

JAT 9/09/2023



Ballons actifs

Dr DROGOUL Laurent
Polyclinique St George Nice
Centre Cardio-Thoracique Monaco

1977

1. Balloon (PTCA):

Andreas Gruntzig performs the first PTCA in Zurich, Switzerland

1988

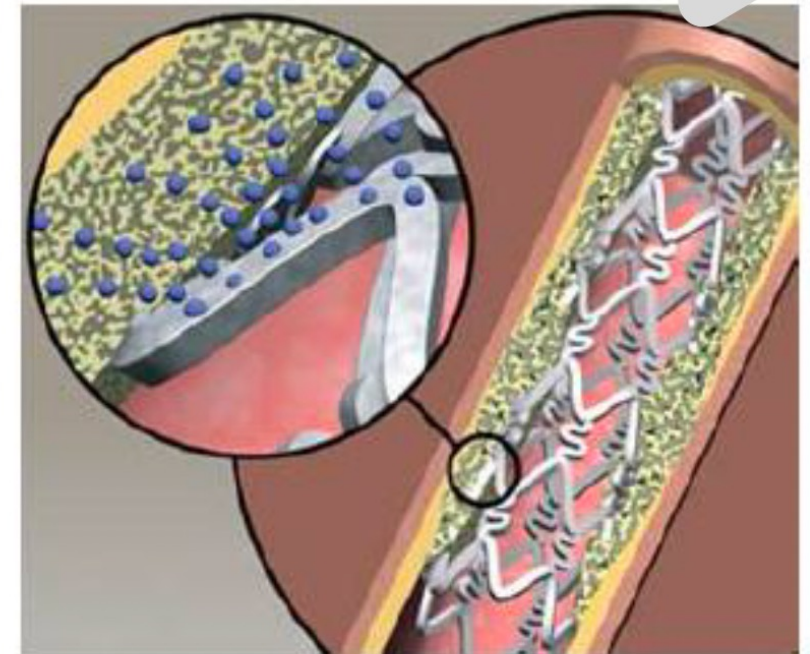
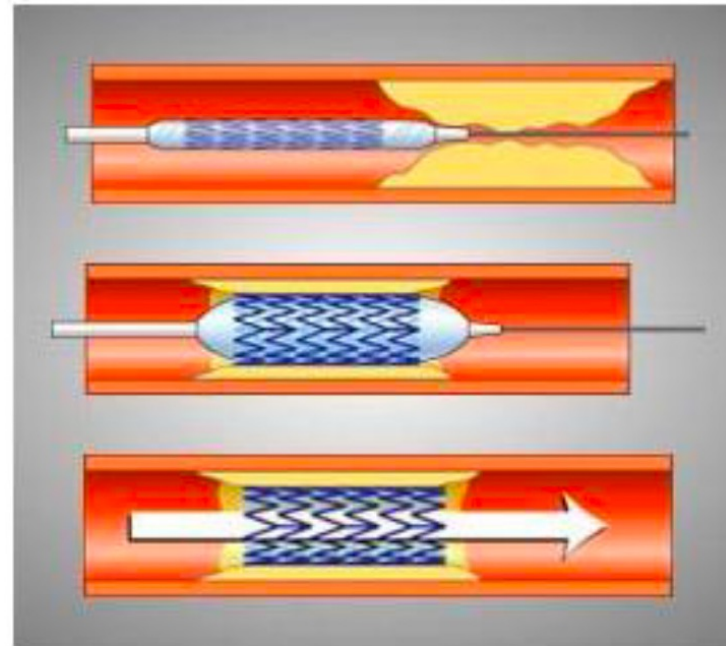
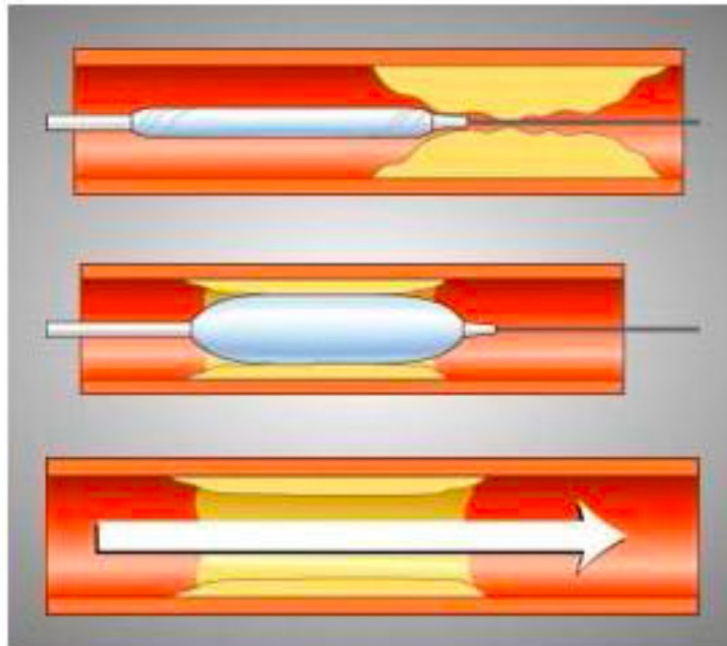
2. Bare Metal Stent (BMS):

Julio Palmaz and Richard Schatz develop a stainless steel stent for coronary applications

2002 - 2003

3. Drug-eluting stents (DES):

introduced to the European and U.S. markets

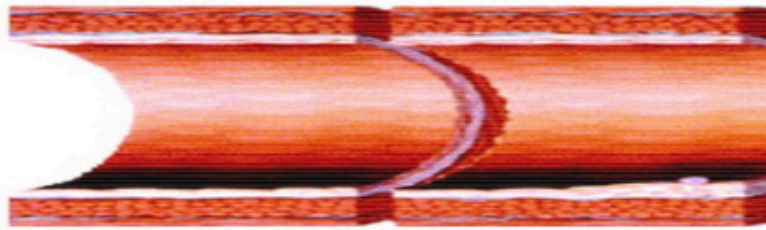


Without Drug Coating

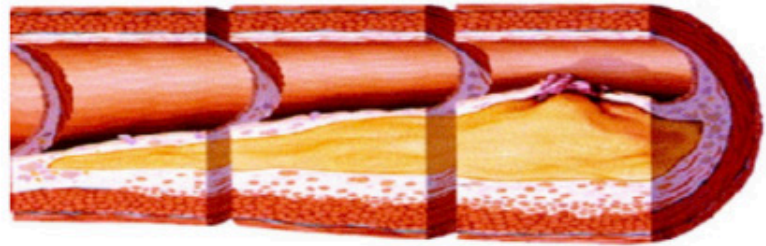


With Drug Coating

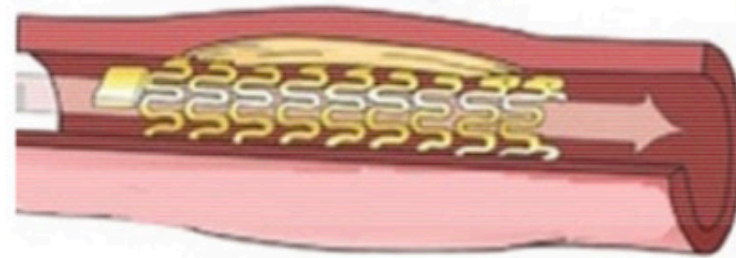




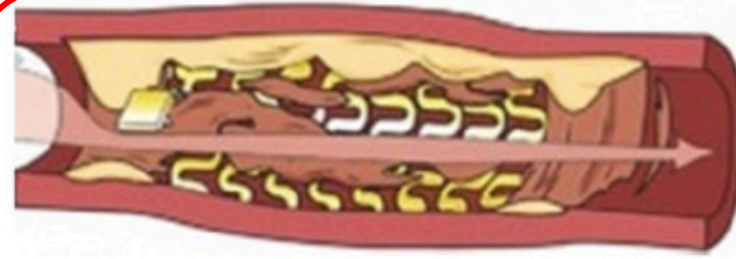
Normal artery



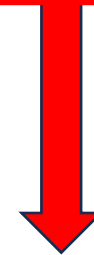
Artery with plaque



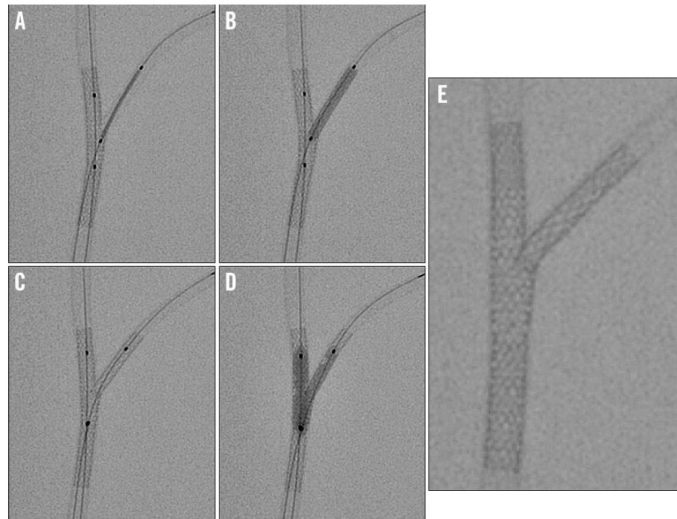
Normal stented artery



ISR stented artery

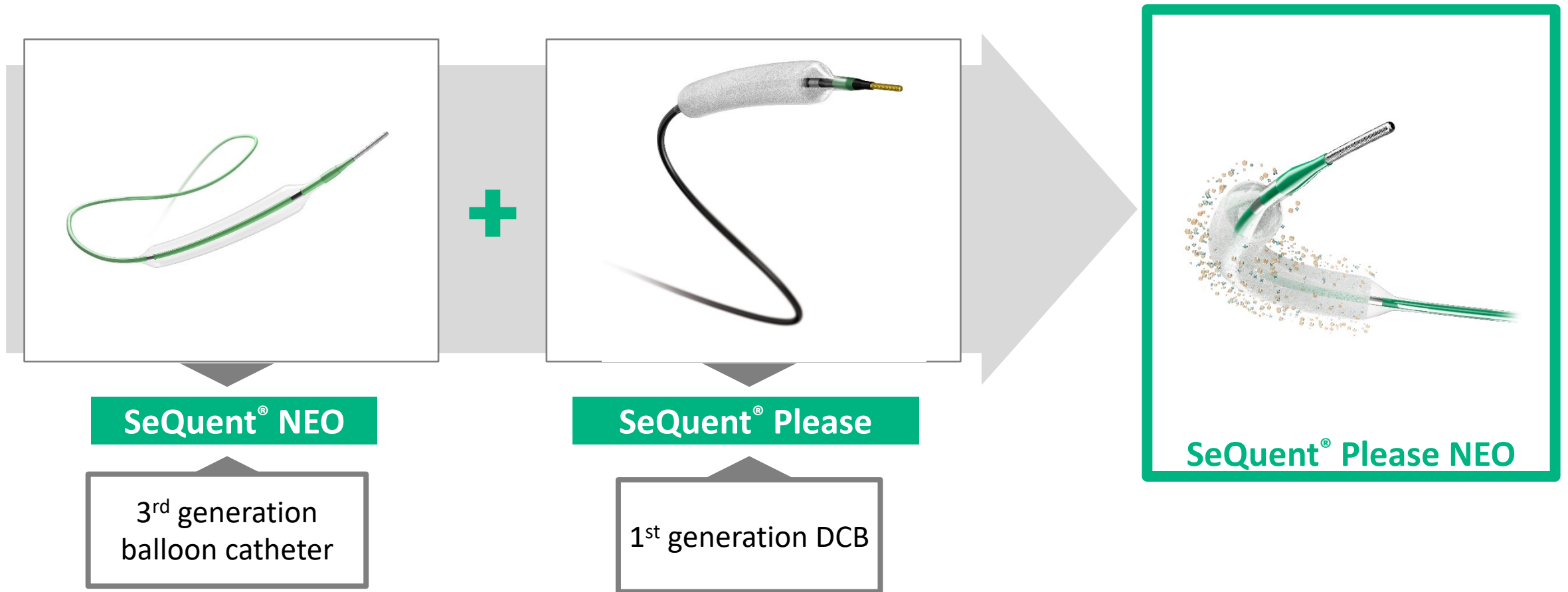


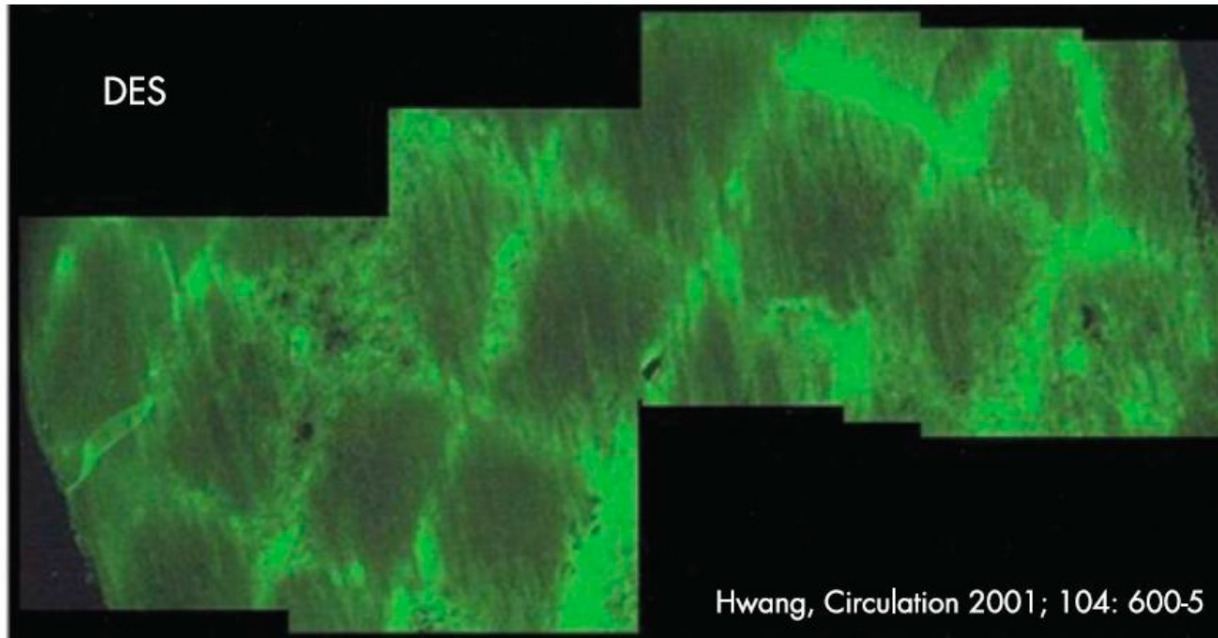
Petits vaisseaux
Lésions longues
Bifurcation montage 2 stents



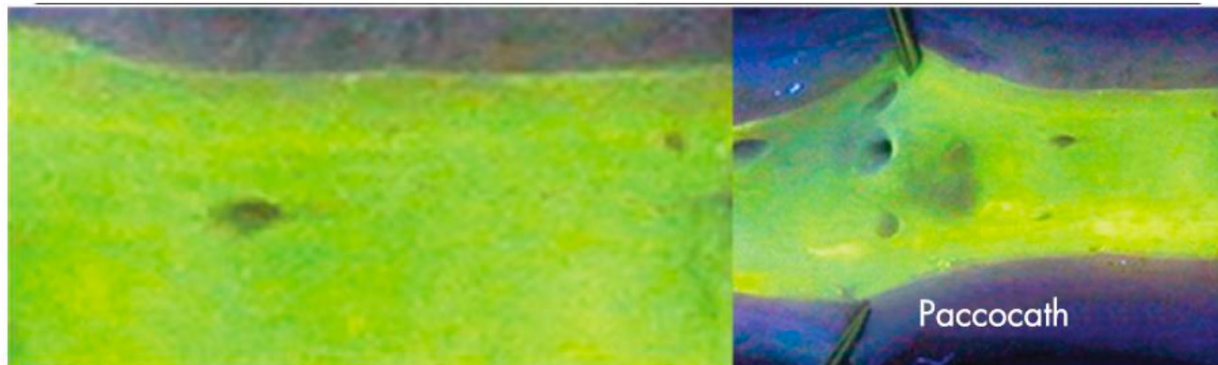


Concept for 2nd Generation DCB





- ⇒ **Drug-Eluting Stent**
- Slow release
 - Persistent drug exposure
 - ~ 100 - 200 μg dose
 - Polymer
 - Stent mandatory



- ⇒ **Drug-Coated Balloon**
- Immediate release
 - Short-lasting exposure
 - ~ 300 - 600 μg dose
 - No polymers

In-Stent
Restenosis

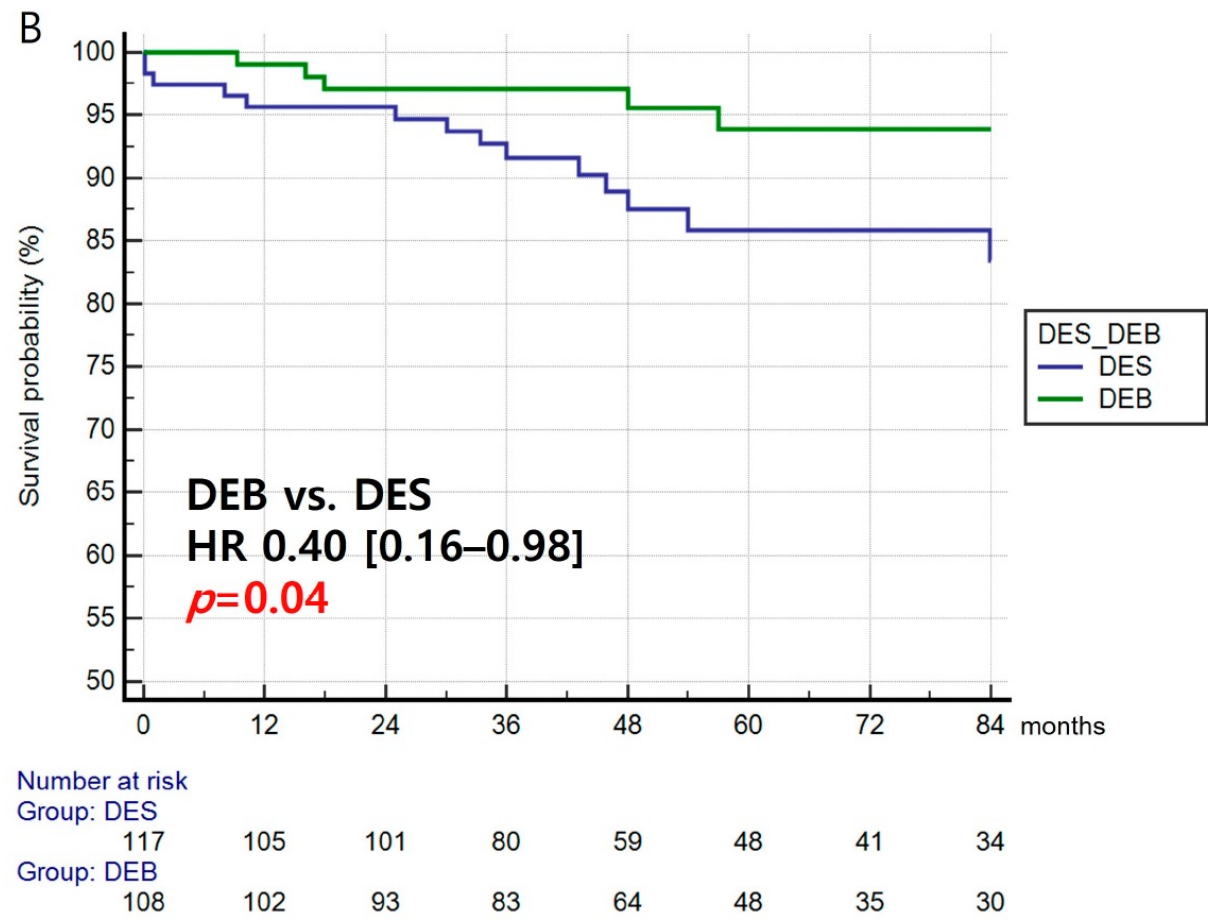
Small Vessel
Disease

Bifurcation
Lesions

De-Novo
Coronary
Lesions

Comparison of 7-Year, Real-World Clinical Outcomes between Drug-Coated Balloon Angioplasty versus Drug-Eluting Stent Implantation in Patients with Drug-Eluting Stent In-Stent Restenosis






Minsu Kim, Albert Youngwoo Jang , Joonpyo Lee, Jeongduk Seo, Yong Hoon Shin, Pyung Chun Oh, Soon Yong Suh , Kyoungcheon Lee, Woong Chol Kang  and Seung-Hwan Han *



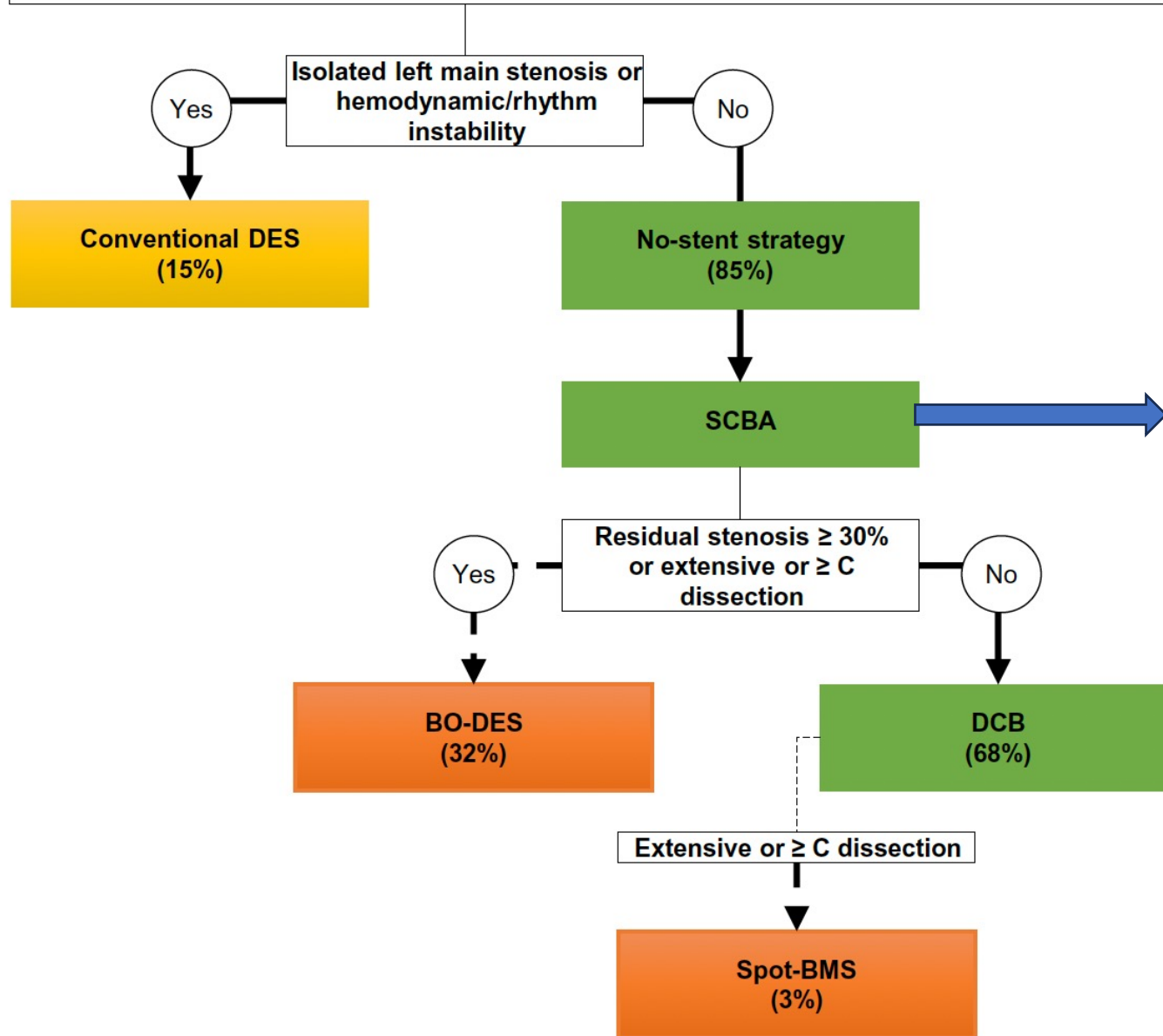
5. Conclusions

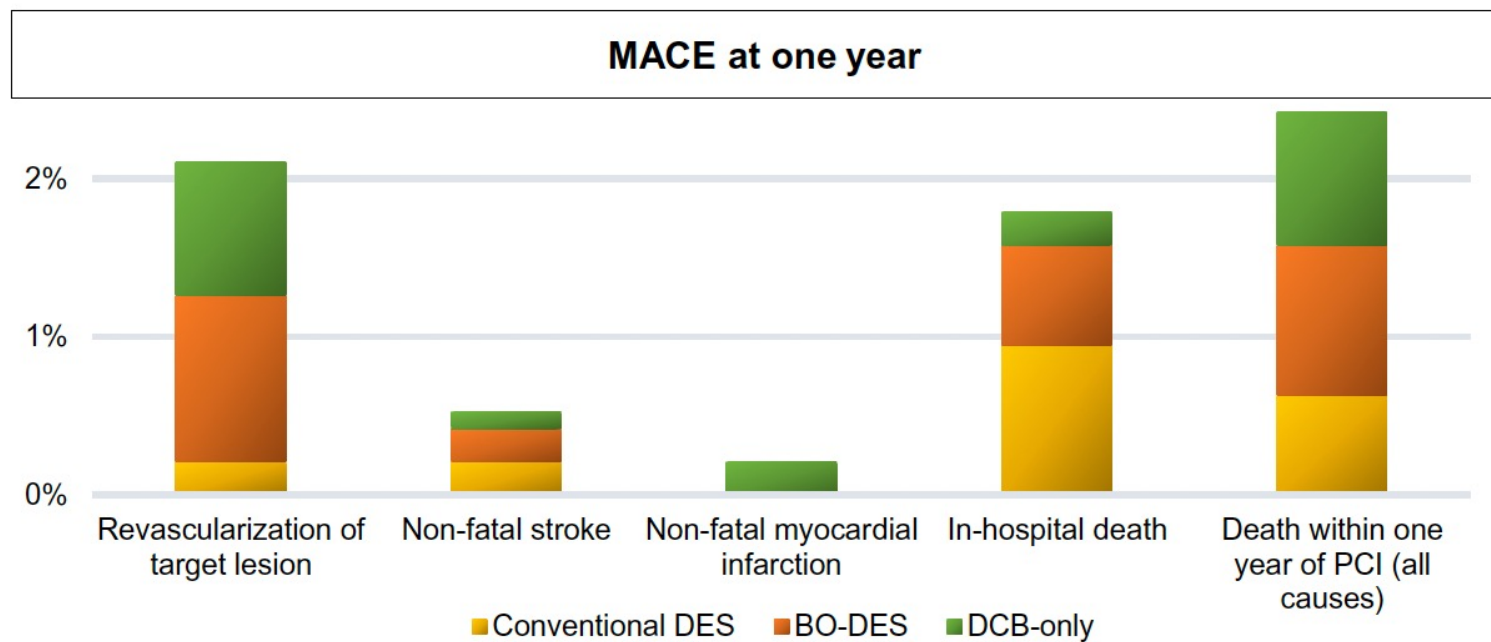
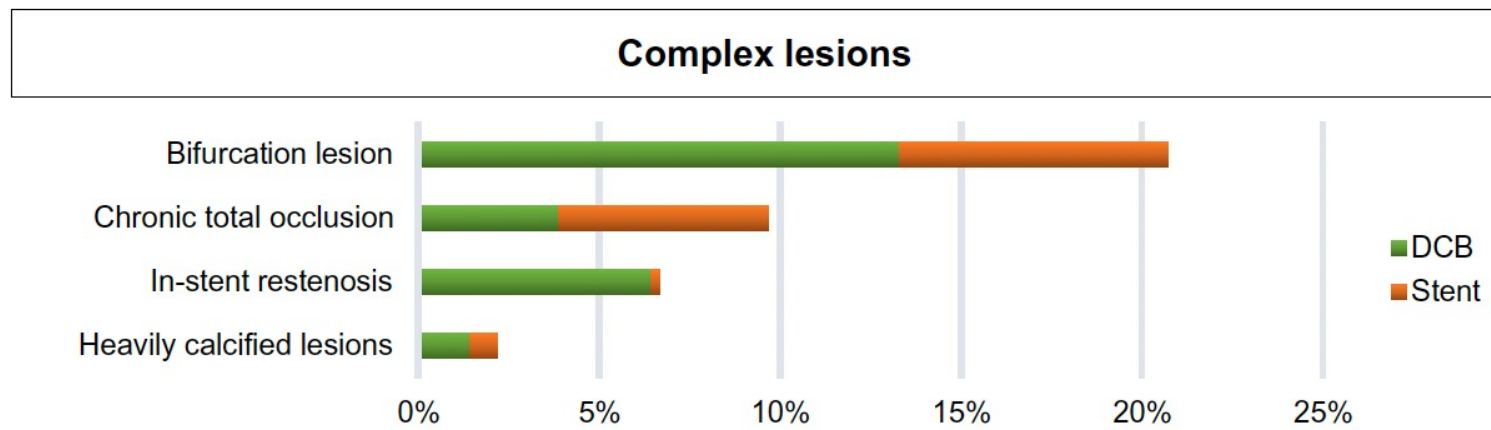
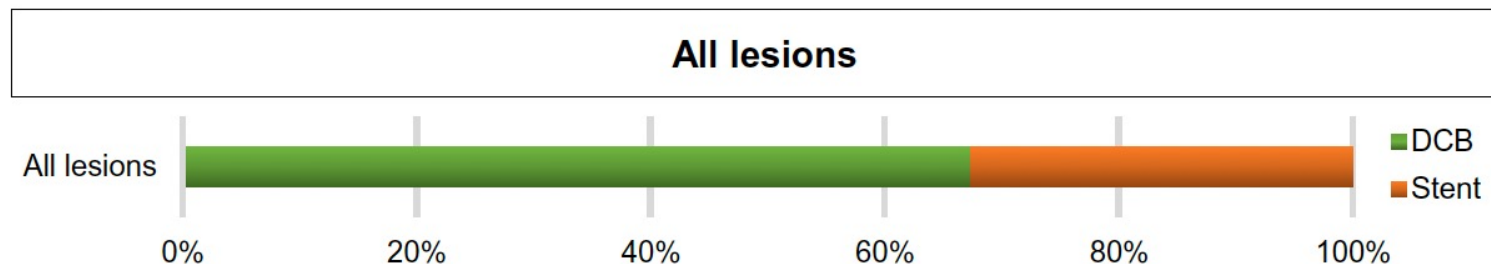
DEB angioplasty in DES-ISR lesions showed a more favorable safety with a similar efficacy to DES implantation during the long-term follow-up period.

Prospective, single-centre evaluation of the safety and efficacy of percutaneous coronary interventions following a decision tree proposing a no-stent strategy in stable patients with coronary artery disease (SCRAP study)

Ludovic Meunier¹  · Matthieu Godin²  · Géraud Souteyrand³  · Benoît Mottin¹  · Yann Valy¹  ·
Vincent Lordet¹  · Christian Benoit¹ · Ronan Bakdi¹  · Virginie Laurençon⁴ · Philippe Genereux^{5,6}  ·
Matthias Waliszewski^{7,8}  · Caroline Allix-Béguet⁴ 

Patient who underwent percutaneous coronary interventions



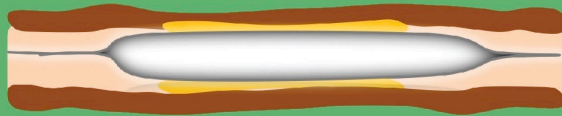


CENTRAL ILLUSTRATION: DCBs vs DES in STEMI

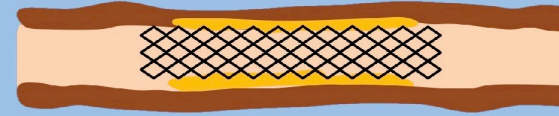
Assessment of DCB vs DES Among STEMI Patients

STEMI, de novo disease, N = 1,139

Paclitaxel drug-coated balloons
n = 452



2nd generation drug-eluting stents
n = 687



After 3-year follow-up (median) and propensity matching, no difference in all-cause mortality or net adverse cardiac events. No difference in:

- All-cause mortality
- Cardiovascular mortality
- Acute coronary syndrome
- Stroke / transient ischemic attack
- Major bleeding
- Unplanned target lesion revascularization

Merinopoulos I, et al. J Am Coll Cardiol Interv. 2023;16(7):771-779.

	Study population		Conventional DES		Eligible for a no-stent strategy			
					BO-stent		DCB-only	
	(n = 949)		(n = 138)		(n = 281)		(n = 530)	
Revascularization of target lesion	20	(2.1%)	2	(1.4%)	10	(3.6%)	8	(1.5%)
Non-fatal stroke	5	(0.5%)	2	(1.4%)	2	(0.7%)	1	(0.2%)
Non-fatal myocardial infarction	2	(0.2%)	0		0		2	(0.4%)
In-hospital death	17	(1.8%)	9	(6.5%)	6	(2.1%)	2	(0.4%)
Death within 1 year of PCI (all causes, in-hospital death excluded)	23	(2.4%)	6	(4.3%)	9	(3.2%)	8	(1.5%)
Total MACE	67	(7.1%)	19	(13.8%)	27	(9.6%)	21	(4.0%)

Data are presented as counts and percentages. DES: Drug Eluting Stent; BO-stent: at least one stent; DCB: Drug Coated Balloon; PCI: percutaneous coronary intervention; MACE: major adverse cardiac event

Treatment of Small Vessel Disease With the Paclitaxel Drug-Eluting Balloon: 6-Month Angiographic and 1-Year Clinical Outcomes of the Spanish Multicenter Registry

Multicenter Registry

- 104 patients with native coronary lesions in small vessels (≤ 2.25mm)
- PEB
- Regular balloon dilatation followed by a larger PEB for a minimum 45–60 sec
- Angiographic success was 93% (7% bailout BMS implantation due to coronary dissection)

Predictors of Adverse Event s at 12- Months

MACE	HR	IC 95%	P-Value
DEB + Bailout BMS	18.74	2.58–135.84	0.004
STEMI	9.99	1.40–71.18	0.022
Complete Revascularization	0.10	0.01–0.87	0.038
TLR			
DEB + Bailout BMS	30.99	2.79–344.07	0.005
Restenosis			

Conclusion: The use of this PEB for the treatment of SMD provides excellent 1-year outcomes with only 4.8% MACE. The need for a bailout BMS was a strong predictor of MACE and TLR.

Clinical expert consensus document on drug-coated balloon for coronary artery disease from the Japanese Association of Cardiovascular Intervention and Therapeutics

Takashi Muramatsu¹  · Ken Kozuma² · Kengo Tanabe³ · Yoshihiro Morino⁴ · Junya Ako⁵ · Shigeru Nakamura⁶ · Kyohei Yamaji⁷ · Shun Kohsaka⁸ · Tetsuya Amano⁹ · Yoshio Kobayashi¹⁰ · Yuji Ikari¹¹ · Kazushige Kadota¹² · Masato Nakamura¹³ · The Task Force of the Japanese Association of Cardiovascular Intervention, Therapeutics (CVIT)

1st Step: *Suitability for DCB*

Patients with

- multiple metallic stents implanted
- concerns about long-term presence of metallic stents (e.g., young adults, suspected metal allergy)
- high bleeding risk

Angiographic conditions with

- in-stent restenosis
- small vessel lesions
- ostial lesions
- bifurcation lesions requiring side branch dilatation
- calcified lesions not expected to be well expandable (e.g., nodular calcification)

2nd Step: *Optimal lesion preparation before using DCB*

Pre-dilatation with

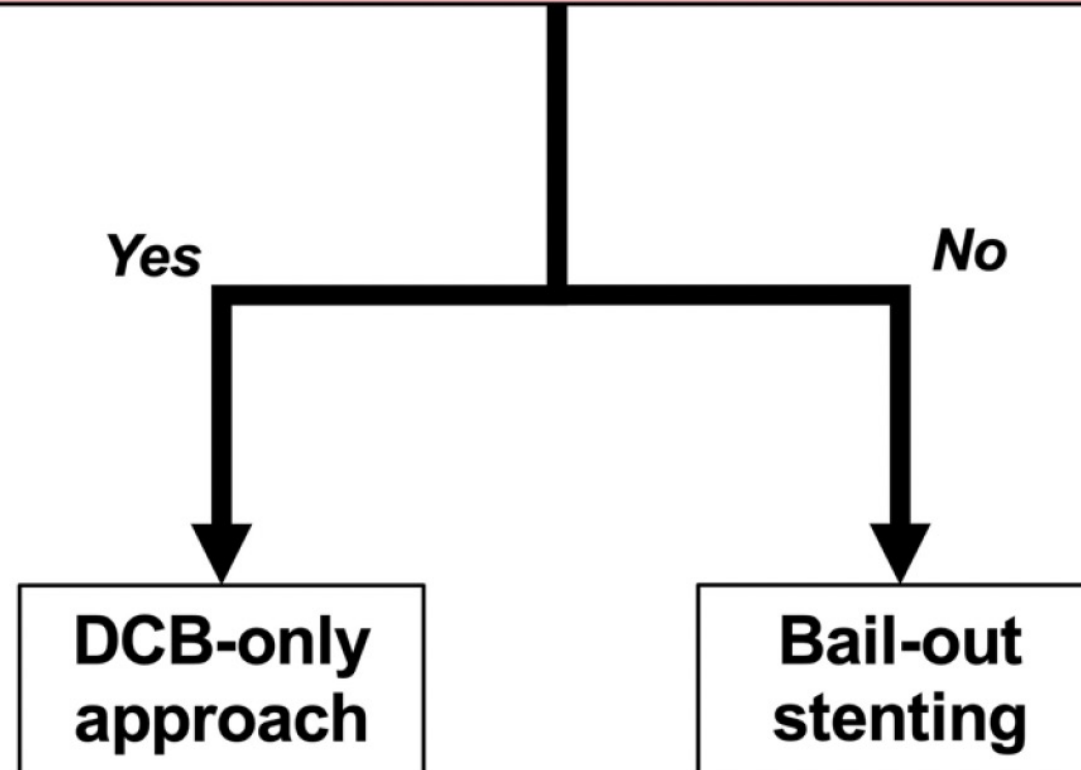
- modified balloons (cutting or scoring) are recommended.
- balloon-to-artery ratio 1:1
- Intracoronary imaging guidance is encouraged.

If moderate to severe calcification is evident, adjunctive rotational atherectomy, orbital atherectomy, or lithotripsy should be considered.

3rd Step: *Assessment after pre-dilatation*

To be confirmed

- TIMI grade 3 flow (non-flow limiting)
- angiographic residual stenosis $\leq 30\%$
- absence of major dissection (type C-F in angiography, or medial involvement or hematoma detected in IVUS/OCT)
- absence of findings suggestive of thrombus
- fractional flow reserve (FFR) >0.80 (option)



CONCLUSION

- ✓ L'utilisation des ballons actifs dans la resténose , les petits vaisseaux et les bifurcations est de plus en plus établie.
- ✓ Des résultats favorable sur les lésions de novo
- ✓ Pas de risque augmenté de thrombose tardives coronaires
- ✓ Période courte de DAPT voir SAPT
- ✓ Période courte de trithérapie chez les patients en FA.

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les 11, 12 et 13 octobre prochains**