Appropriate Position for DCB and DES in Femoropopliteal Disease

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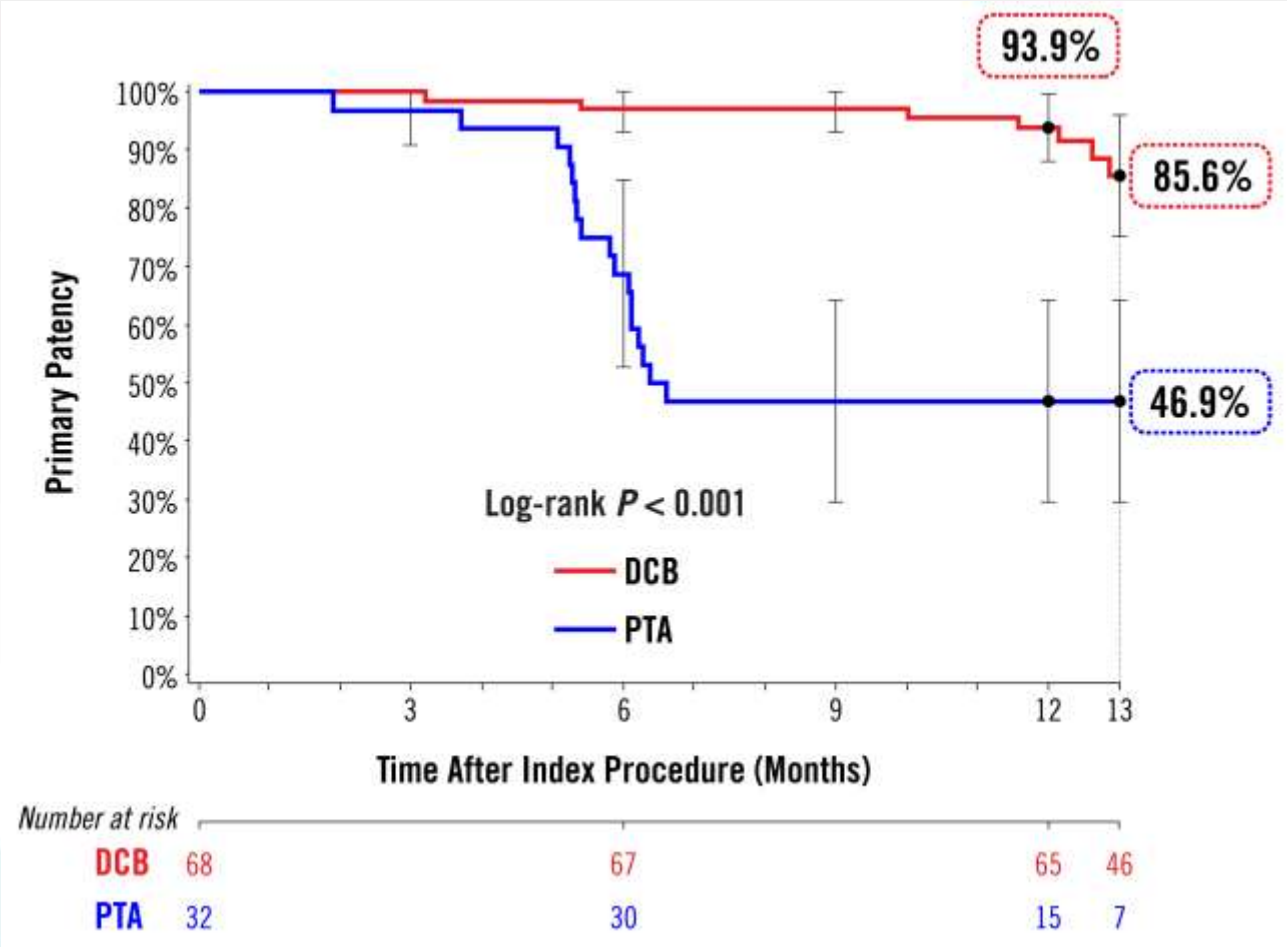
Today's agenda

1. IN.PACT SFA Japan
2. Zilver PTX RCT and Japan PMS
3. IN.PACT vs. Zilver PTX (Zeller T, et al. JEVT 2012)
4. IN.PACT vs. Zilver PTX (Schinert D, et al. LINC 2018)
5. Decision-making in drug-eluting selection

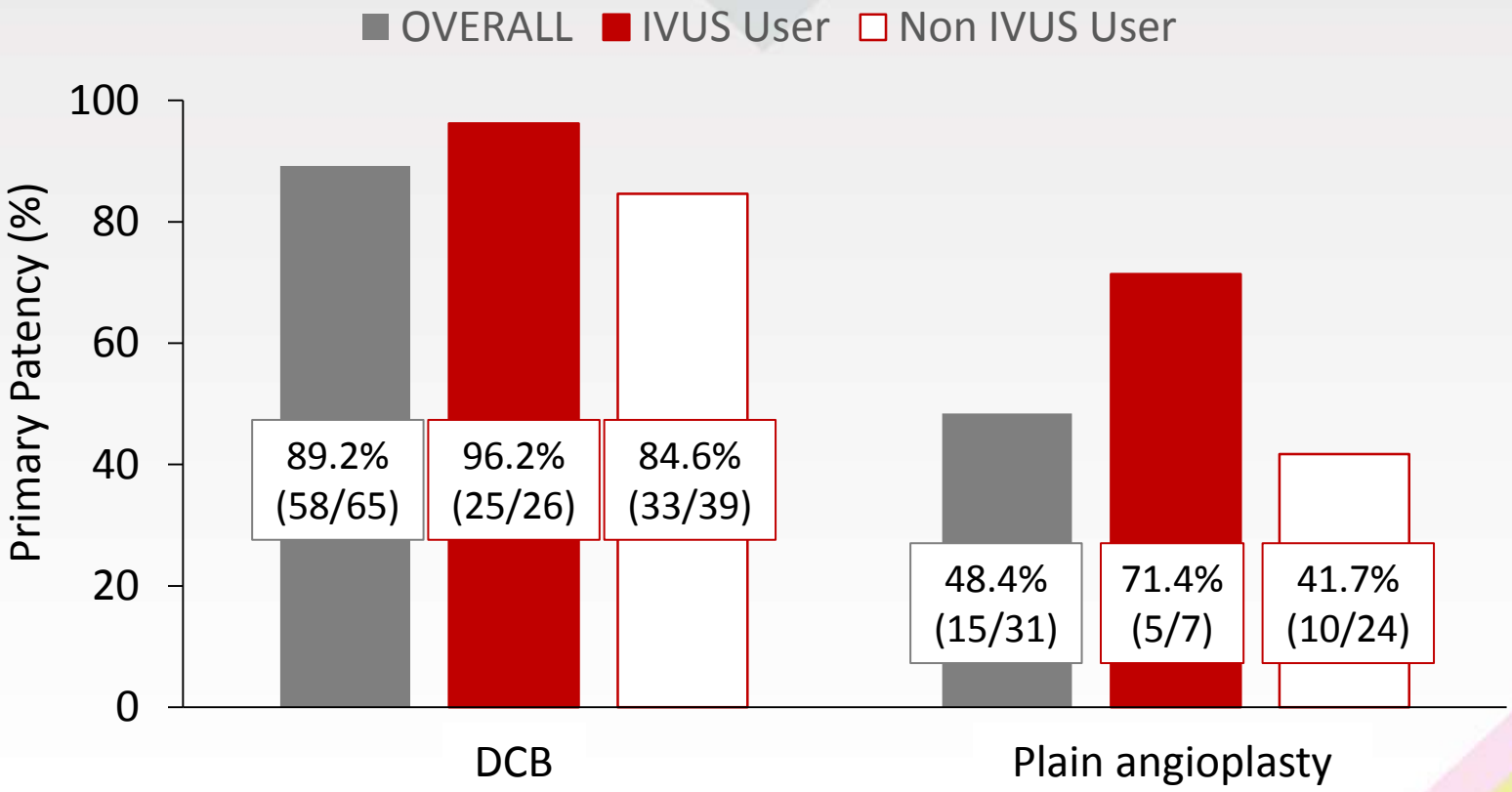
The IN.PACT SFA JPN trial changes Japanese market (Paradigm shift)

1-year result

Primary Patency @ 12 months



DCB treatment quality (Learn from JPN data)



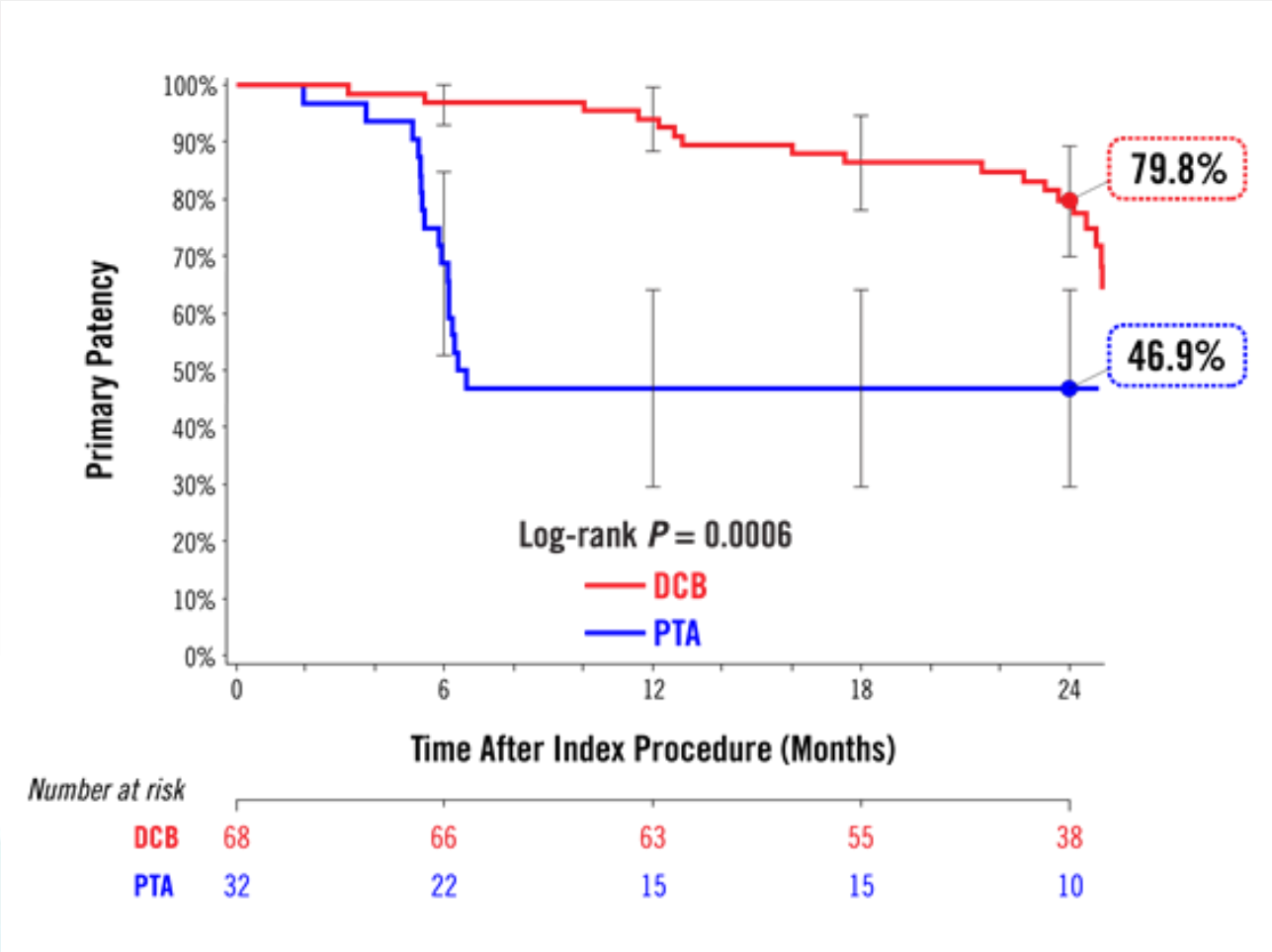
Importantly, there was a trend towards improved outcomes in patients whose vessels were evaluated with **IVUS** pre-procedure.

Iida O et al. J Endovasc Ther. 2018;25:109-117.

The IN.PACT SFA JPN trial changes Japanese market (Paradigm shift)

2-year result

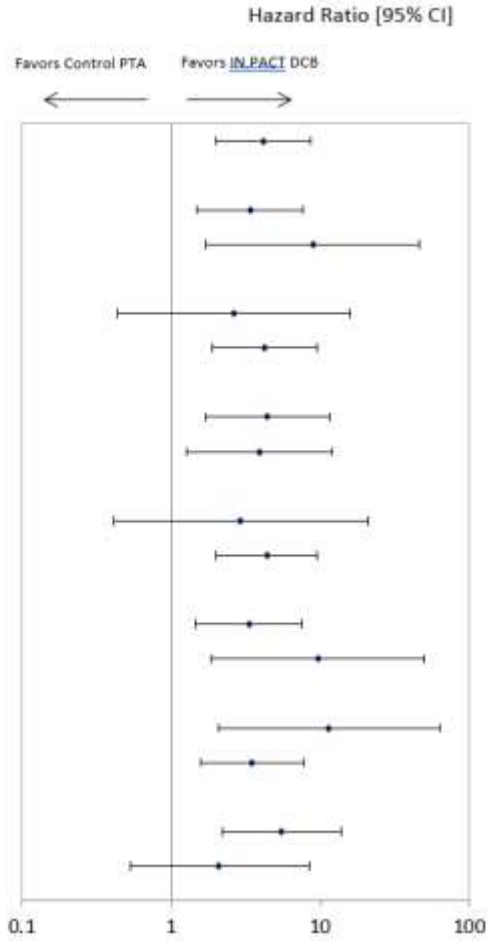
Primary Patency @ 24 months



Interaction analysis for 2-year primary patency and lesion characteristics

2-year result

Subgroup (NDCB/NPTA)	IN.PACT DCB % (#Failure)[1]	Control PTA % (#Failure)[1]	Hazard Ratio [95% CI]	p-value for interaction
Overall ITT (68/32)	79.8% (13)	46.9% (17)	4.16 [2.01, 8.61]	NA
TASC Lesion Type				0.303
A & B (55/25)	78.5% (11)	52.0% (12)	3.40 [1.49, 7.72]	
C (13/7)	84.6% (2)	28.6% (5)	8.92 [1.71, 46.37]	
IVUS Usage				0.631
Yes (27/8)	88.2% (3)	75.0% (2)	2.64 [0.44, 15.80]	
No (41/24)	74.6% (10)	37.5% (15)	4.27 [1.90, 9.57]	
Lesion Calcification				0.867
Calcified (42/16)	80.2% (8)	43.8% (9)	4.44 [1.71, 11.57]	
Non-Calcified (26/16)	79.0% (5)	50.0% (8)	3.92 [1.28, 12.01]	
Severe Lesion Calcification				0.705
Yes (5/3)	60.0% (2)	33.3% (2)	2.91 [0.41, 20.77]	
No (63/29)	81.3% (11)	48.3% (15)	4.38 [2.00, 9.57]	
Lesion Length				0.257
<15 mm (54/25)	78.0% (11)	52.0% (12)	3.33 [1.46, 7.56]	
≥ 15 mm (14/7)	85.7% (2)	28.6% (5)	9.63 [1.85, 50.10]	
Total Occlusion				0.219
Yes (11/5)	75.8% (2)	20.0% (4)	11.44 [2.07, 63.17]	
No (57/27)	80.2% (11)	51.9% (13)	3.51 [1.57, 7.87]	
Reference Vessel Diameter				0.255
< 5 mm (41/24)	81.9% (7)	41.7% (14)	5.52 [2.21, 13.77]	
≥ 5 mm (27/8)	76.4% (6)	62.5% (3)	2.10 [0.53, 8.42]	



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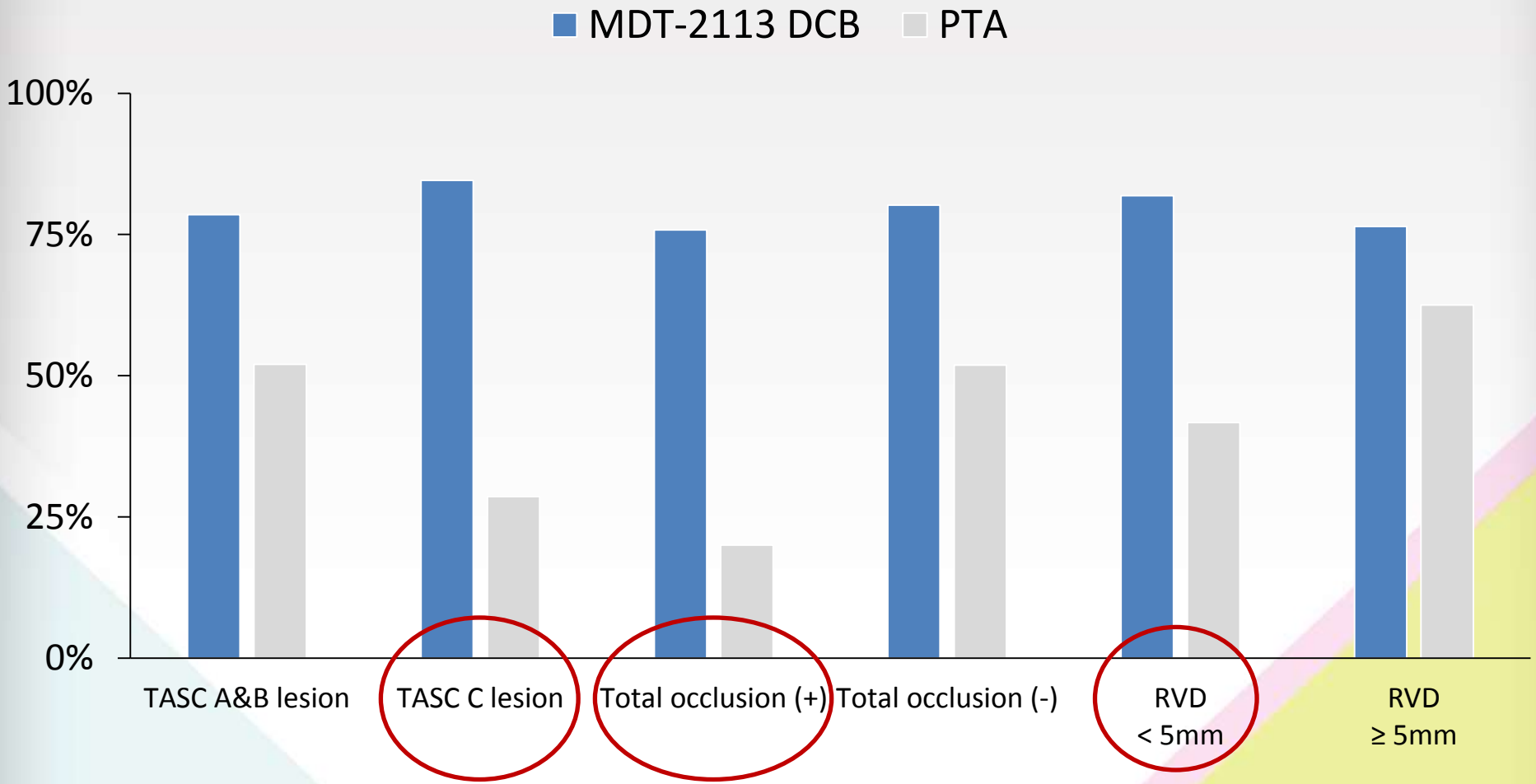

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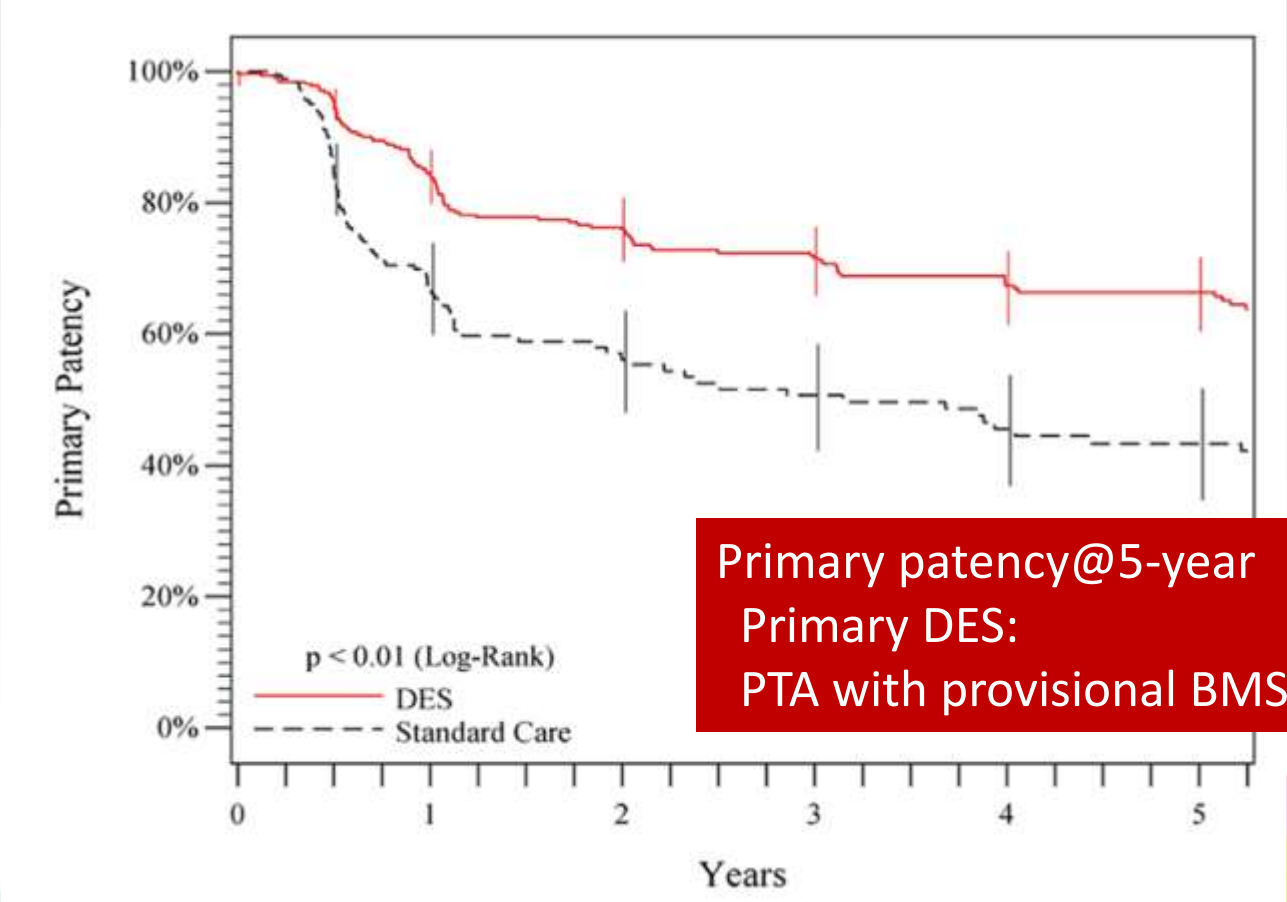
Sustained Safety and Effectiveness of PES for FP Lesions; 5-Year Follow-Up



Primary patency@5-year

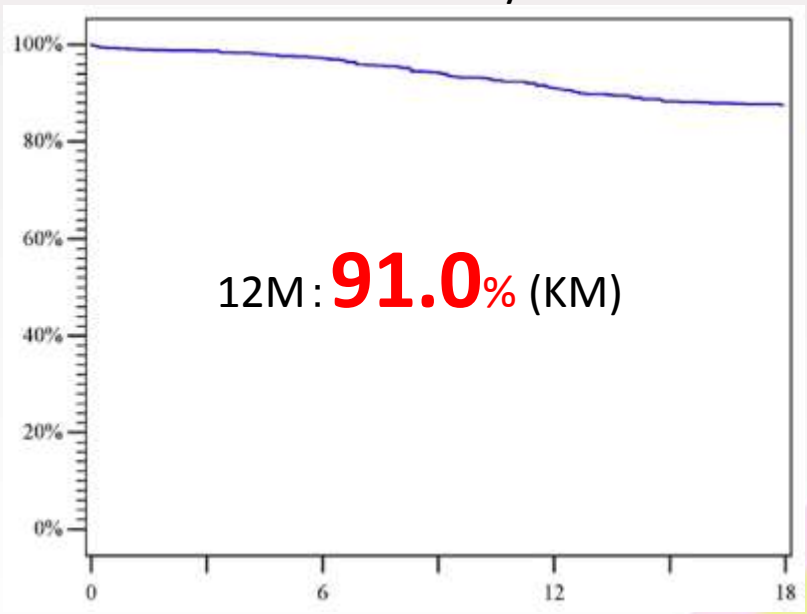
Primary DES:	**66.4%**
PTA with provisional BMS:	**43.4%**

Dake MD, et al. Circulation. 2016;133:1472-1483.

Zilver PTX PMS in Japan, 12-Month Result

	n=907
Age	73.5±8.5
DM	58.8%
Dialysis	30%
CLI	21.5%
CTO	41.6%
ISR	18.6%
Lesion Length (cm)	14.7±9.7
Lesion Length>15cm	42.0%

Freedom from clinically driven-TLR



Stent Fracture rate(12M): **1.5%**

Stent Thrombosis rate(12M): **3.8%**

Yokoi H, et al. JACC Cardiovasc. Interv. 2016;9:271–277.

DCB versus DES in Japanese population

	n=68
Age	73.3±7.4
DM	58.8%
Dialysis	**0%**
CLI	**4.4%**
CTO	16.2%
ISR	0%
Lesion Length(cm)	**9.2±5.9**
Lesion Length>15cm	19.1%
Freedom from TLR	91.0%

VS

	n=907
Age	73.5±8.5
DM	58.8%
Dialysis	**30%**
CLI	**21.5%**
CTO	41.6%
ISR	18.6%
Lesion Length(cm)	**14.7±9.7**
Lesion Length>15cm	42.0%
Freedom from TLR	91.0%

IN.PACT™ DCB (Medtronic)

Clinical trial population

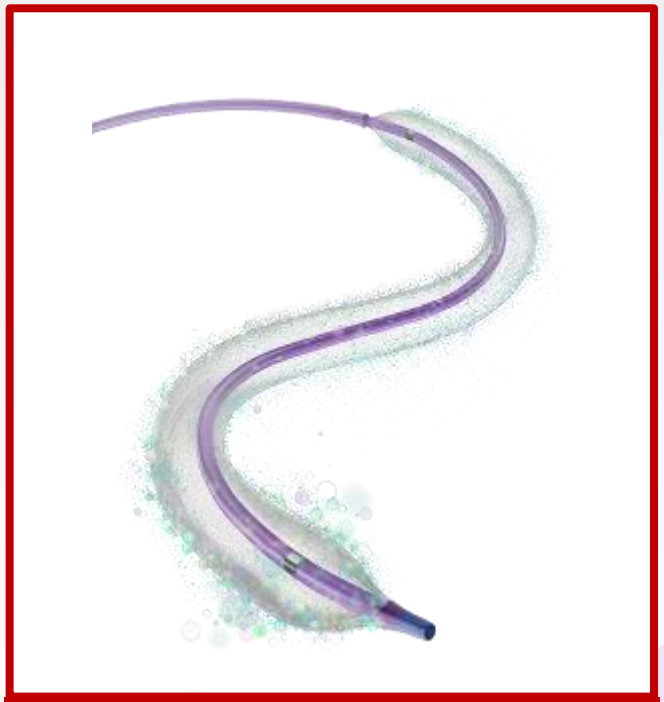
Zilver PTX DES (Cook)

Real-world population

Zilver PTX versus IN.PACT DCB

Zilver PTX DES (Cook)

VS



IN.PACT™ DCB (Medtronic)

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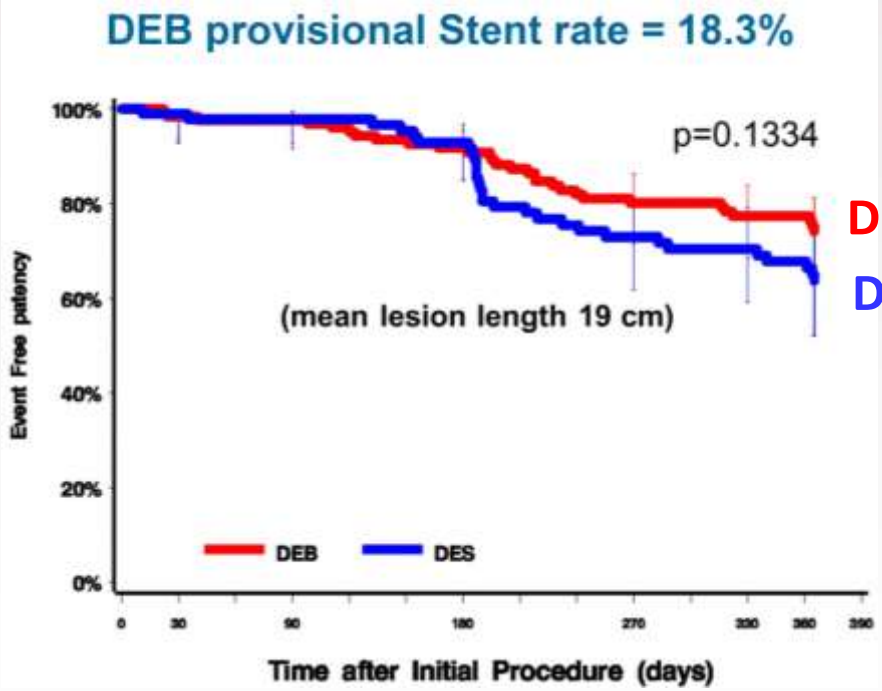
DEB vs. DES in Long SFA lesions

- ✓ Single Center
- ✓ Retrospective with propensity score analysis
- ✓ IN.PACT DEB vs. Zilver PTX
- ✓ 228 patients
- ✓ Mean lesion length = 19 cm



Major Adverse Events	IN.PACT (DEB)	Zilver PTX (DES)	p	adjusted p
n	131	97		
Any TLR	19.3% (21/109)	21.5% (17/79)	0.705	0.55
Clinical-driven TLR	15.6% (17/109)	19.0% (15/79)	0.543	0.572
Loss of Patency	23.9% (26/109)	30.4% (24/79)	0.319	0.372

Zeller T, et al. JEVT 2014;3:359-68.

3-year result of the REAL PTX RCT comparing Zilver PTX vs. IN.PACT in FP lesion

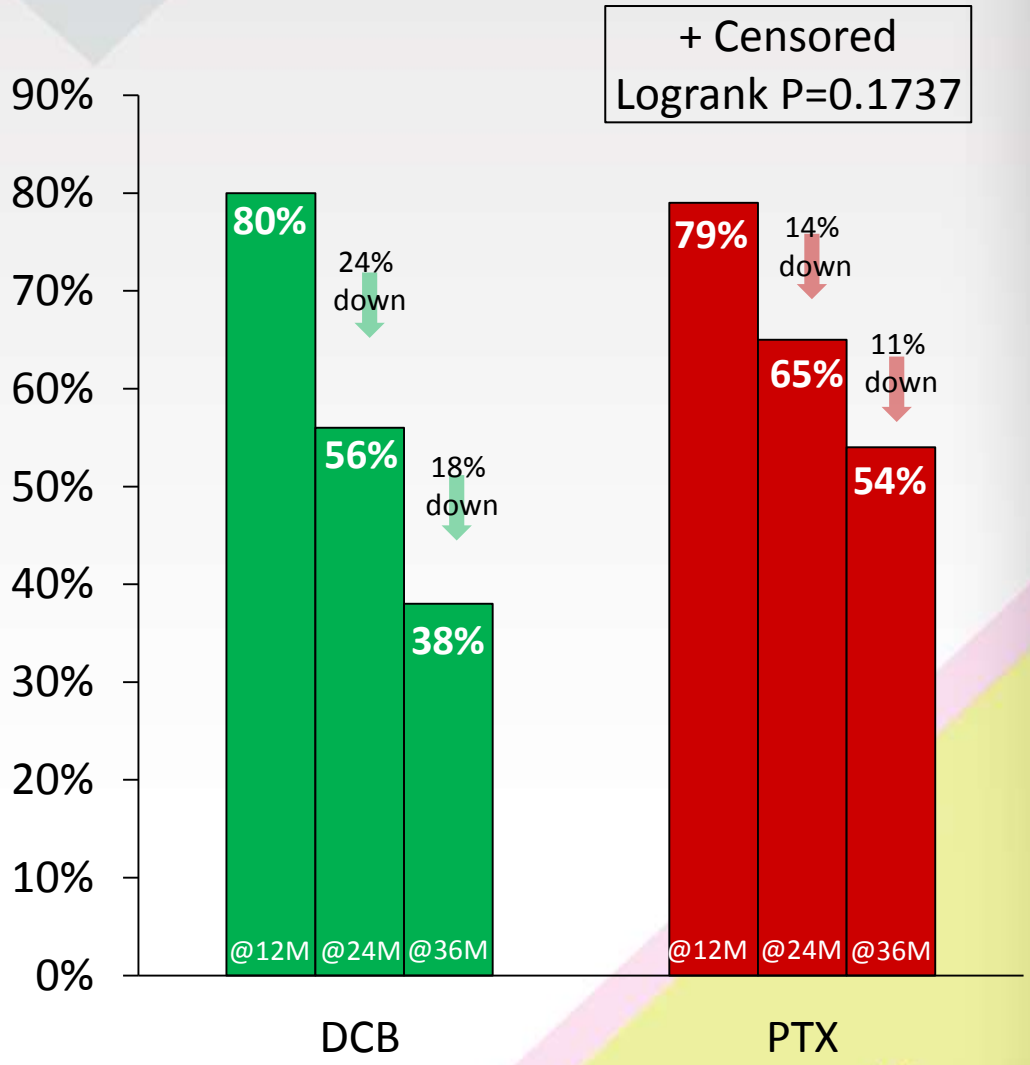
Study design:	Prospective, multicenter (5 in EU), RCT
Primary endpoint:	Patency @ 12 M
Secondary endpoint:	Procedural success, MAE, Patency @ 24, 36 M, CD-TLR, ABI Improvement in Rutherford Categories, WIQ, Mortality
Enrollment:	150 patients, 75 in each group
Stratification:	for both groups (1:1:1) Short : ≤ 10 cm Middle : > 10 and ≤ 20 cm Long : > 20 and ≤ 30 cm
Mean LL:	152.6 ± 88.2 mm

Scheinert D, et al. LINC 2018

Primary Patency @ 12, 24 & 36M

Baseline Characteristics:

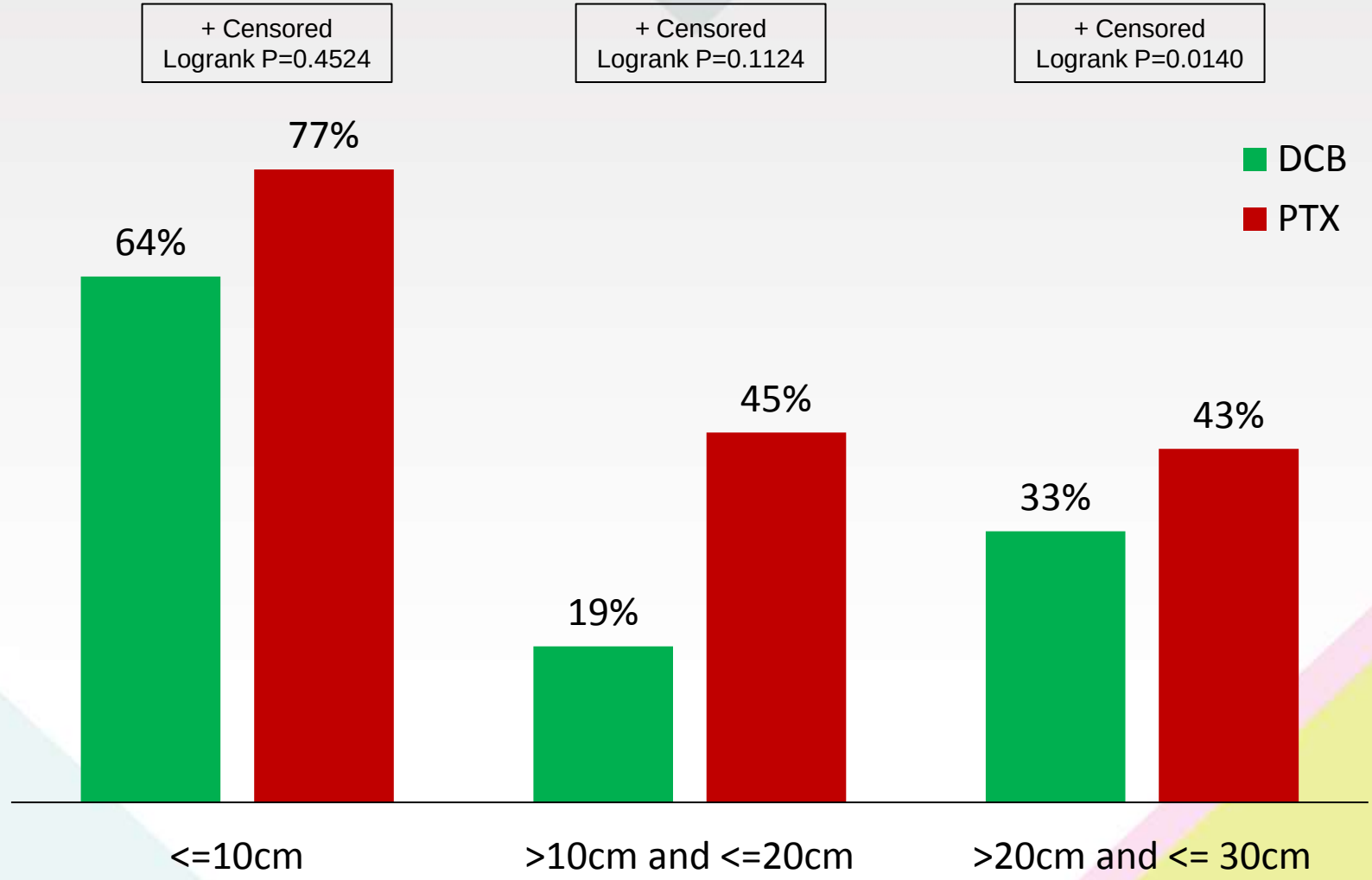
Variables	DCB (n=75)	PTX (n=75)
Rutherford 2-3	67 (89.3%)	63 (84.0%)
Lesion length (mm)	144.8 ± 92.1	159.6 ± 97.3
CTO	40 (53.3%)	39 (52.0%)
No data @3year		
Moderate-severe calc	34(45.4%)	47(62.6%)
Bailout stenting	19(25.3%)	NA
No data @3year		
No data @3year		



Scheinert D, et al. LINC 2018

Decrease in Primary Patency @36M

By Lesion Length



Scheinert D, et al. LINC 2018

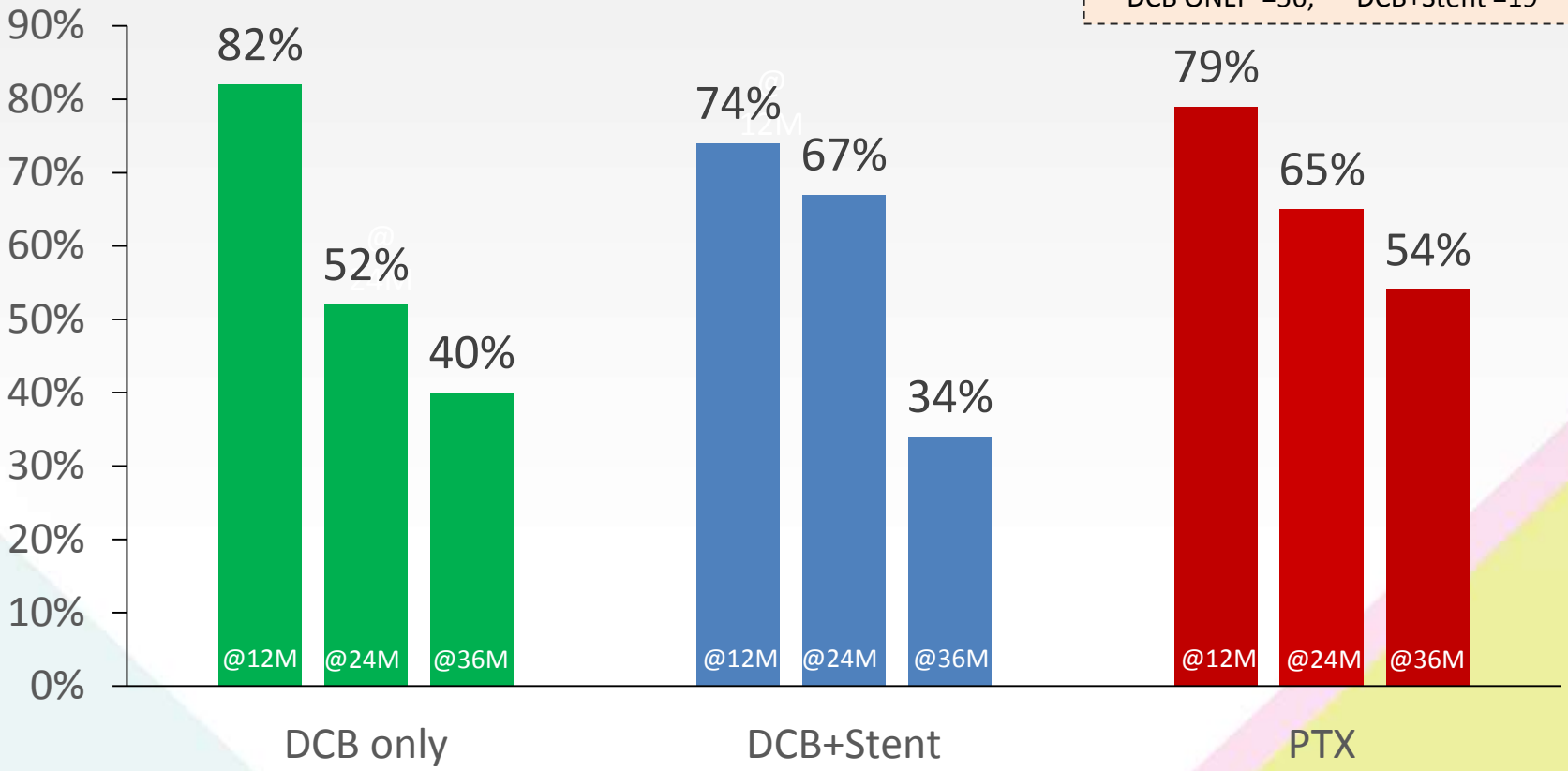
Primary Patency @ 12, 24 &36 M

DCB ONLY vs. DCB+Stent vs. PTX

+ Censored
Logrank P=0.3644

Variables	DCB (n=75)	PTX (n=75)
Bailout stenting	19(25.3%)	NA

DCB ONLY =56, DCB+Stent =19



What does REAL PTX tell us…

TERM	✓ 1 year :	DCB = DES	No significant difference
	✓ 2 & 3 years:	DCB < DES	Better durability of DES
Length	✓ < 10cm :	DCB = DES	Equal performance
	✓ 10 cm < :	DCB < DES	Increased benefit of DES
Combination	DCB + Stent < DCB < DES		
	DCB + Stent NOT EQUAL TO DES		

Vessel preparation is mandatory for both DCB and DES particularly in complex lesions!

Pilot trial – not powered to show statistical significance

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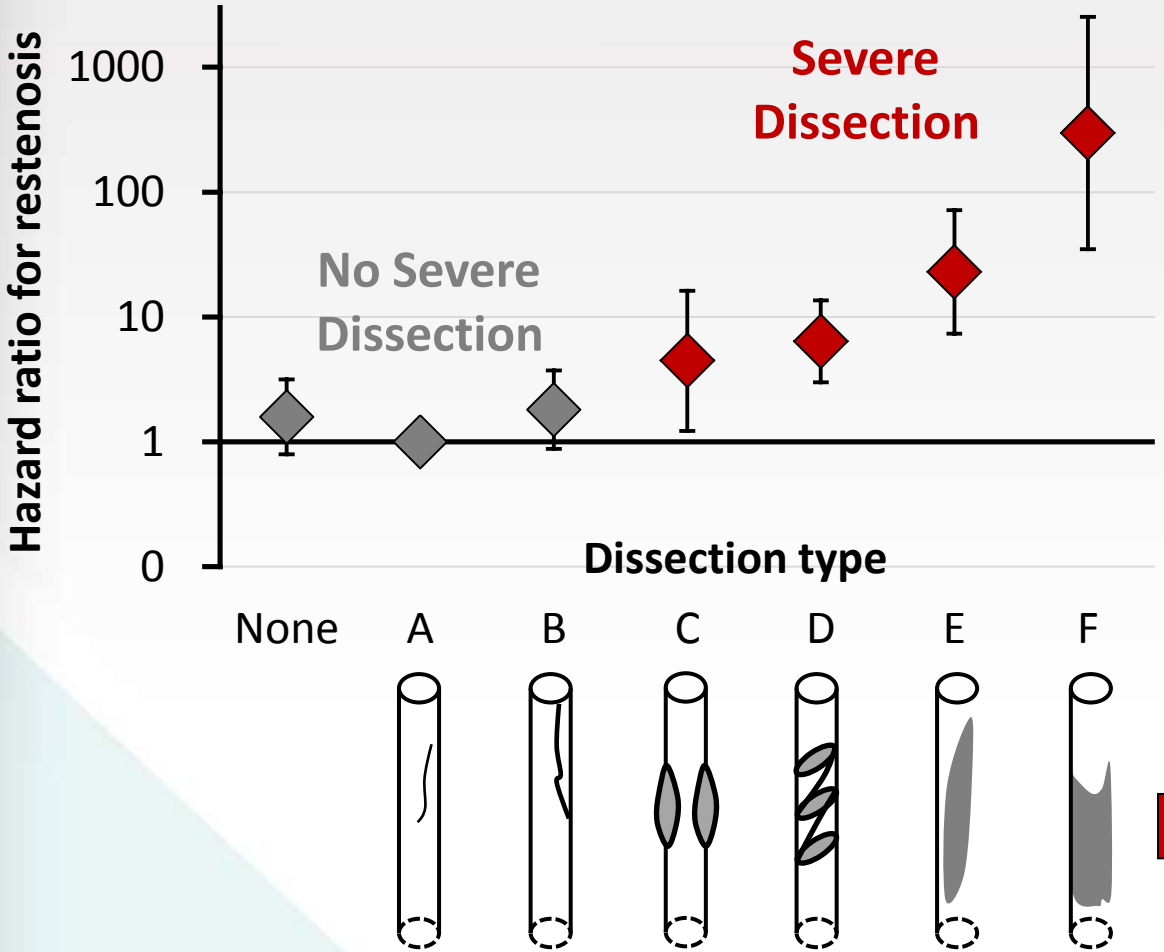
What should we consider for decision-making in selection of drug-eluting solutions

What are predictors of angioplasty failure?

* Angioplasty failure means predictors for "**major dissection**" or **lesions needing provisional stent**

Hazard Ratio of restenosis comparison with dissection pattern



	HR [95% CI]	p value
None	1.58 [0.79, 3.16]	0.193
A	1.00 (Ref)	
B	1.81 [0.88, 3.73]	0.108
C	4.45 [1.22, 16.2]	0.024
D	6.37 [2.99, 13.6]	< 0.001
E	22.9 [7.33, 71.6]	< 0.001
F	297 [34.9, 2527]	< 0.001

Type C-F

dissection is the risk of restenosis occurrence.

Fujihara M, et al. JEVT 2017

Predictive factors for Severe dissection (type C-F) assessed by multivariate analysis

Variables	HR	95% CI	P value
Non Hemodialysis	1.09	0.74-1.63	0.64
CTO	4.3	**3.02-6.4**	**<0.001***
TASC CD	2.1	**1.46-3.06**	**<0.001***
Reference vessel diameter <5mm	1.94	**1.25-3.04**	**0.0032***
Non Severe Calc	1.38	0.95-2.02	0.08
Large inch system balloon (0.035inch)	1.60	0.97-2.67	0.06
Vessel/balloon size<1.0	1.28	0.76-2.15	0.34
IVUS usage	1.55	**1.06-2.27**	**0.021***

Fujihara M, et al. JEVT 2017

Stented versus Non-Stented Outcomes at 2 Years: A Sub-analysis of the IN.PACT Global Study

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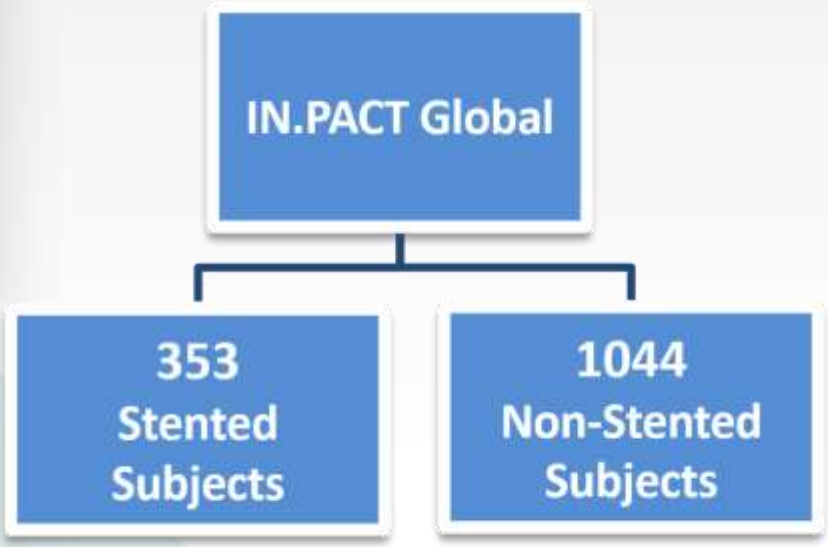
On behalf of the IN.PACT Global Study Investigators

IN.PACT Global Study
Stented vs Non-Stented Analysis

Purpose: To compare outcomes of standalone IN.PACT™ Admiral™ DCB usage versus IN.PACT™ Admiral™ DCB followed by provisional stenting.



25.3%

Provisional stent rate

Reason for Provisional Stenting* (N=455 Lesions)	
Persistent Residual Stenosis ≥ 50%	59.2% (221/373)
>10 mmHg Trans Lesion Gradient	0.5% (2/373)
Flow-Limiting Dissection	53.6% (200/373)
Other	5.1% (19/373)

* Data presented are lesion based

IN.PACT Global Study
Stented vs Non-Stented Analysis

Baseline lesion Characteristics

	IN.PACT DCB Stented (N=353 Subjects) (N=455 Lesions)	IN.PACT DCB Non-Stented (N=1044 Subjects) (N=1306 Lesions)	p-value (Stented vs Non-Stented)
Lesion Length (cm ± SD)	**15.37 ± 10.68**	**10.97 ± 8.83**	< 0.001
Total Occlusions % (n)	54.7% (249/455)	28.6% (373/1306)	< 0.001
Occluded Lesion Length (cm ± SD)	7.93 ± 10.46	3.33 ± 7.40	< 0.001
Calcification % (n) Severe [2] % (n)	73.8% (336/455) 14.7% (67/455)	66.7% (870/1304) 8.7% (113/1304)	0.005 < 0.001
RVD (mm ± SD)	5.209 ± 0.651	5.187 ± 0.687	0.540
Diameter Stenosis (% ± SD)	92.1 ± 11.6	87.6 ± 12.3	< 0.001

In DCB stented group, 1) lesion length (CTO length) was longer, 2) frequency of CTO and severe calcification was higher, 3) %diameter stenosis was greater.

Summary

DCB: Results from the IN.PACT SFA Japan trial showed superior treatment effect for DCB vs PTA, with excellent patency and low CD-TLR rates.

DES: Despite more challenging lesions, results from the Japan PMS are similar to outcomes from the previous Zilver PTX studies, confirming the benefit of the Zilver PTX DES in a real-world patient population.

Real PTX: Although no significant difference was found between DCB and DES in primary patency@1year, long-term trend showed better durability of DES @ 2 and 3 year