



INSTITUT
CARDIOVASCULAIRE
PARIS
SUD

Bifurcation PCI

T. Lefèvre, Massy, France

Disclosure Statement of Financial Interest

Within the past 12 months, I or my spouse/partner have had a financial interest/arrangement or affiliation with the organization(s) listed below.

Affiliation/Financial Relationship	Company
<ul style="list-style-type: none">• Grant/Research Support• Consulting Fees/Honoraria	Abbott, Astra Zeneca, BSc, Lily, Medtronic and Terumo
<ul style="list-style-type: none">• Major Stock Shareholder/Equity• Royalty Income• Ownership/Founder• Intellectual Property Rights• Other Financial Benefit	

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

Jens Flensted Lassen^{1*} MD, PhD; Niels Ramsing Holm¹, MD; Goran Stankovic², MD, PhD; Thierry Lefèvre³, MD; Alaide Chieffo⁴, MD; David Hildick-Smith⁵, MD; Manuel Pan⁶, MD; Olivier Darremont⁷, MD; Remo Albiero⁸, MD; Miroslaw Ferenc⁹, MD; Yves Louvard³, MD

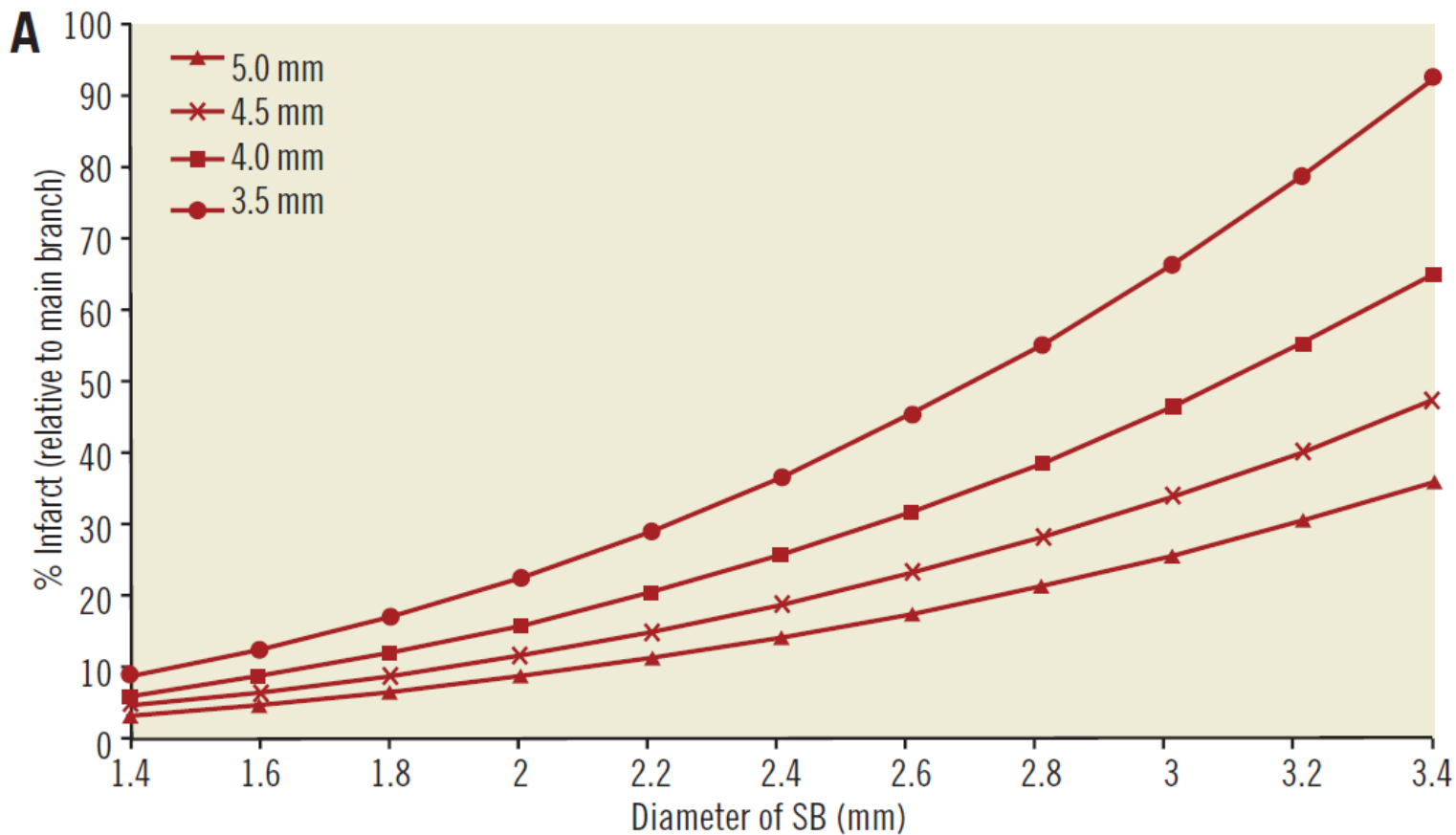


What is a Bifurcation ?

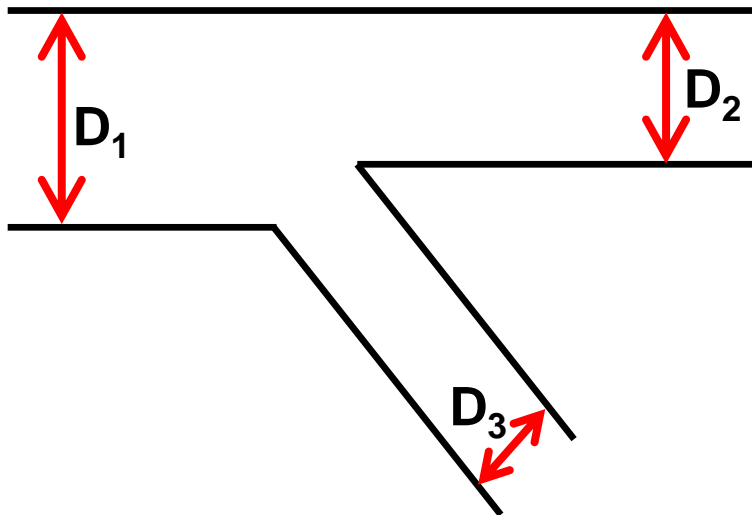
A lesion occurring at, or adjacent to, a significant division of a major epicardial coronary artery.

A significant side branch is a side branch that the operator does not want to lose (evaluating the individual patient in a global context).

Structure-function scaling laws of vascular trees



The 3 Diameters Rule



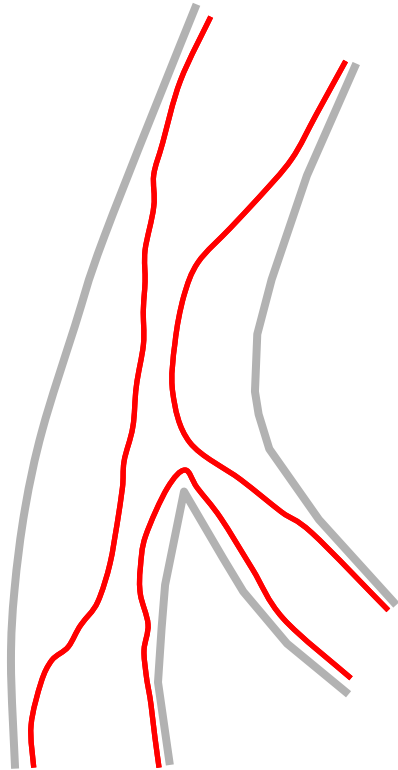
Murray's law

$$D_1^3 = D_2^3 + D_3^3$$

Finet's law

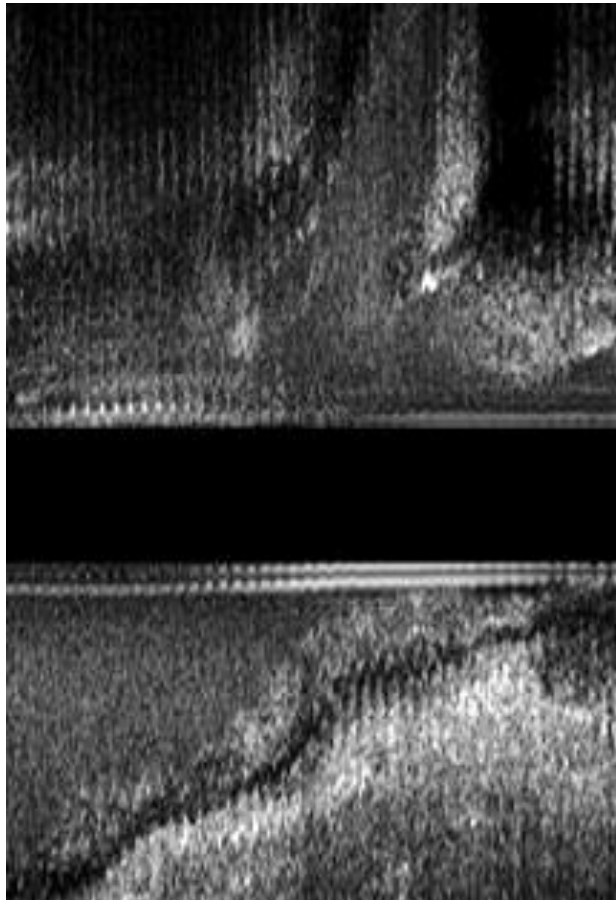
$$D_1 = 0.678 (D_2 + D_3)$$

Carena is usually not diseased

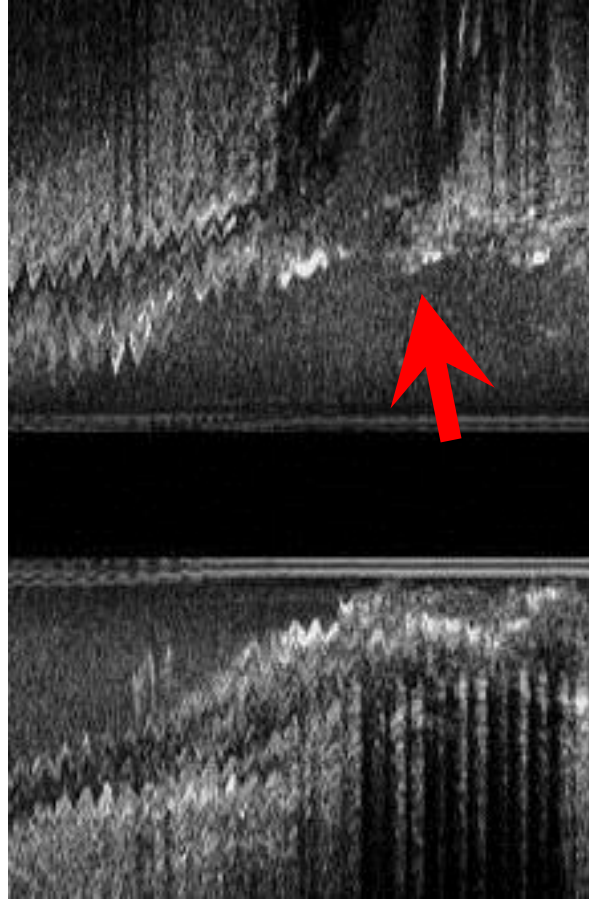


- ✓ *Virmani EBC 2007*
- ✓ *Oviedo et al. ACC 2008*
- ✓ *Van der Giessen, et al. Eurointervention 2008*
- ✓ *Nakazawa G, et al. JACC 2010*
- ✓ *Suarez de lezzo, Eurointervention 2011*

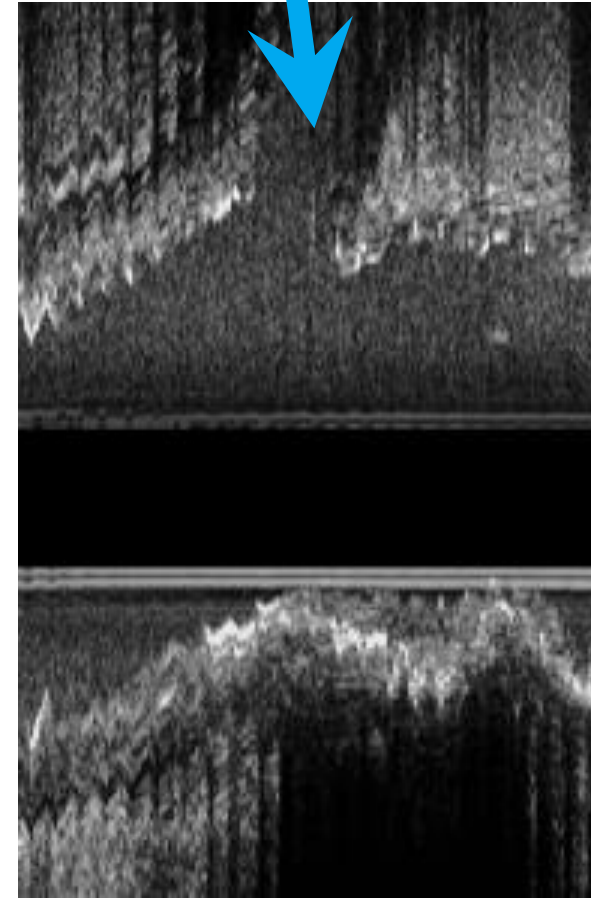
Plaque shifting or carena shifting ?



Pre-intervention

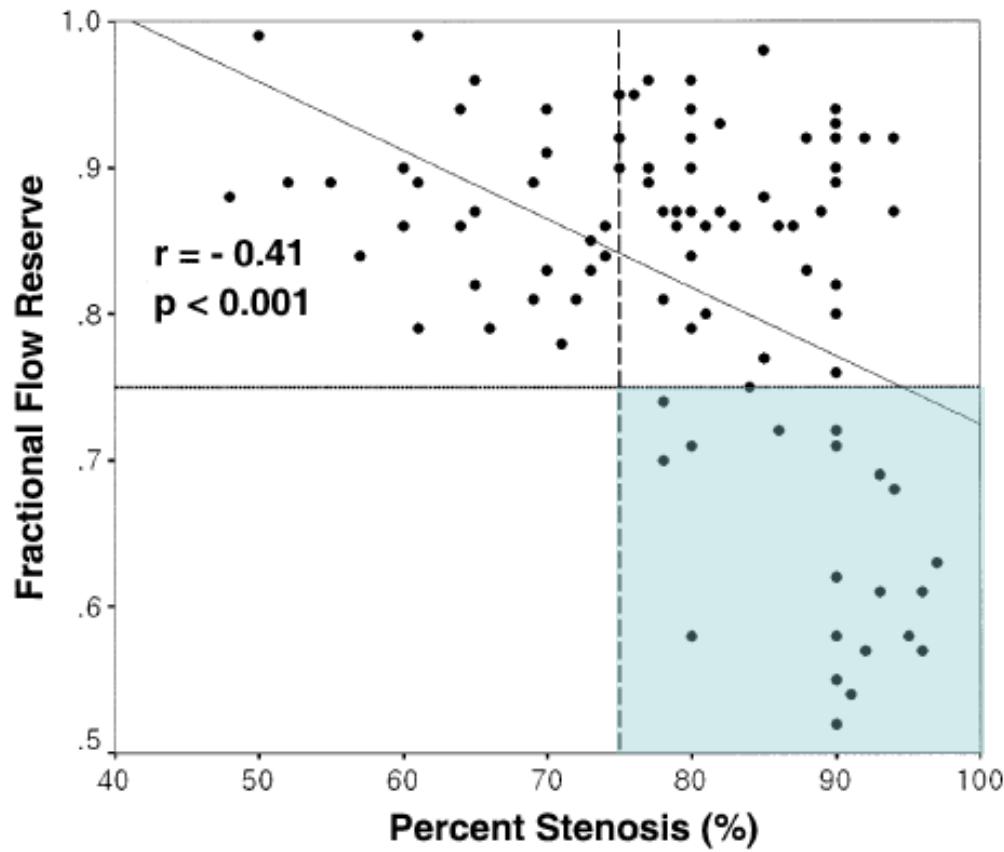


MB stenting



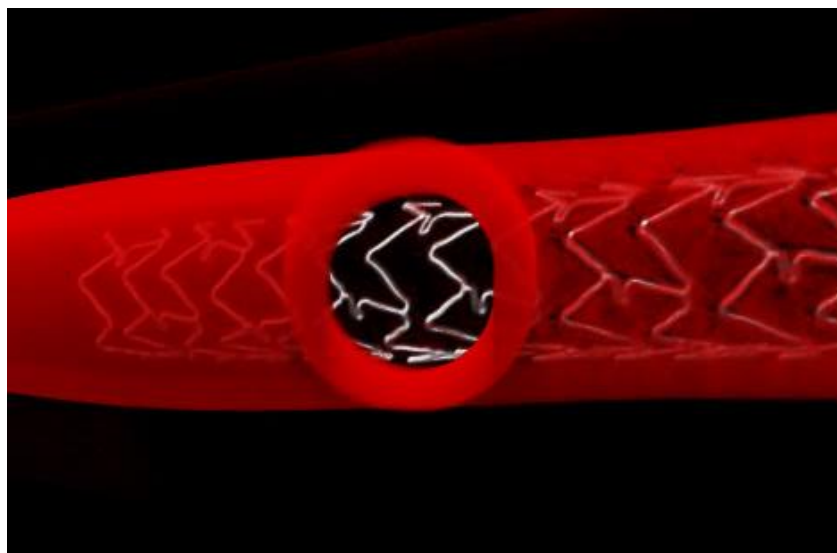
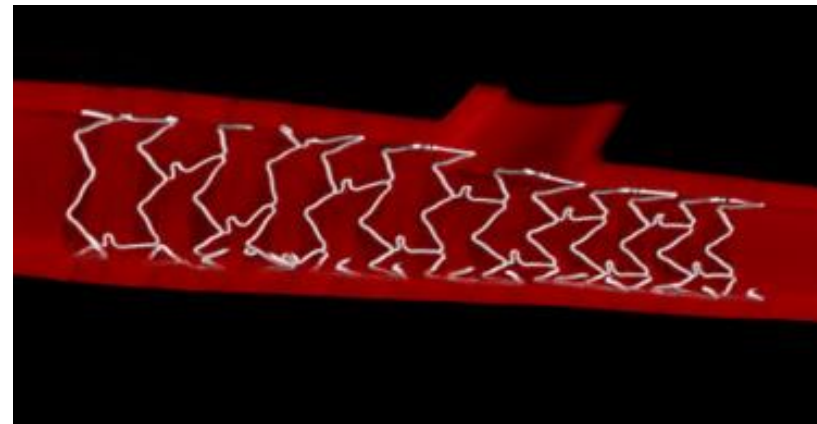
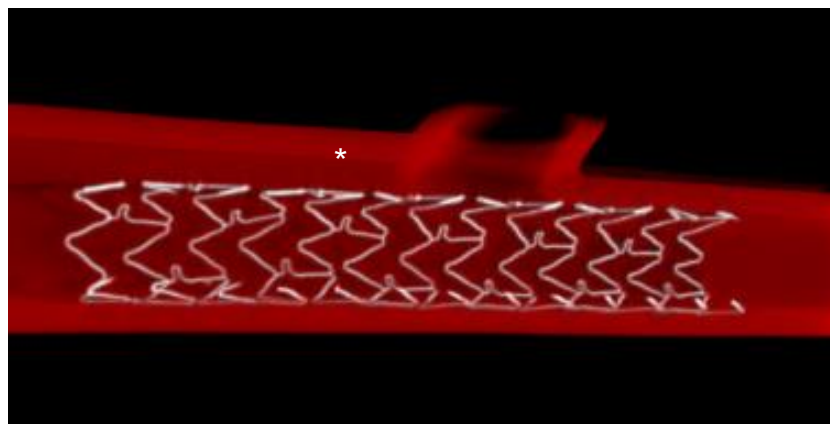
Kissing balloon

SB ostial lesions are overestimated

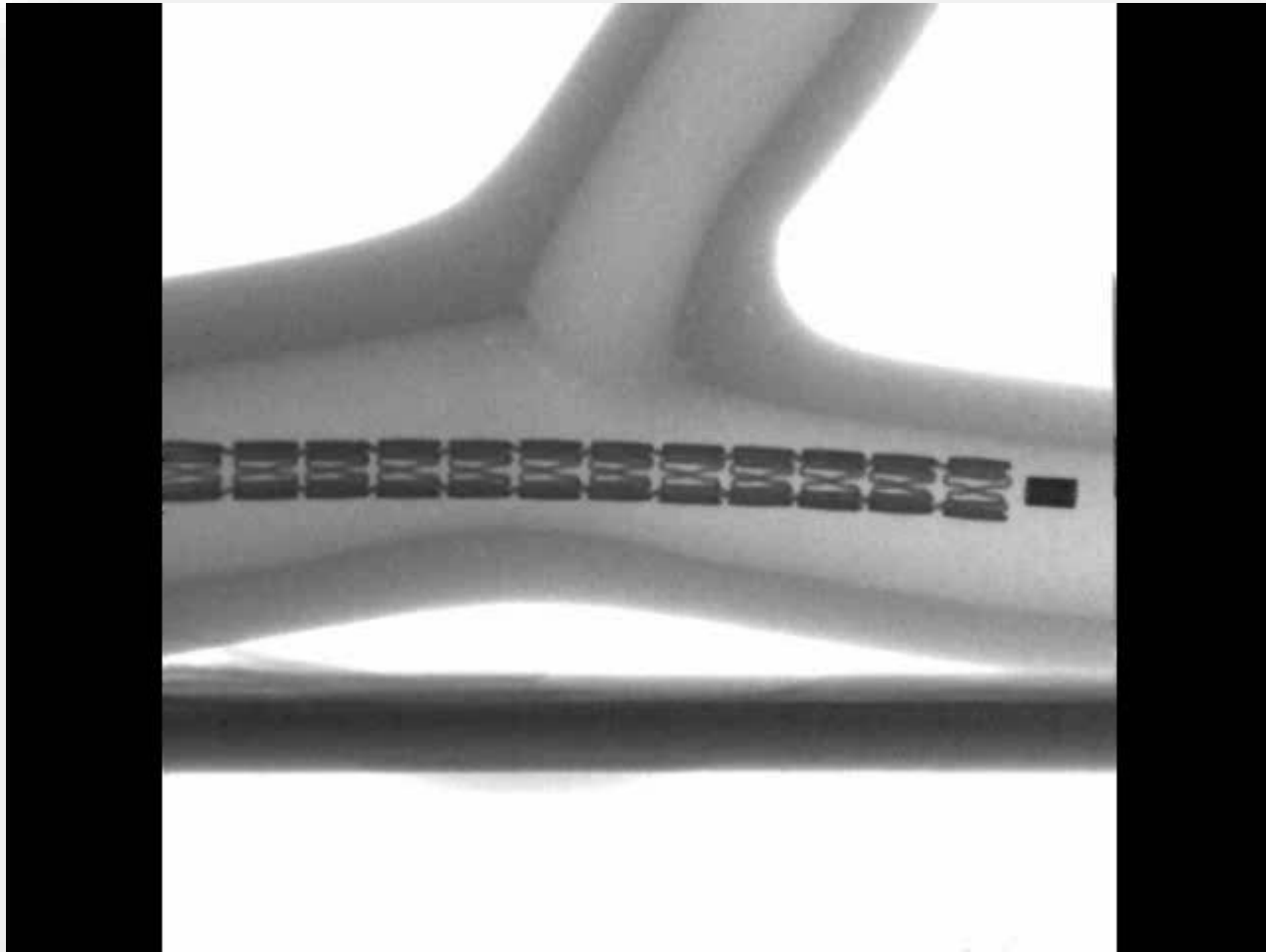


Among 73 lesions with $\geq 75\%$ stenosis by QCA, only 20 lesions were functionally significant.

Proximal Optimisation Technique

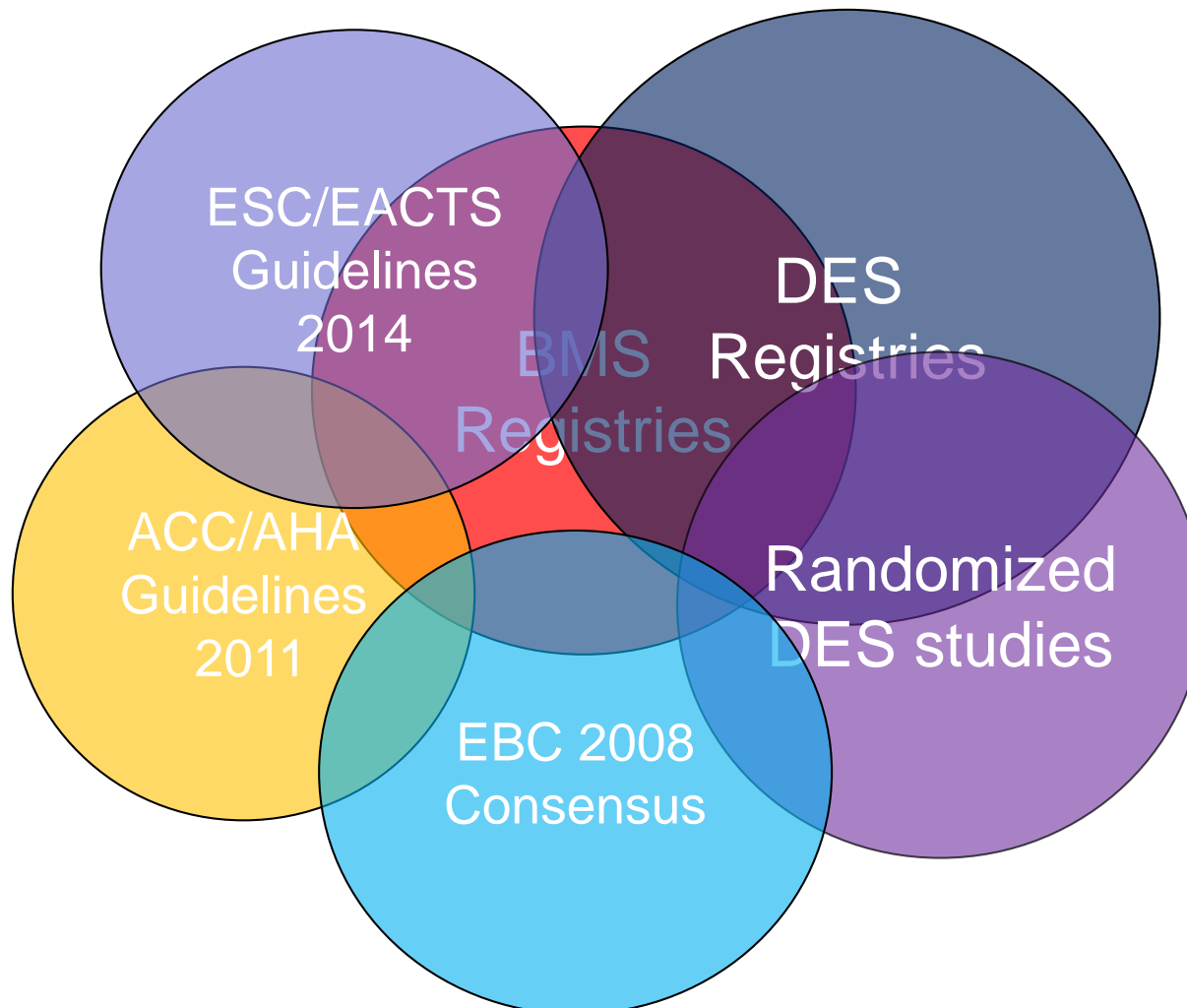


Proximal Optimisation Technique

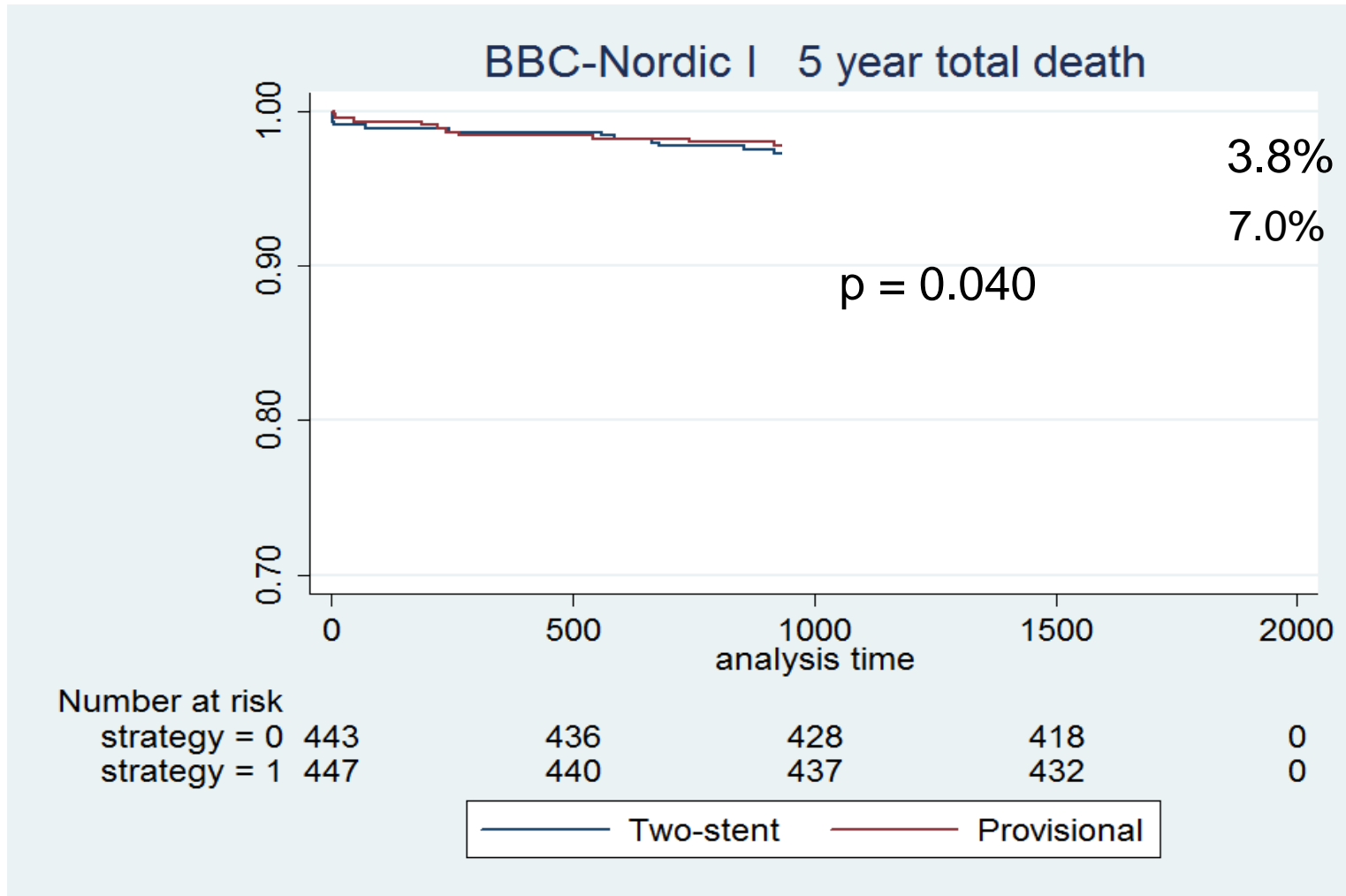


Kissing balloon post dilatation + POT (Kaname^R)

Provisional Side Branch Stenting Should Be the Default Approach



BBC-Nordic: 5-year Death



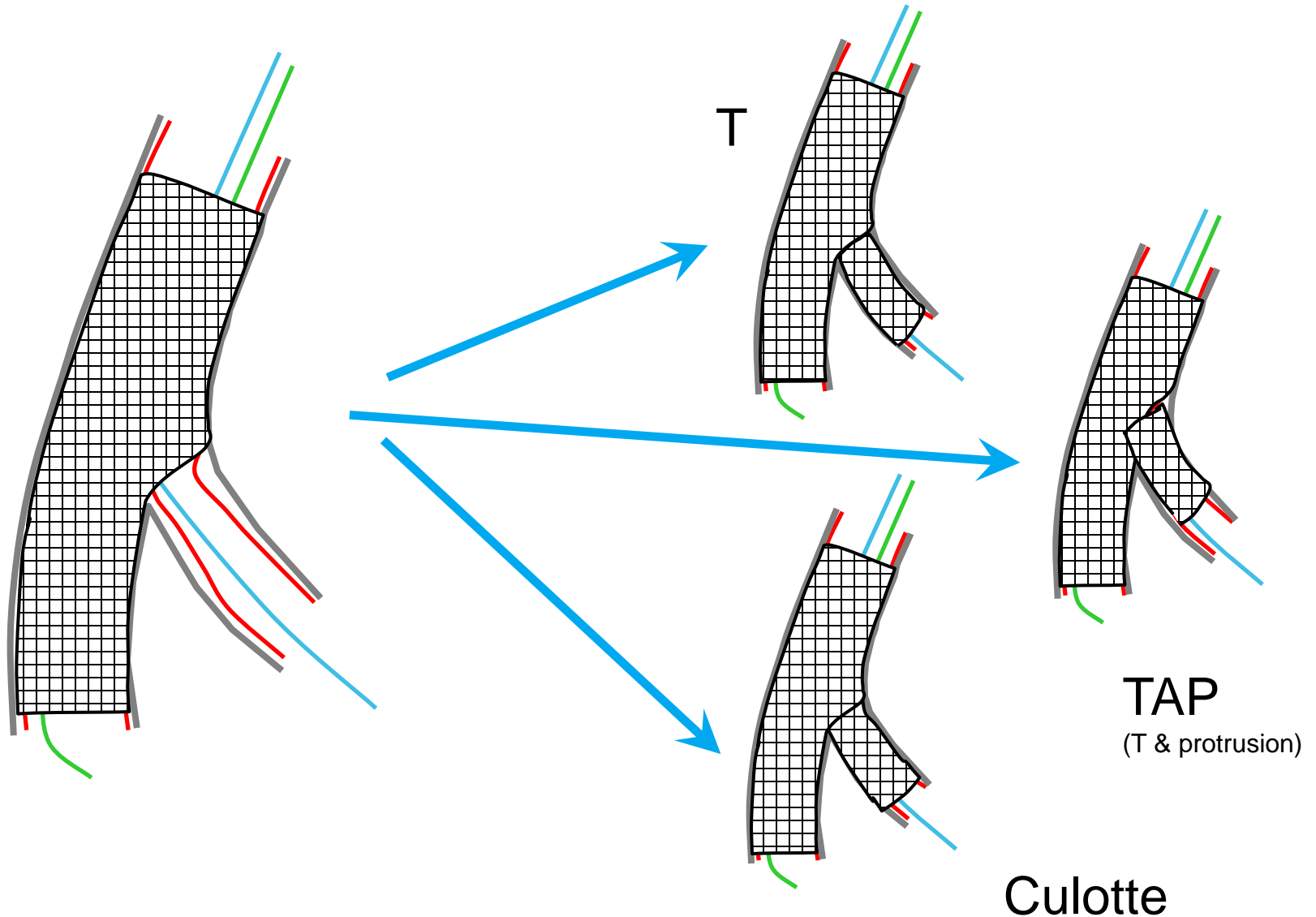
Cox proportional hazards model stratified by study

BBC-Nordic: 5-year Death

	Simple N=457	Complex N=456	P value
Age (yrs)	64 ± 10	63 ± 11	ns
"True" bifurcation (%)	69.4	74.3	ns
Procedure time (min)	58 ± 27	77 ± 35	<0.0001
Contrast volume (mL)	244 ± 109	300 ± 130	<0.0001
Fluoroscopy time (min.)	15 ± 11	22 ± 12	<0.0001
Tx succesful* (%)	97.8	97.2	ns
Periprocedural MI (%)	3.5	9.9	<0.001
TVR 9-months (%)	5.7	7.2	0.34

* (Residual stenosis <30% of MV + TIMI flow III in SB)

Provisional Side Branch Stenting



One stent when we can

Optimal strategy for high success rate and low need for SB stenting

- ✓ *Start with 2 wires*
- ✓ *Select the MB stent diameter according to the distal reference*
- ✓ *Liberal use of the POT technique*
- ✓ *When SB needs attention: FKB or POT/Side/POT*
- ✓ *Use NC balloons*

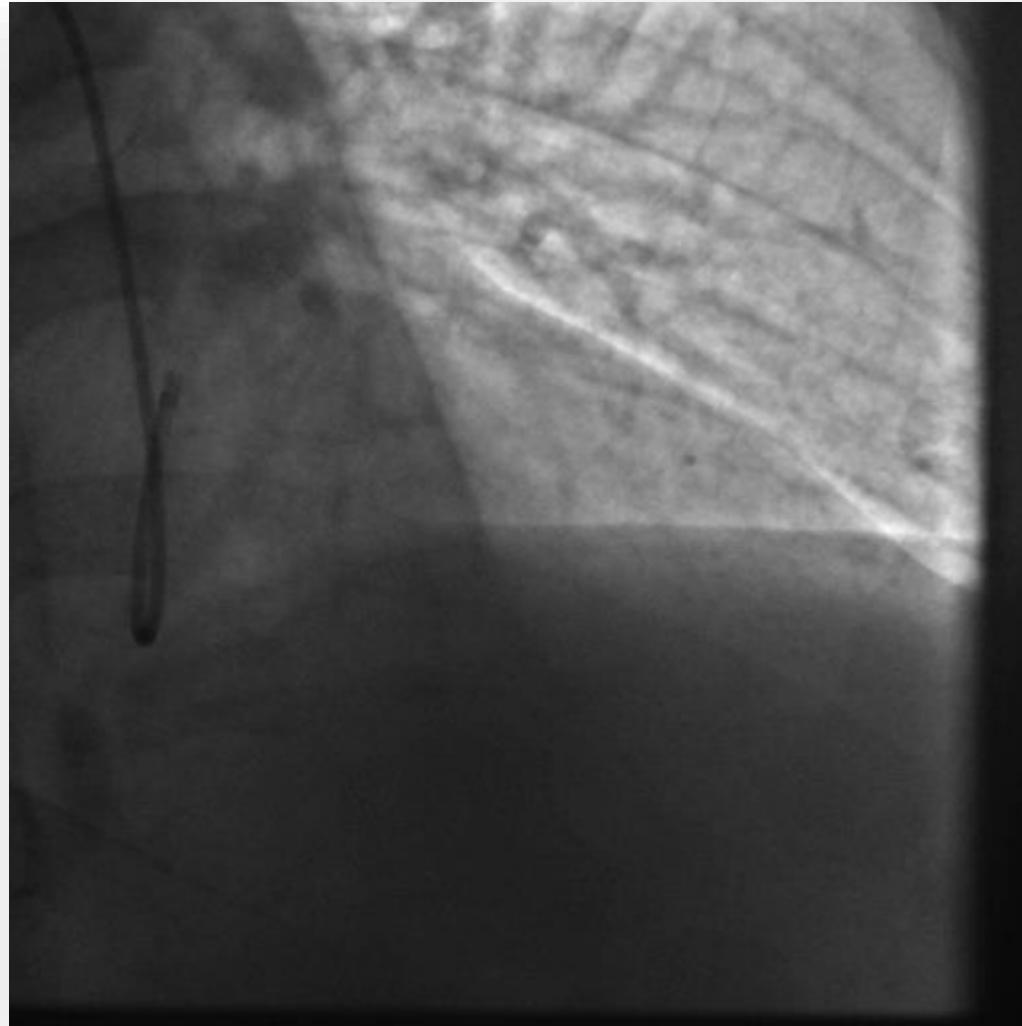
One stent when we can

Optimal strategy for high success rate and low need for SB stenting

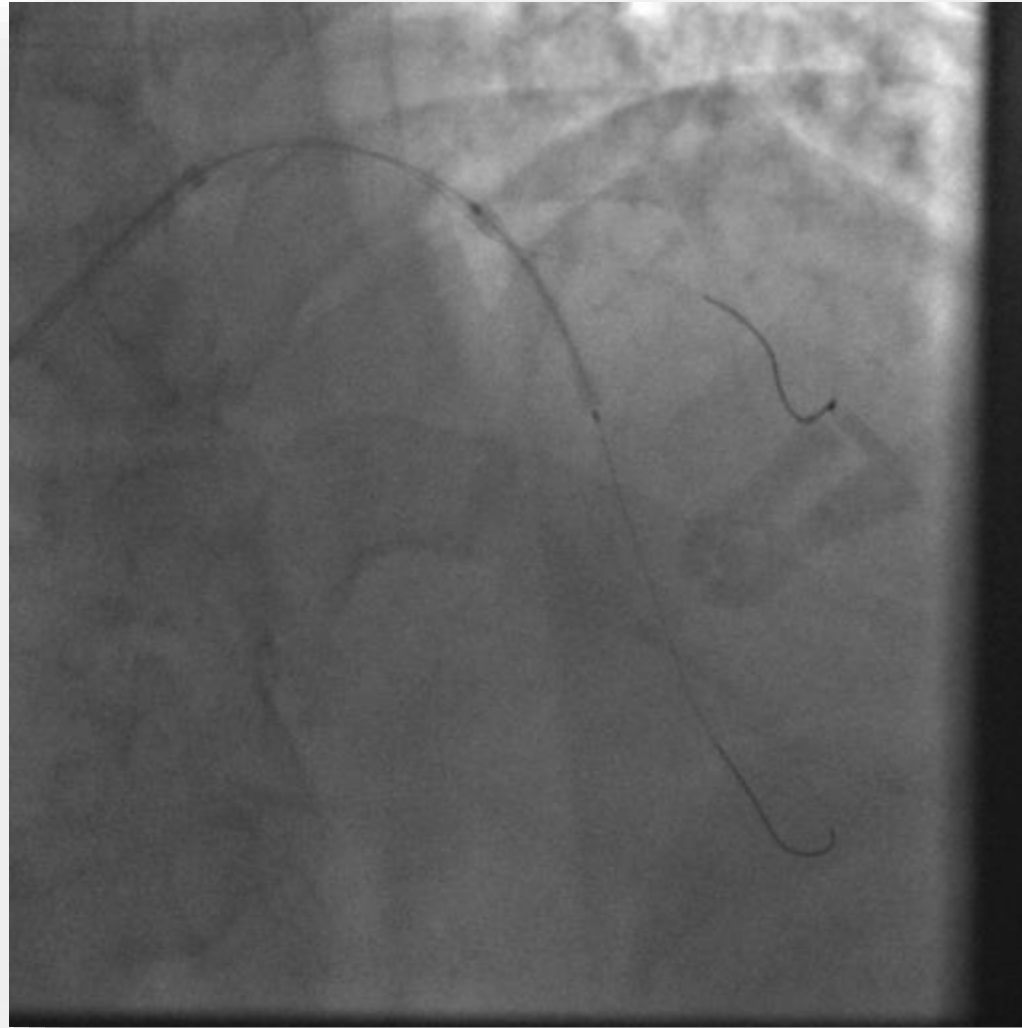
Two stents when needed

Develop strategies to make it easy, safe and effective

1,0,0 1,1,0 0,1,0 Lesions



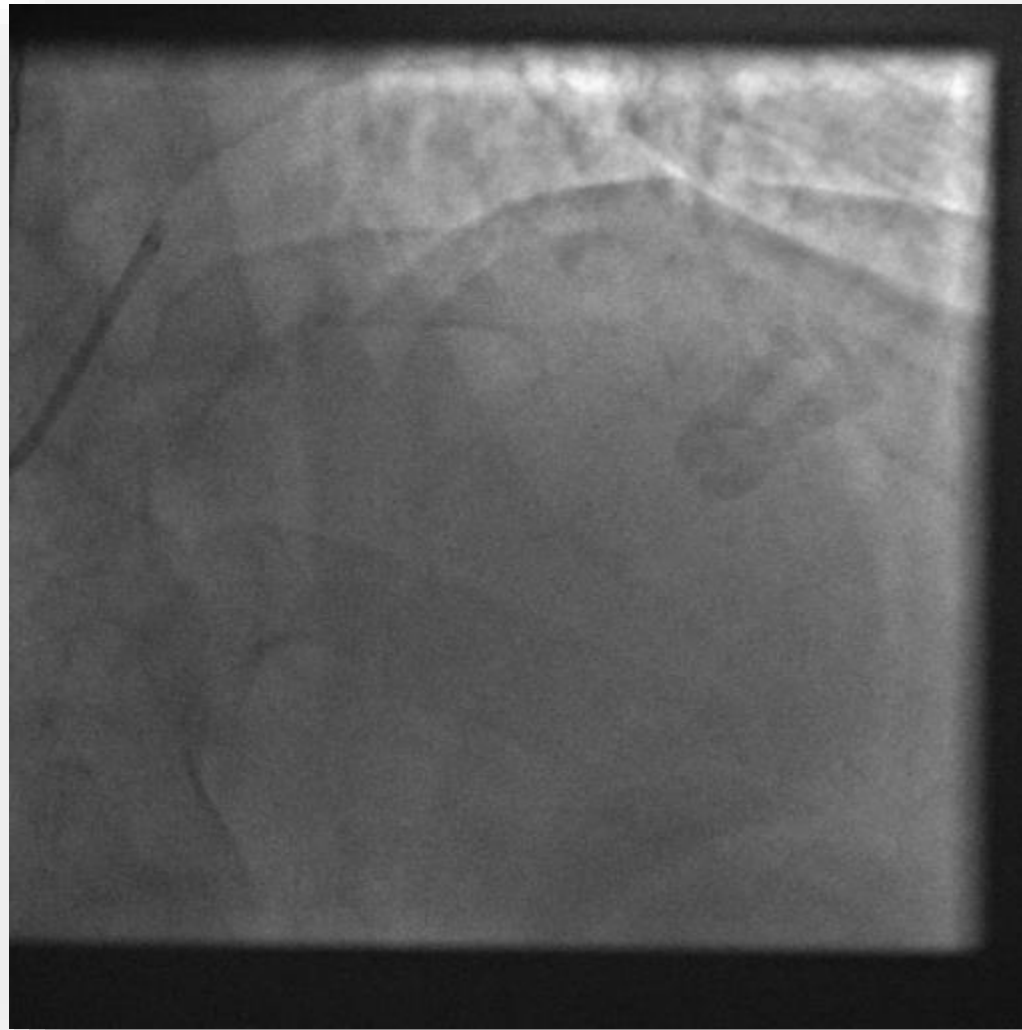
1,0,0 1,1,0 0,1,0 Lesions



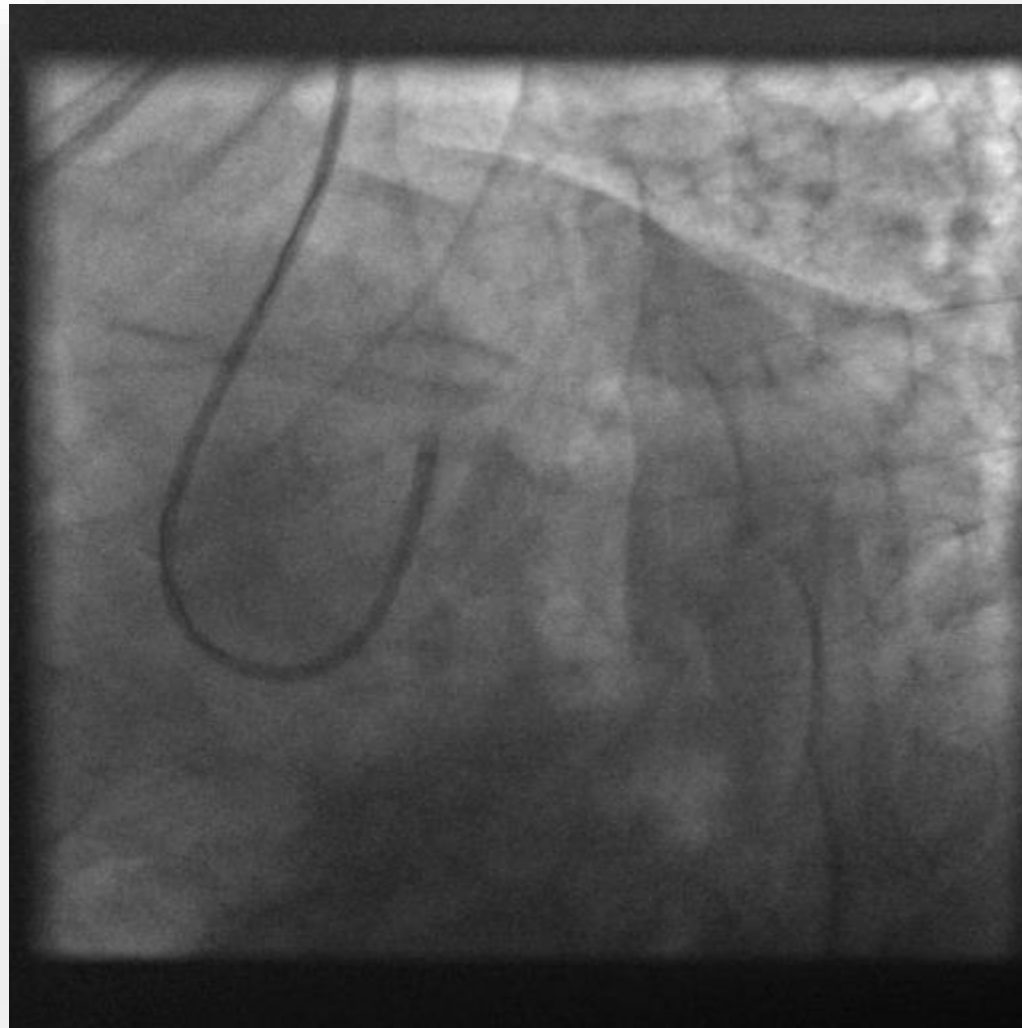
1,0,0 1,1,0 0,1,0 Lesions



1,0,0 1,1,0 0,1,0 Lesions



1,0,0 1,1,0 0,1,0 Lesions



0,1,1 1,01, 1,1,1 Lesions



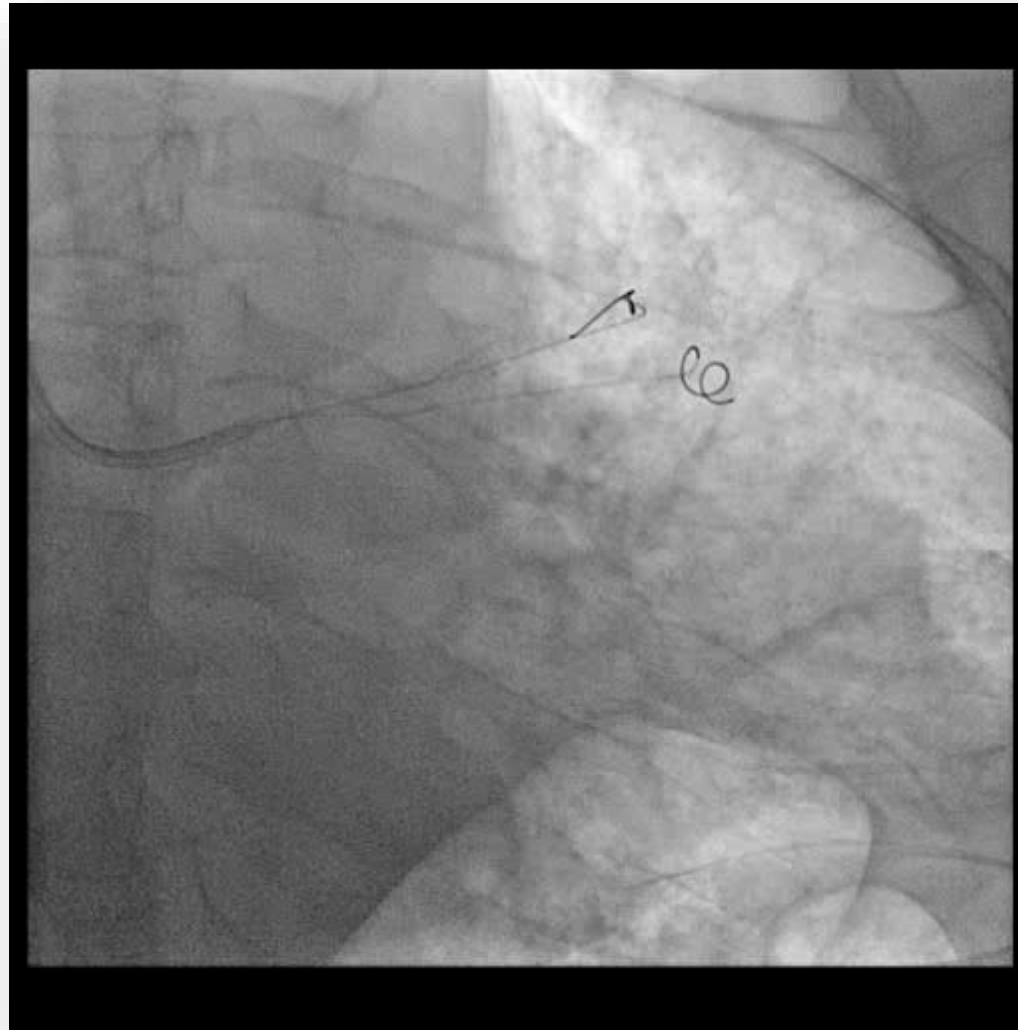
0,1,1 1,0,1 1,1,1 Lesions



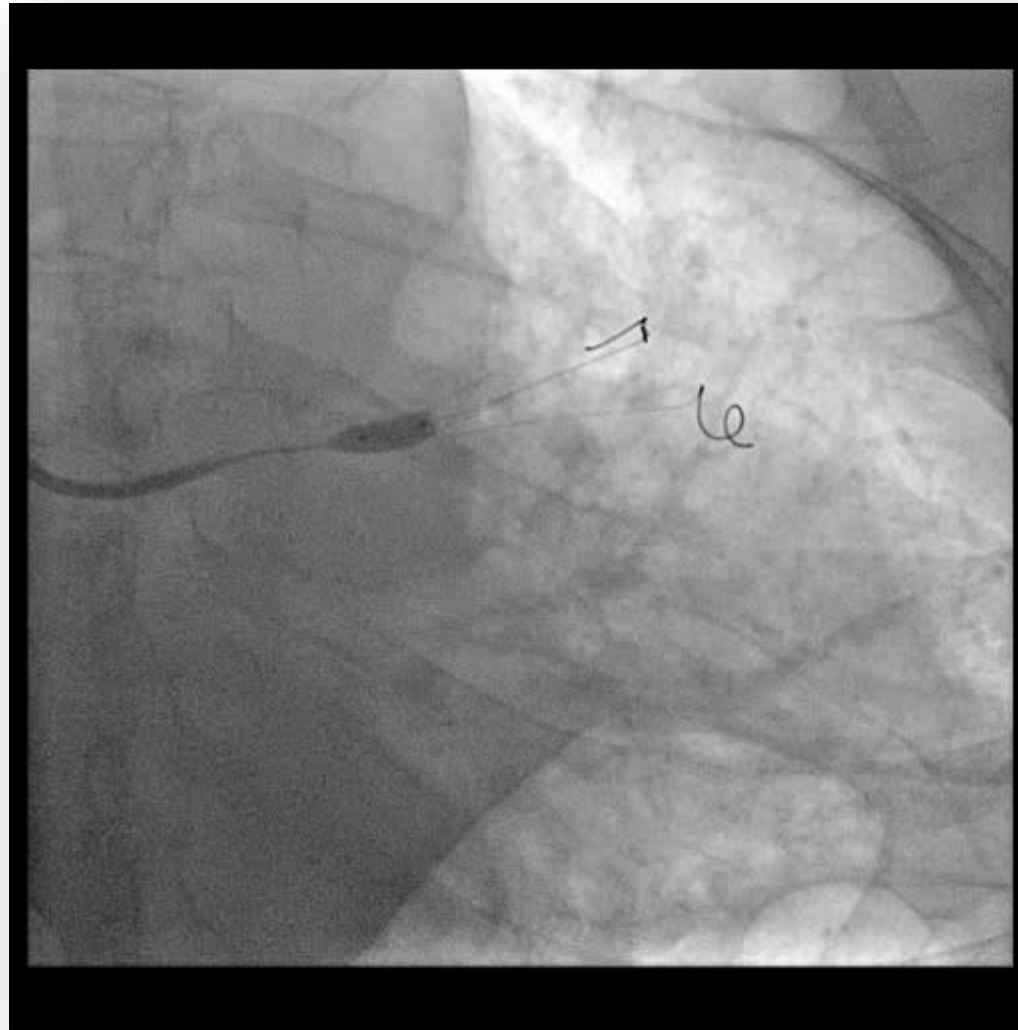
0,1,1 1,0,1 1,1,1 Lesions



0,1,1 1,0,1 1,1,1 Lesions



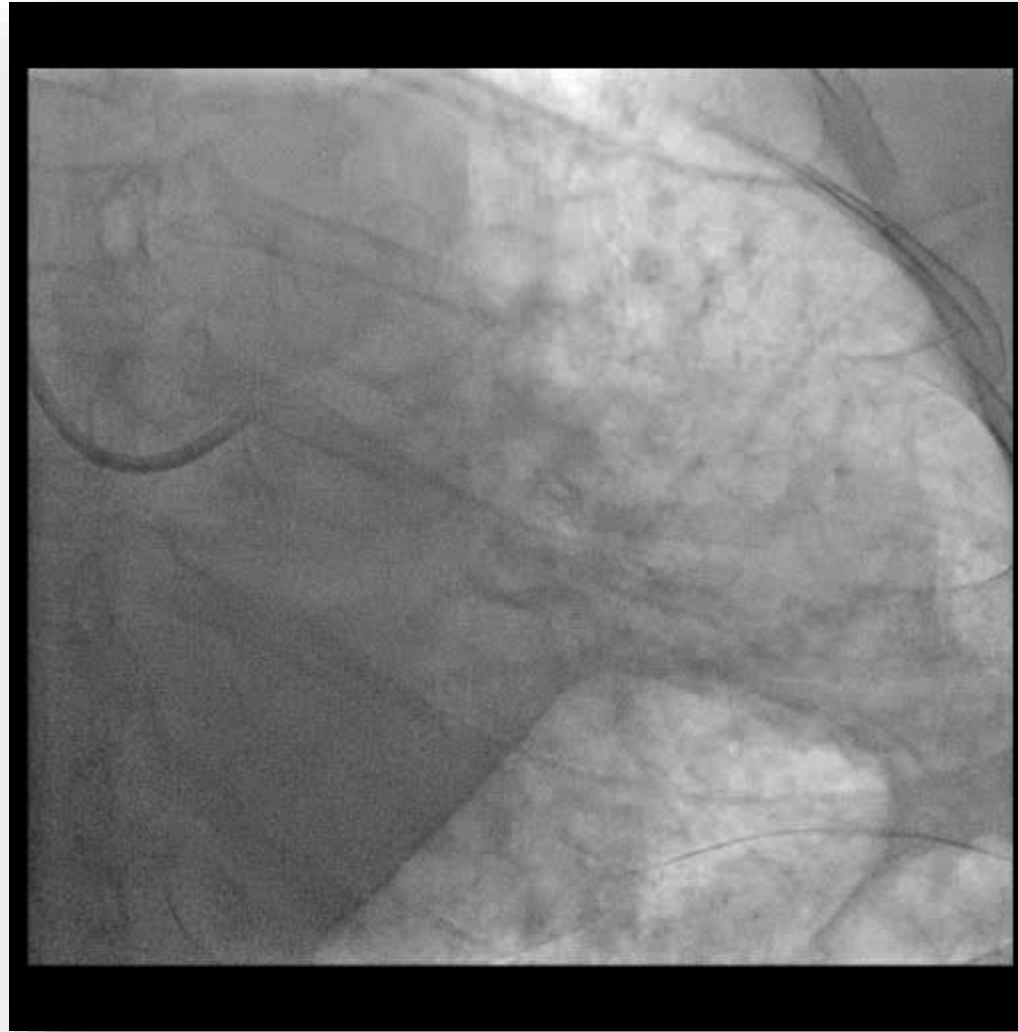
0,1,1 1,0,1 1,1,1 Lesions



0,1,1 1,0,1 1,1,1 Lesions



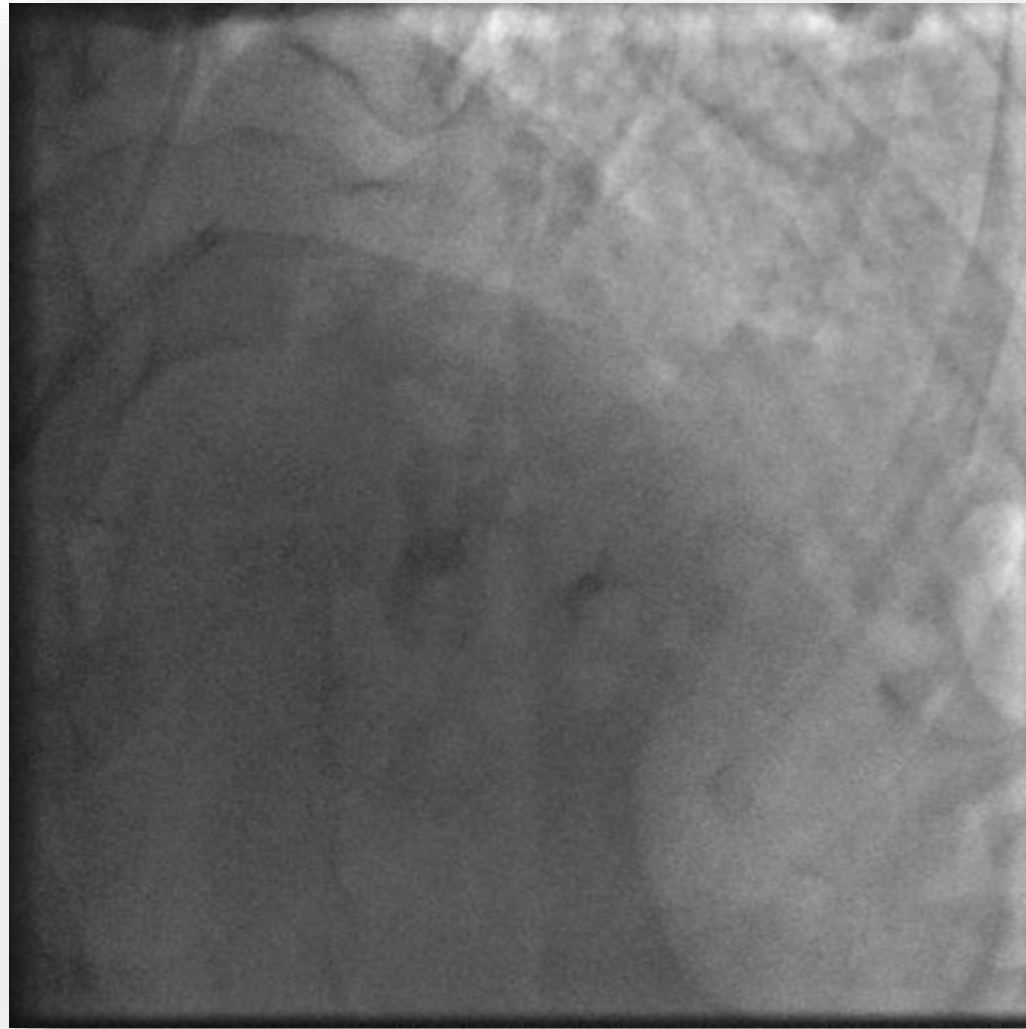
0,1,1 1,0,1 1,1,1 Lesions



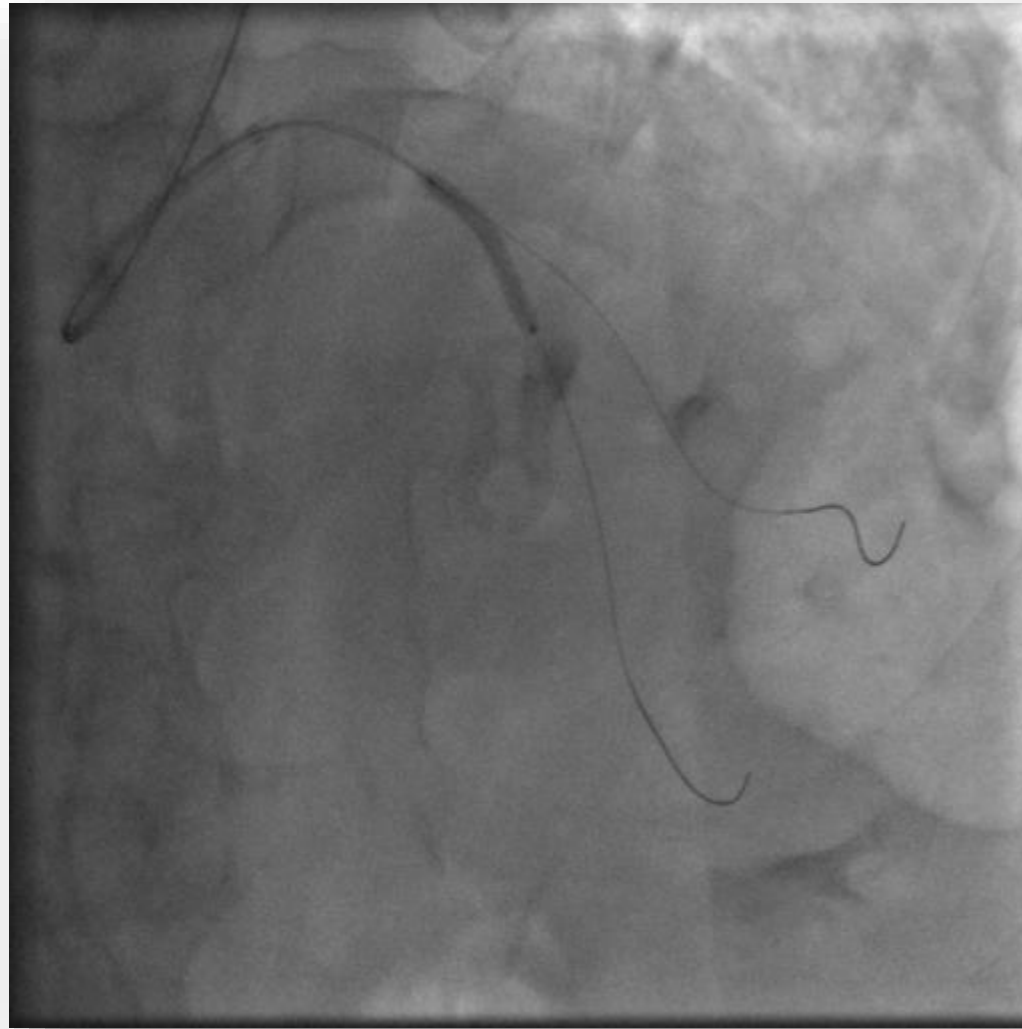
0,1,1 1,0,1 1,1,1 Lesions



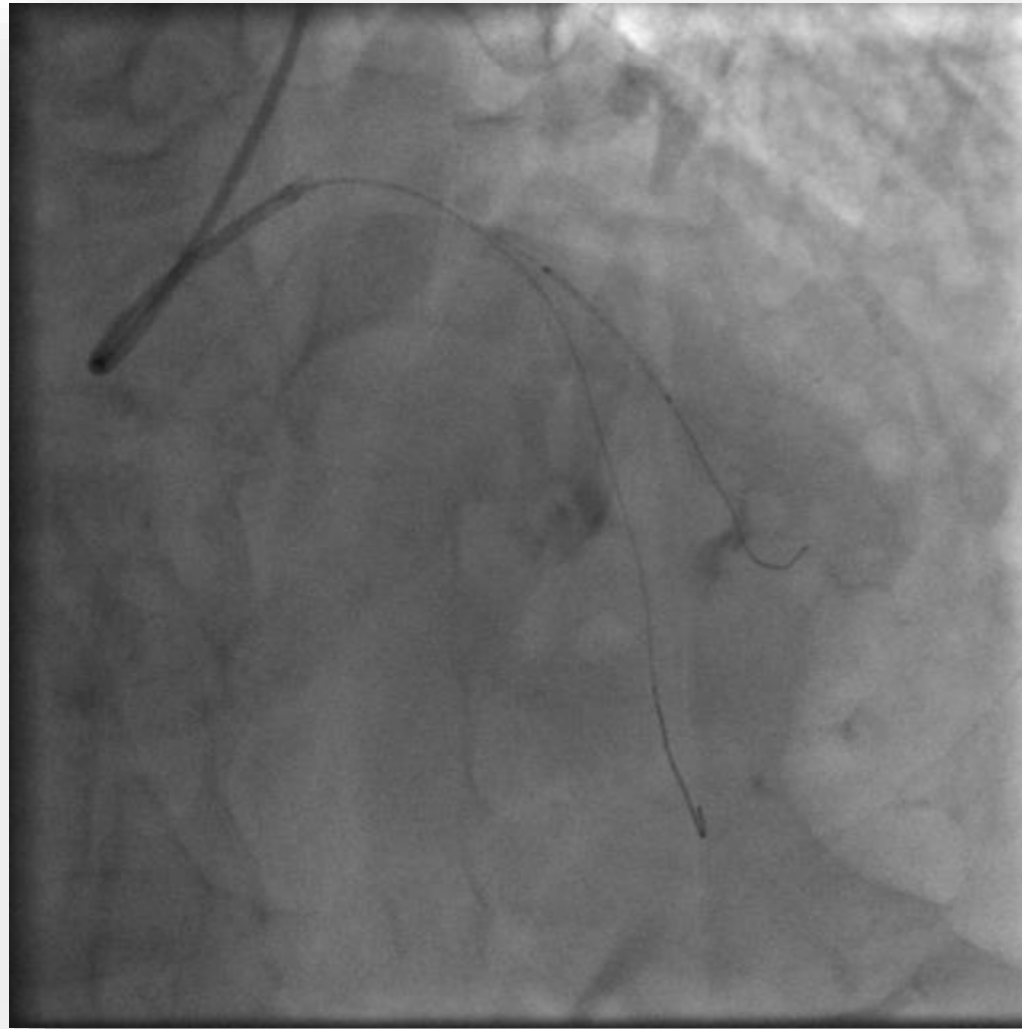
0,1,1 1,0,1 1,1,1 Lesions



0,1,1 1,0,1 1,1,1 Lesions



0,1,1 1,0,1 1,1,1 Lesions



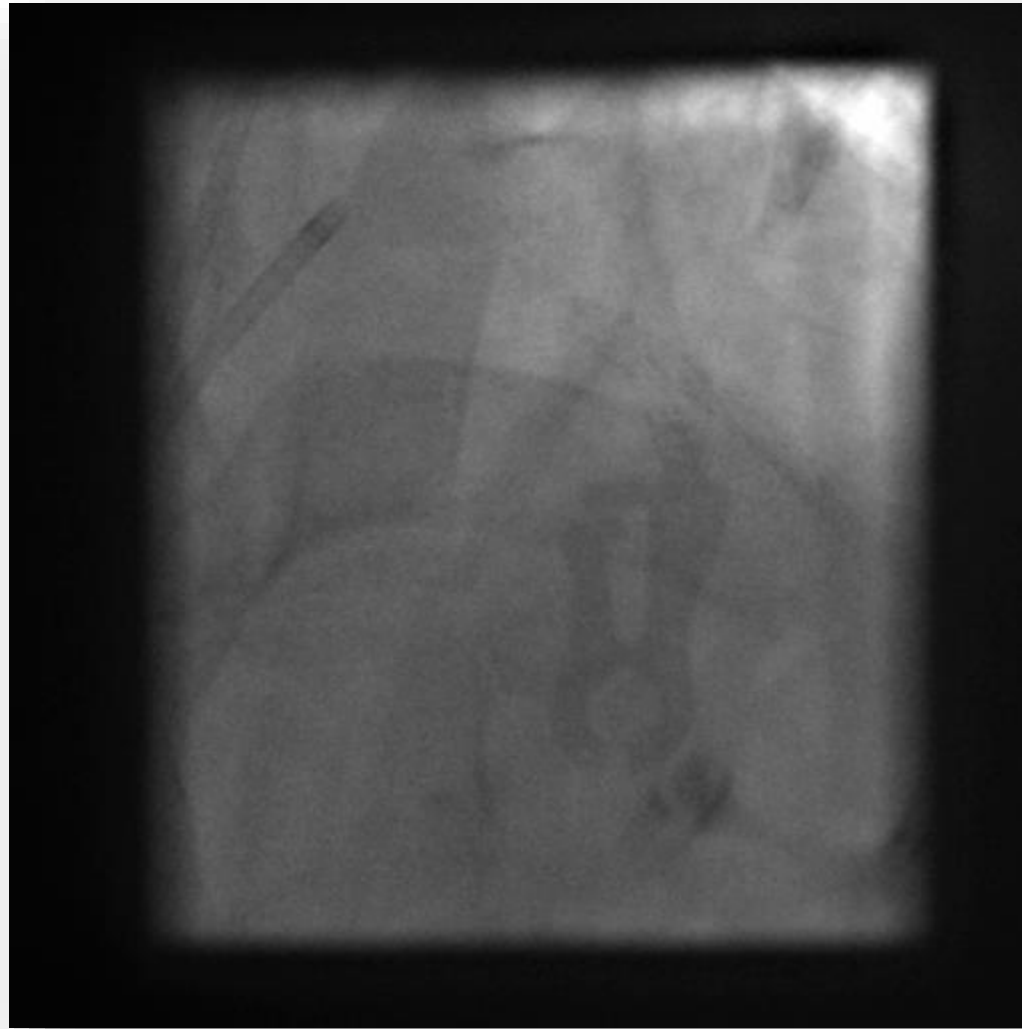
0,1,1 1,0,1 1,1,1 Lesions



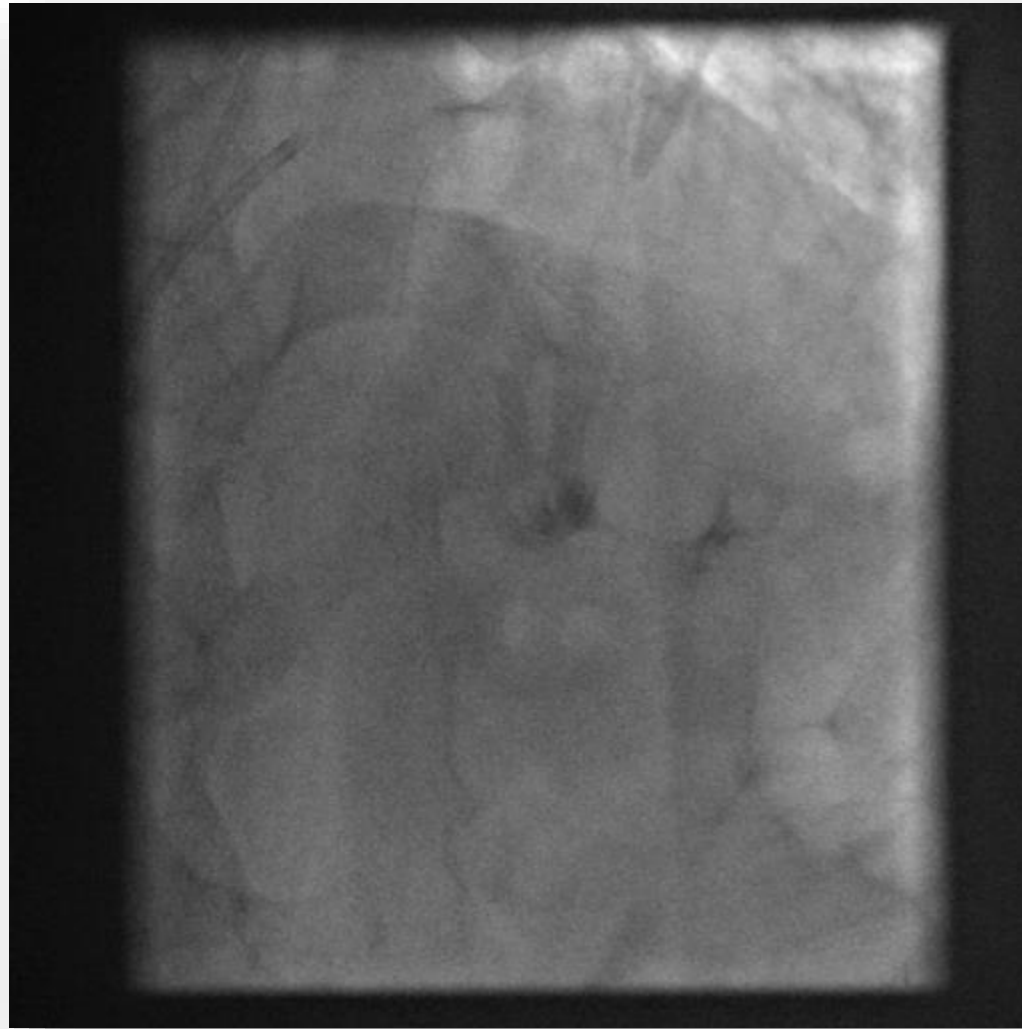
0,1,1 1,0,1 1,1,1 Lesions



0,1,1 1,0,1 1,1,1 Lesions



0,1,1 1,0,1 1,1,1 Lesions



Conclusion

- ✓ Main vessel stenting with provisional SB treatment is the preferred technique for most bifurcation lesions
- ✓ A two-stent technique may be considered up-front for bifurcations with large SB (ref. diameter ≥ 2.75 mm) and significant disease extending more than 5 mm into the SB. This also applies to the left main bifurcation.

Conclusion



- ✓ When a two-stent technique is needed, it can be safely done if the technique is optimal and FKB is performed.
- ✓ The preferred approach is MB stenting first
- ✓ SB stenting first may be used for safety reasons when SB access is challenging.



For more information:

EBC consensus, Eurointervention (2004 to 2014)

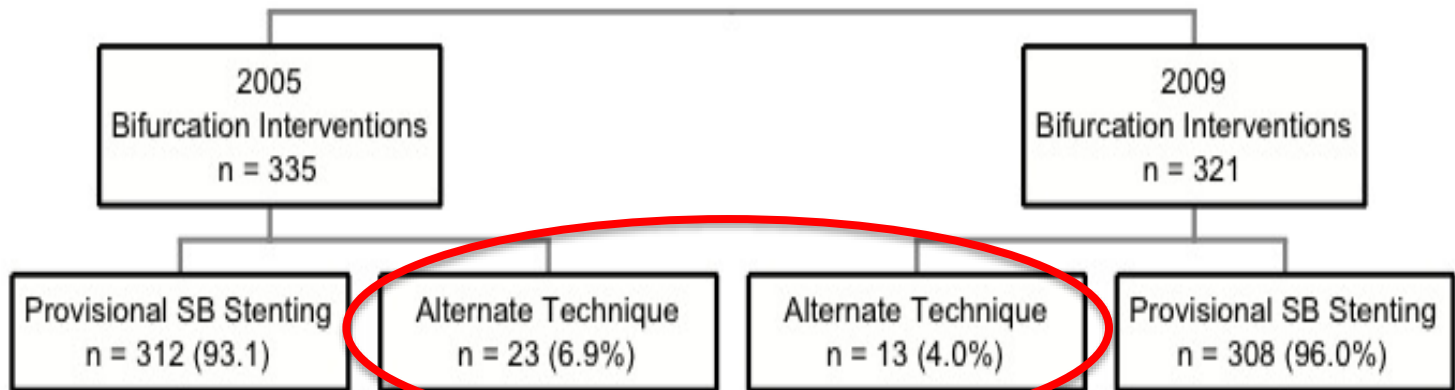
Bifurcation supplement, Eurointervention 2011

Updated bifurcation chapter, PCR-EAPCI textbook 2014

Back up slides

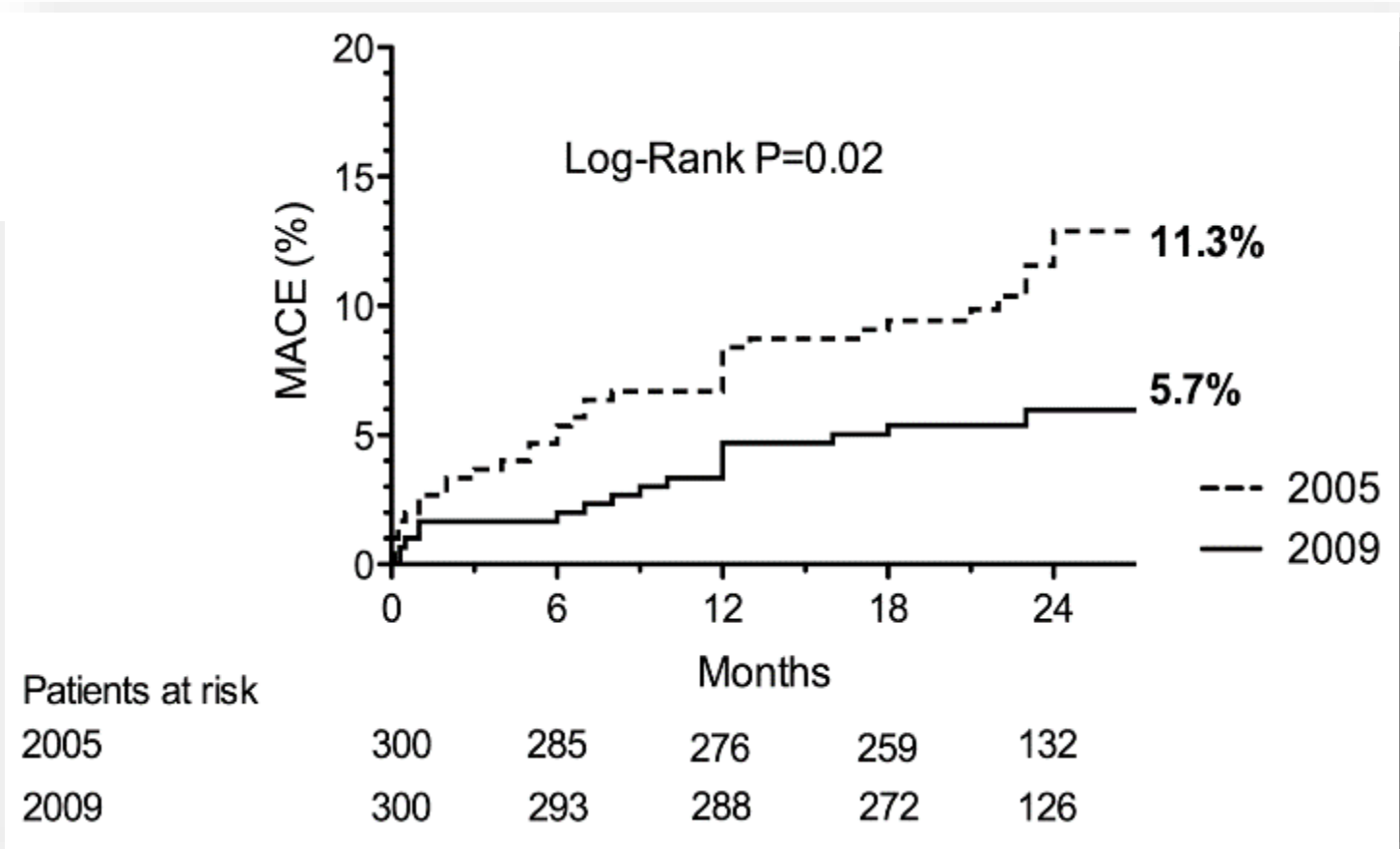
Provisional SB stenting (2009 vs 2005)

2-years Outcome



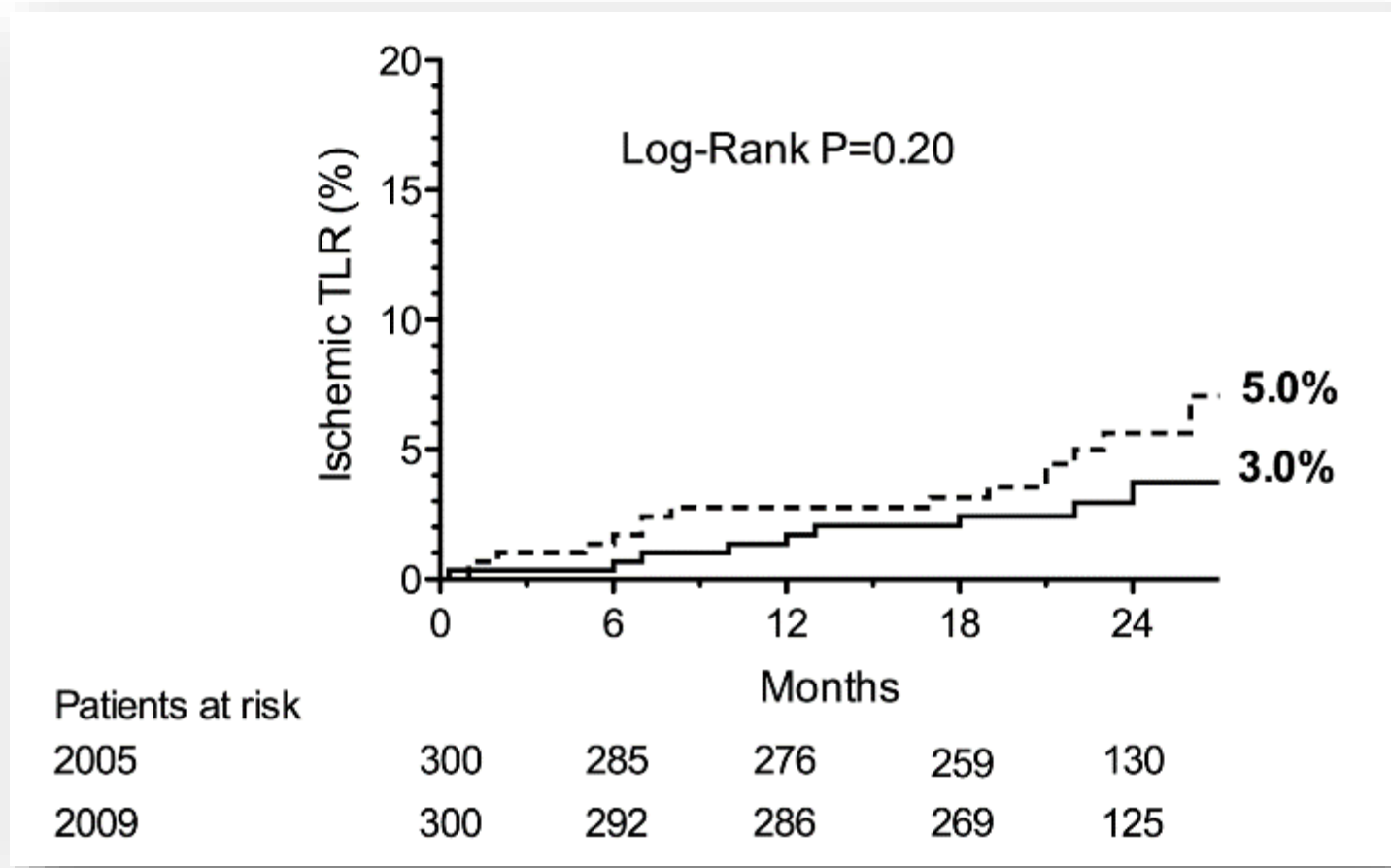
Provisional SB stenting (2009 vs 2005)

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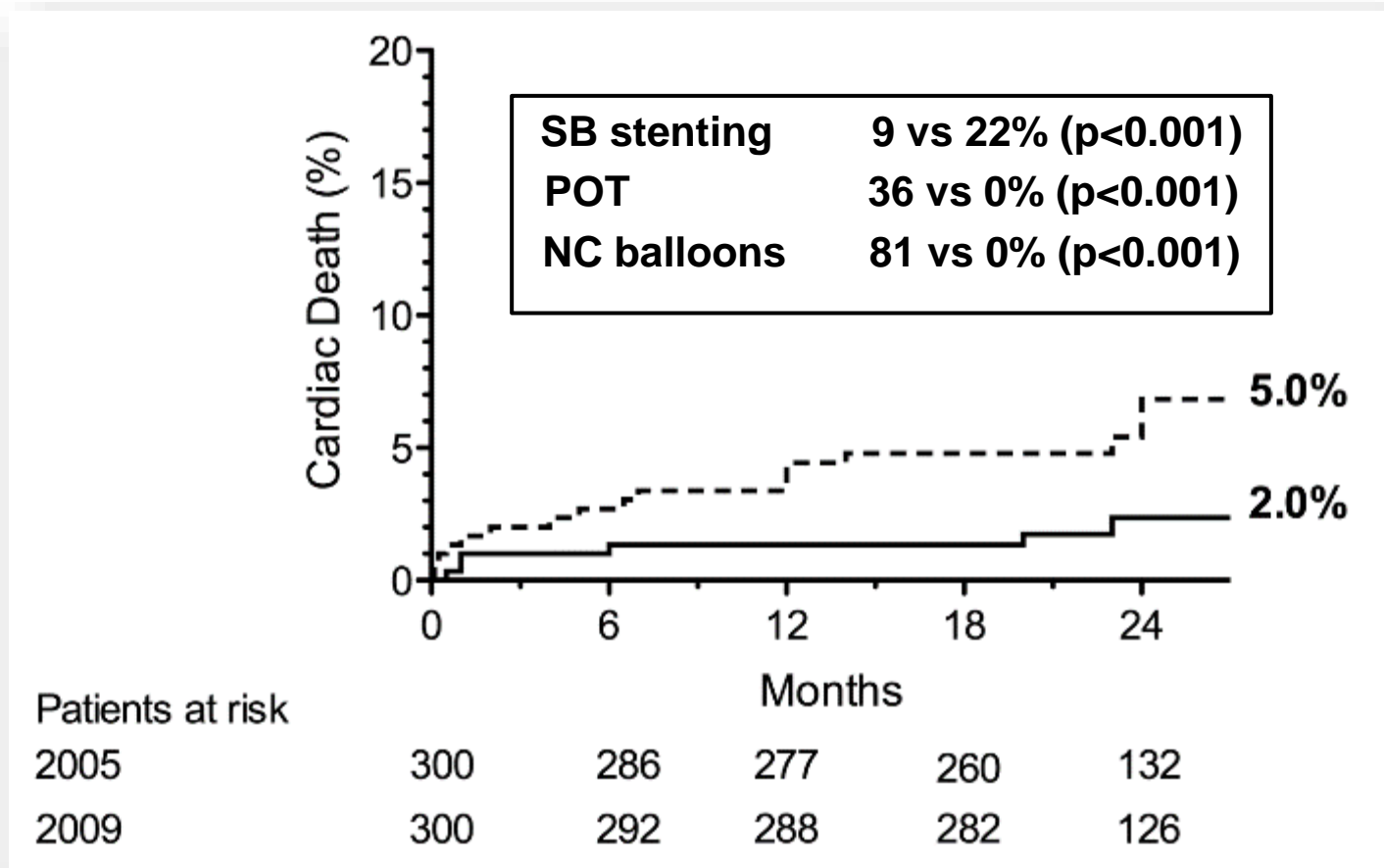
Provisional SB stenting (2009 vs 2005)

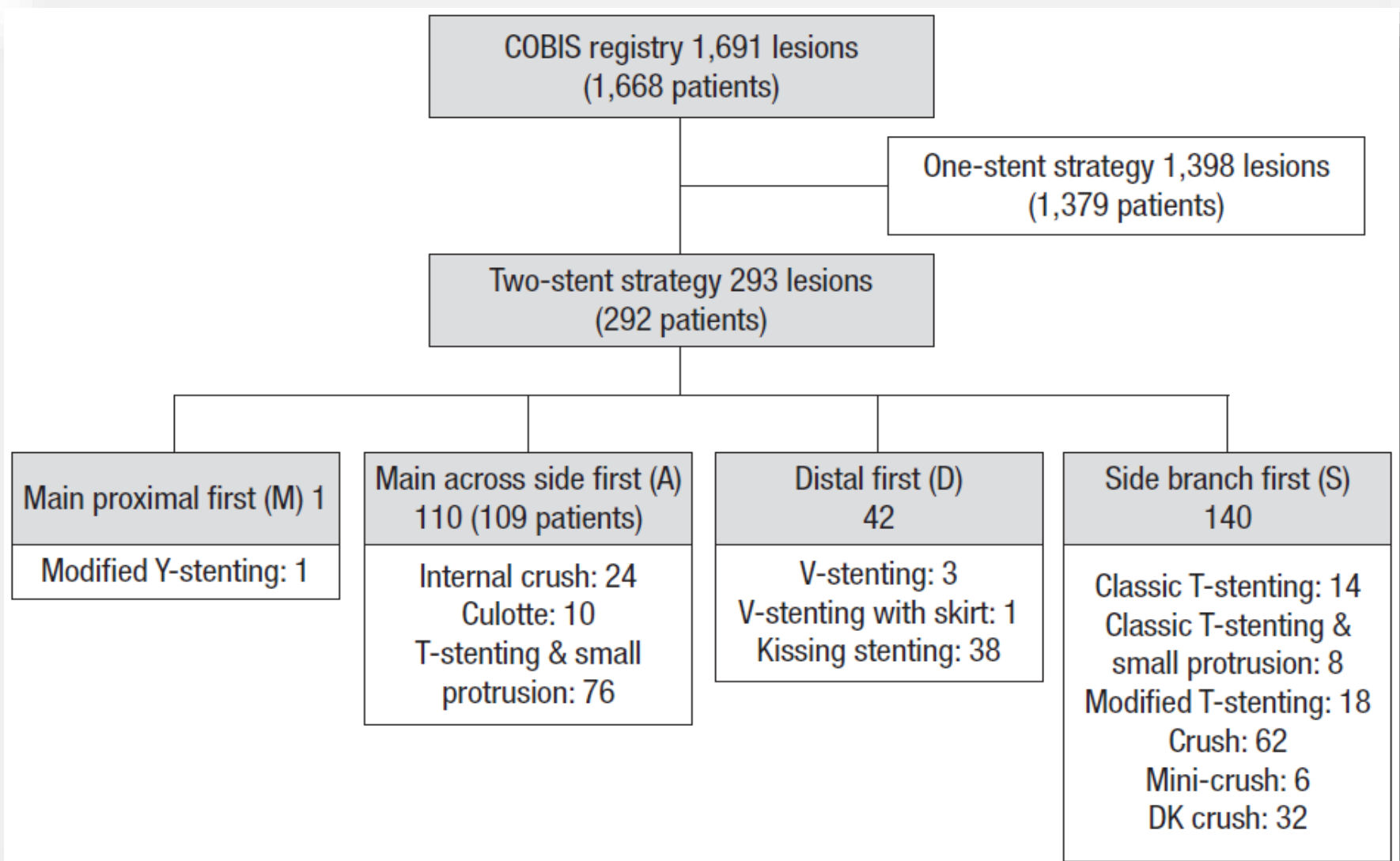
2-years Outcome



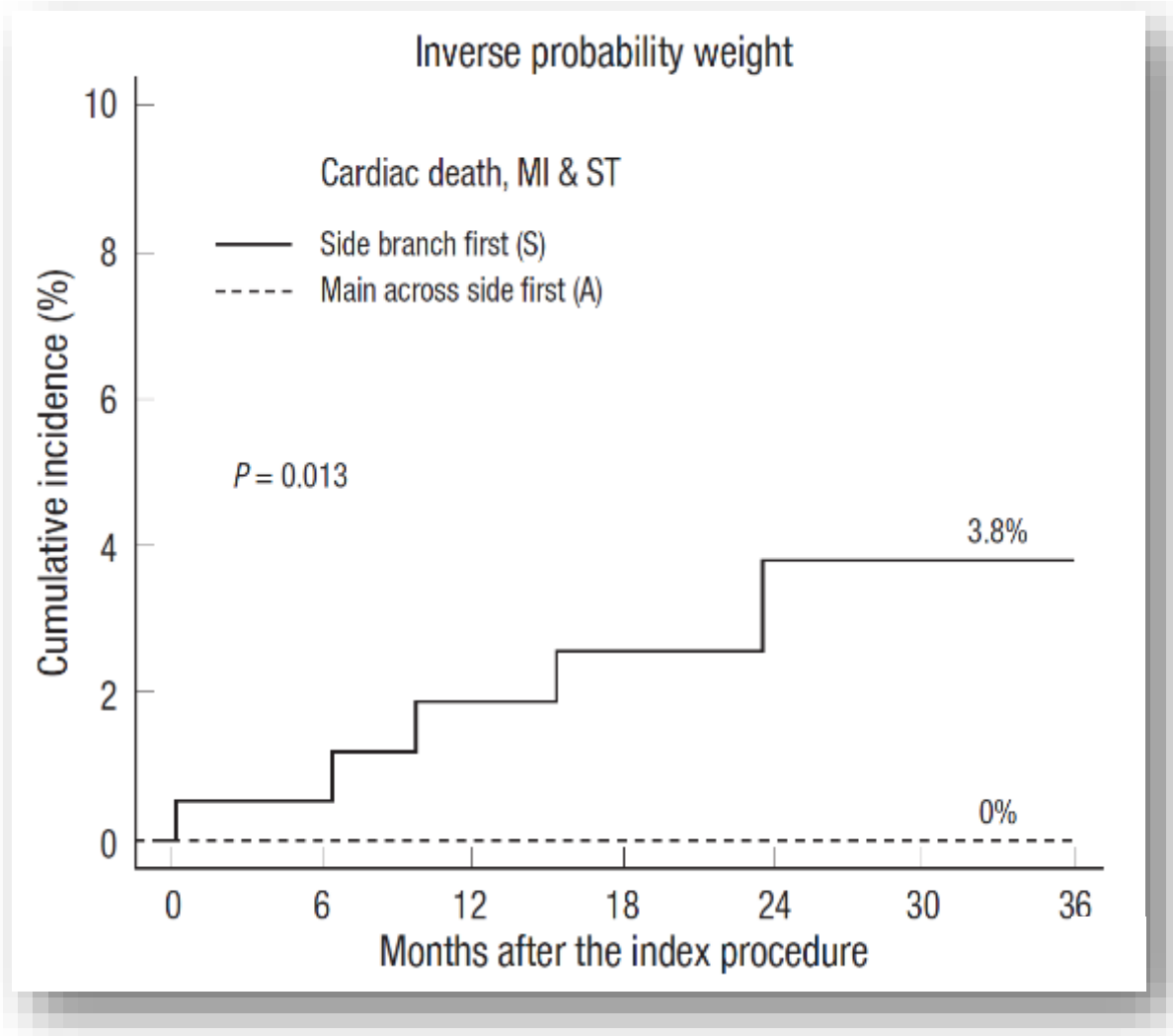
Provisional SB stenting (2009 vs 2005)

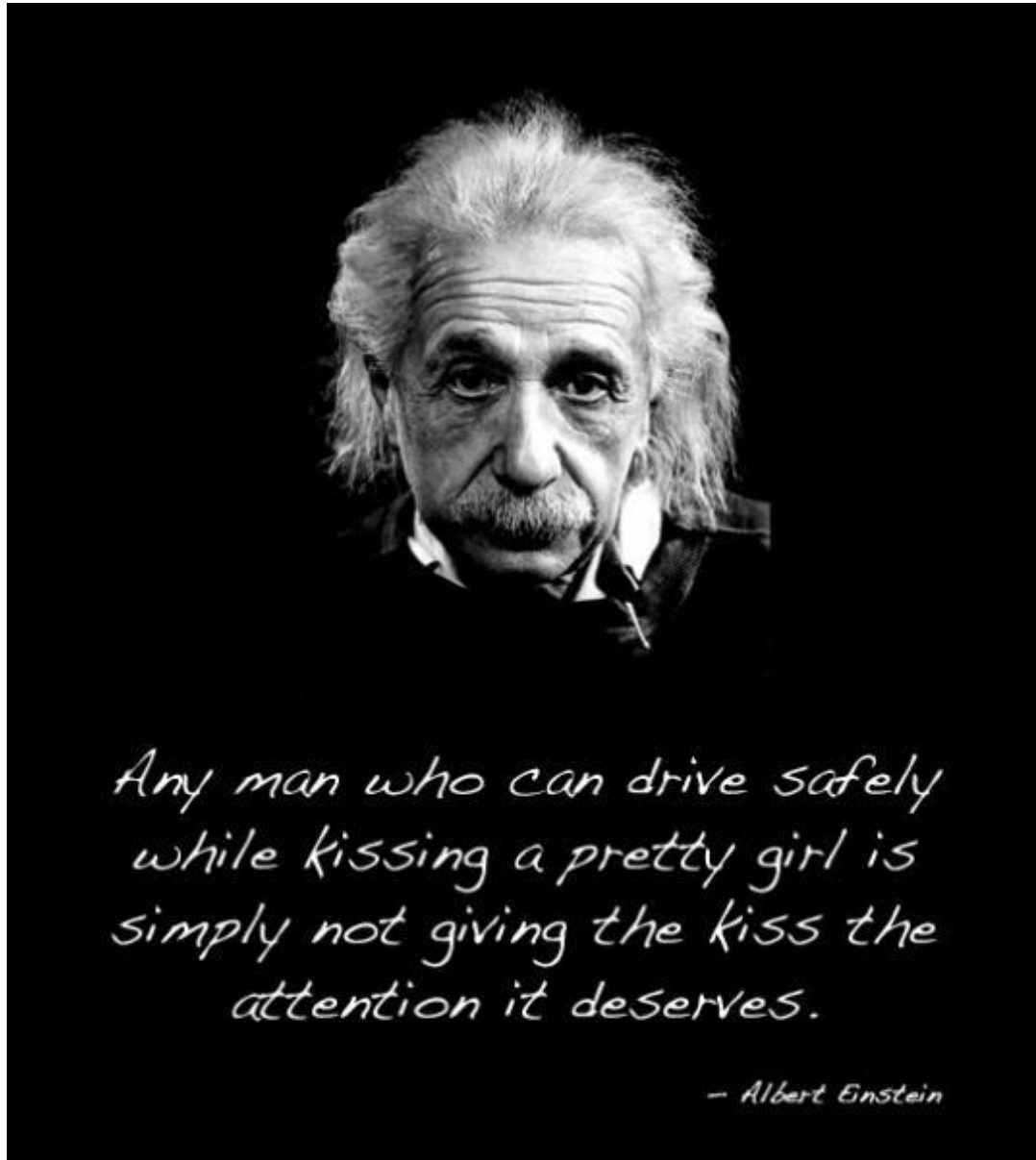
2-years Outcome





Provisional vs SB first





Kissing Recommendations

- ✓ Optional for simple techniques
- ✓ Obligatory for complex techniques
- ✓ SB inflated first
- ✓ Short balloons
- ✓ NC Balloons
- ✓ Long inflations

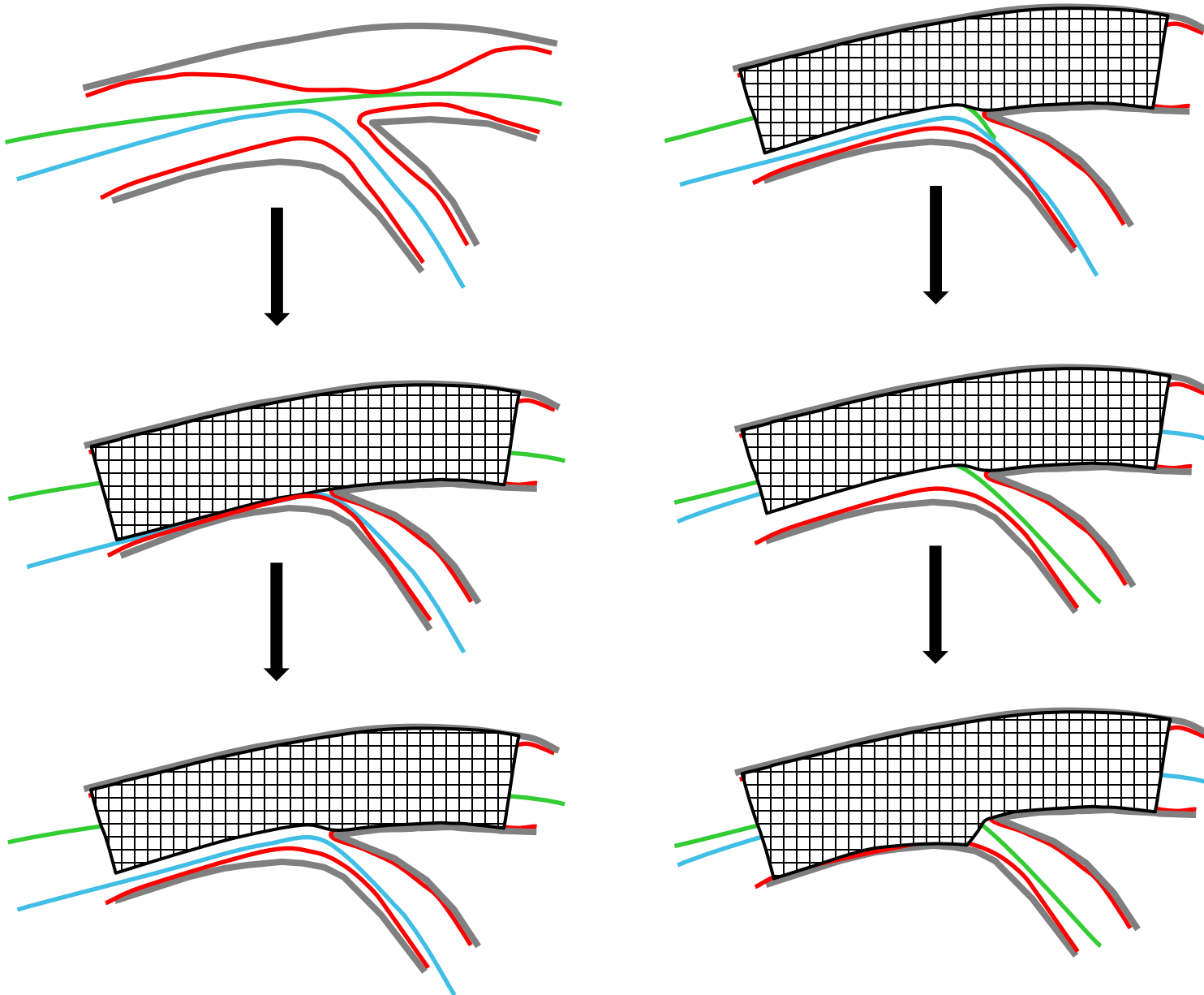
Start with 2 Wires

- ✓ Keep the SB open ?*
- ✓ Good Marker of the SB ostium
- ✓ Modified favorably the angle between MB and SB**
- ✓ Not working with 2 wires is a predictor of SB occlusion***
- ✓ Decrease the risk of TVR ***

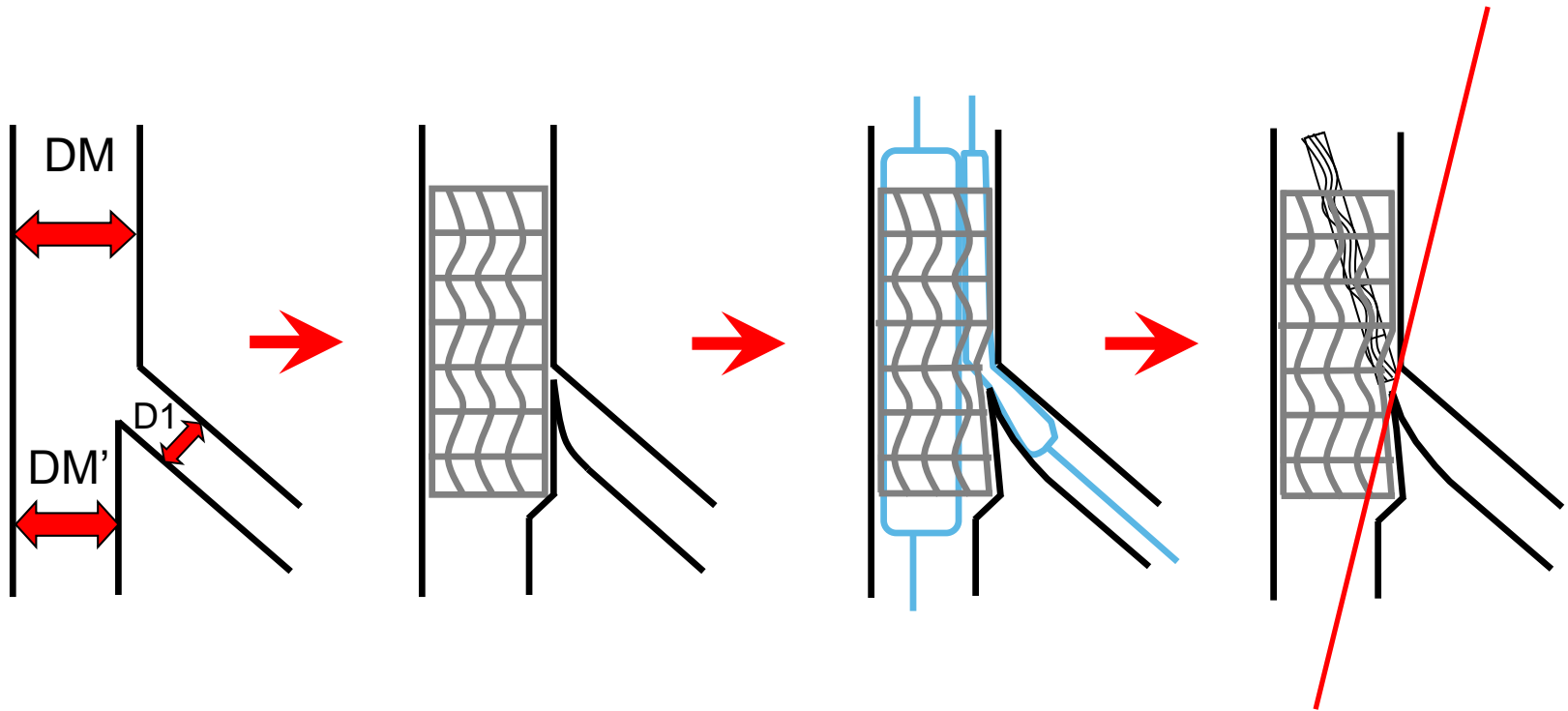
Colombo et al. personal communication, TCT 2008

*** Louvard et al. TCT 2003*

**** Brunel et al. TULIP Study, CCVI 2006*



The 3 Diameters Rule



The 3 Diameters Rule

