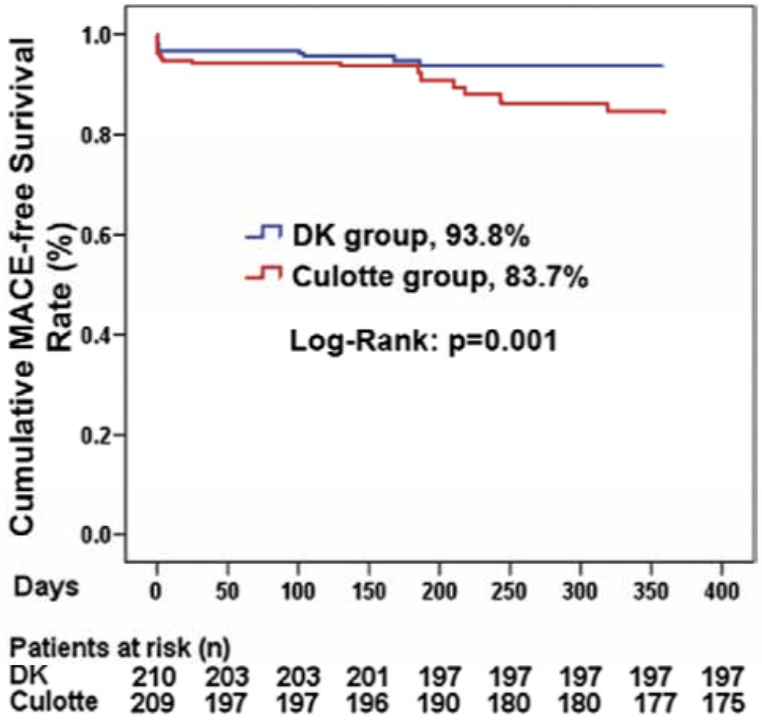
Erglis et al. *Circ Cardiovasc Interv*. 2009;2:27-34

Culotte vs Double Kissing Crush

DKCRUSH-III study

419 patients with unprotected distal left main bifurcation lesions were randomly assigned to DK (n = 210) or Culotte (n = 209) treatment.

MACE (MI, cardiac death, and/or TVR) free survival



Clinical follow-up

	DK Group (n = 210)	Culotte Group (n = 209)	p Value
At 12 months			
Composite MACE	13 (6.2)	34 (16.3)	0.001
Cardiac death	2 (1.0)	2 (1.0)	1.000
MI	7 (3.3)	11 (5.3)	0.377
TLR	5 (2.4)	14 (6.7)	0.037
TVR	9 (4.3)	23 (11.0)	0.016
For LAD	0 (0)	4 (1.9)	0.061
For LCX	1 (0.5)	2 (1.0)	0.623
For left main	9 (4.3)	20 (9.6)	0.036
CABG	2 (1.0)	0 (0)	0.499
Stent thrombosis	1 (0.5)	2 (1.0)	0.623
Definite	0 (0)	2 (1.0)	0.248
Probable	0 (0)	0 (0)	NS
Possible	1 (0.5)	0 (0)	1.000

Chen S-L et al. et al. J Am Coll Cardiol 2013;61:1482–8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