CONTROVERSES ET ACTUALITÉS EN CHIRURGIE VASCULAIRE
CONTROVERSIES & UPDATES IN VASCULAR SURGERY
JANUARY 23-25 2014
MARRIOTT RIVE GAUCHE & CONFERENCE CENTER PARIS, FRANCE

Do we really need a stent in long SFA lesions? No: DEB is the answer

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My Disclosures:

Advisory Board:

Medtronic-Invatec, W.L. Gore, Angioslide, Medtronic-Ardian, Covedian-ev3

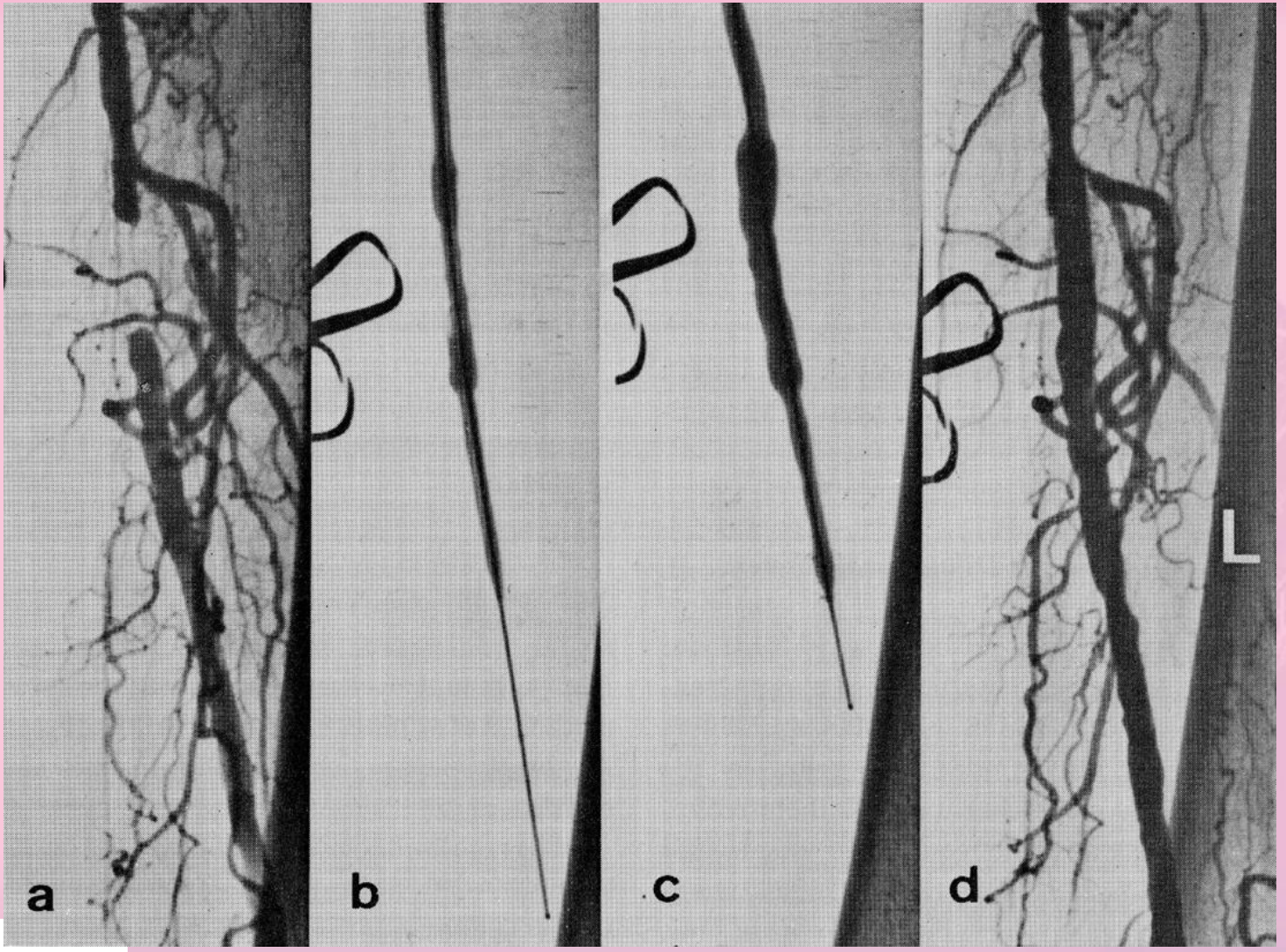
Consulting Fees/Honoraria:

Sanofi-Aventis, C.R. Bard, J&J Cordis, Covedian-ev3, Boston Scientific, Straub Medical, Invatec, Biotronik, Optimed, Pathway Medical, W.L. Gore

Research Grants:

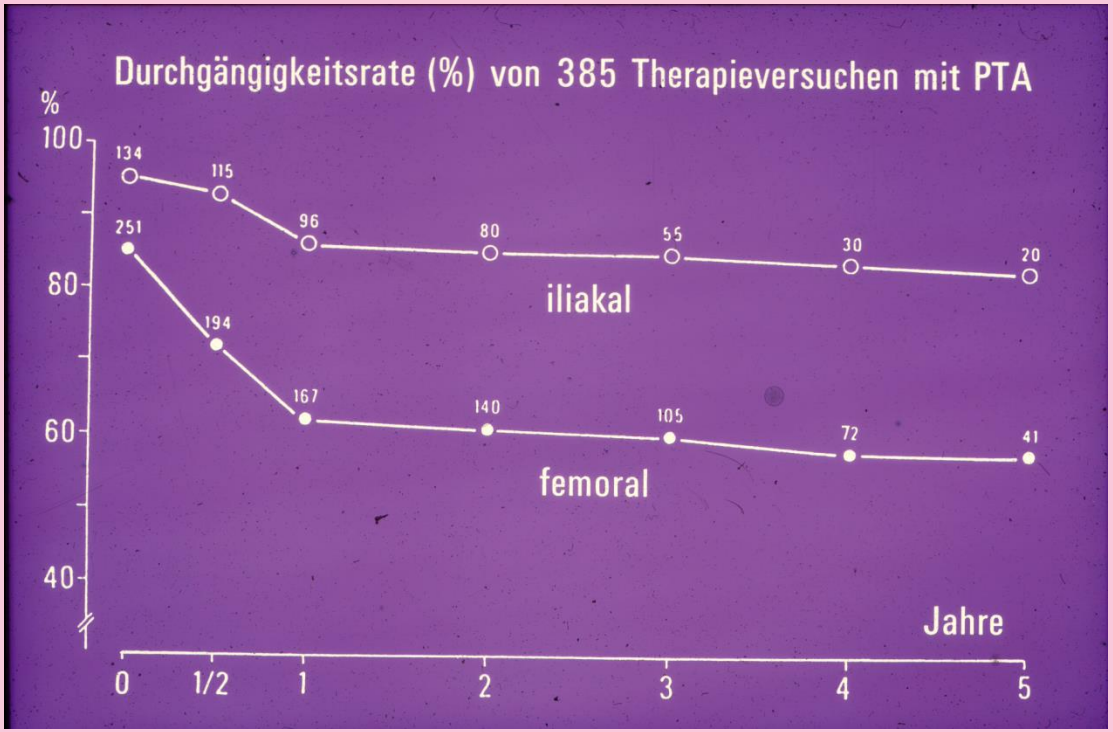
Cook, Krauth Medical, Pathway Medical, Abbott Vascular, J&J Cordis, Angioslide, Ardian, Biotronik, Invatec, InnoRa, W.L. Gore

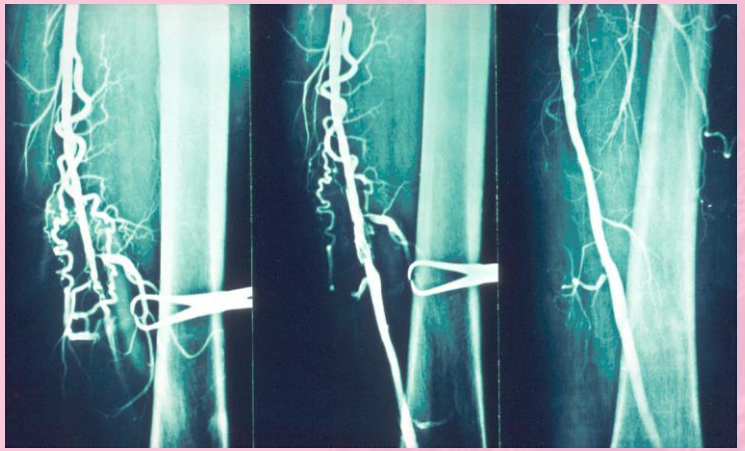
One of the first SFA Recanalizations by Andreas Grüntzig



Balloon-Angioplasty

Patency



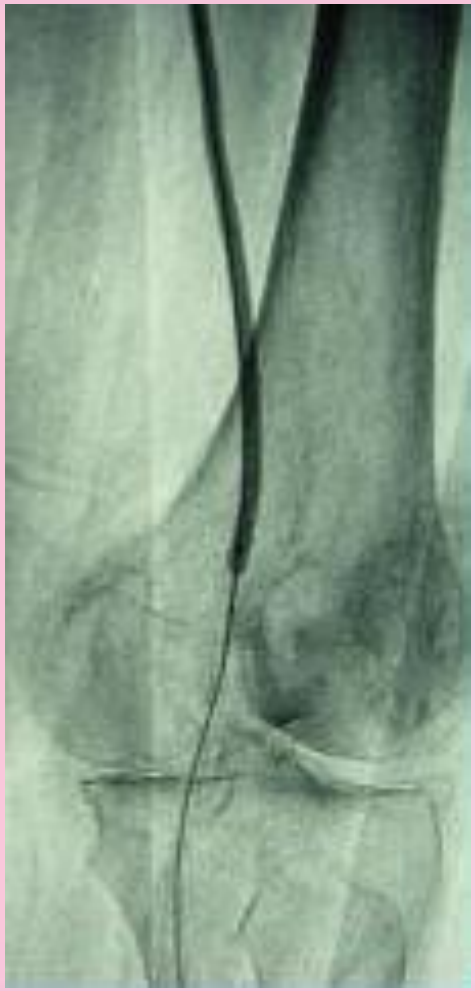


baseline post 2 years

Gallino A et al. Circulation 1984;70: 619-623

SIAH

Subintimal Angioplasty



Recanalization of SFA CTOs

Subintimal Angioplasty

Sidhu et al.: 120 patients with TASC II C/D lesions

- Technical success: 91%
- Primary 6 months patency: 90%
- **Primary 12 months patency: 73%**
- Secondary 12 months patency: 85%
- 1-year limb salvage: 98%
- No relevant complications

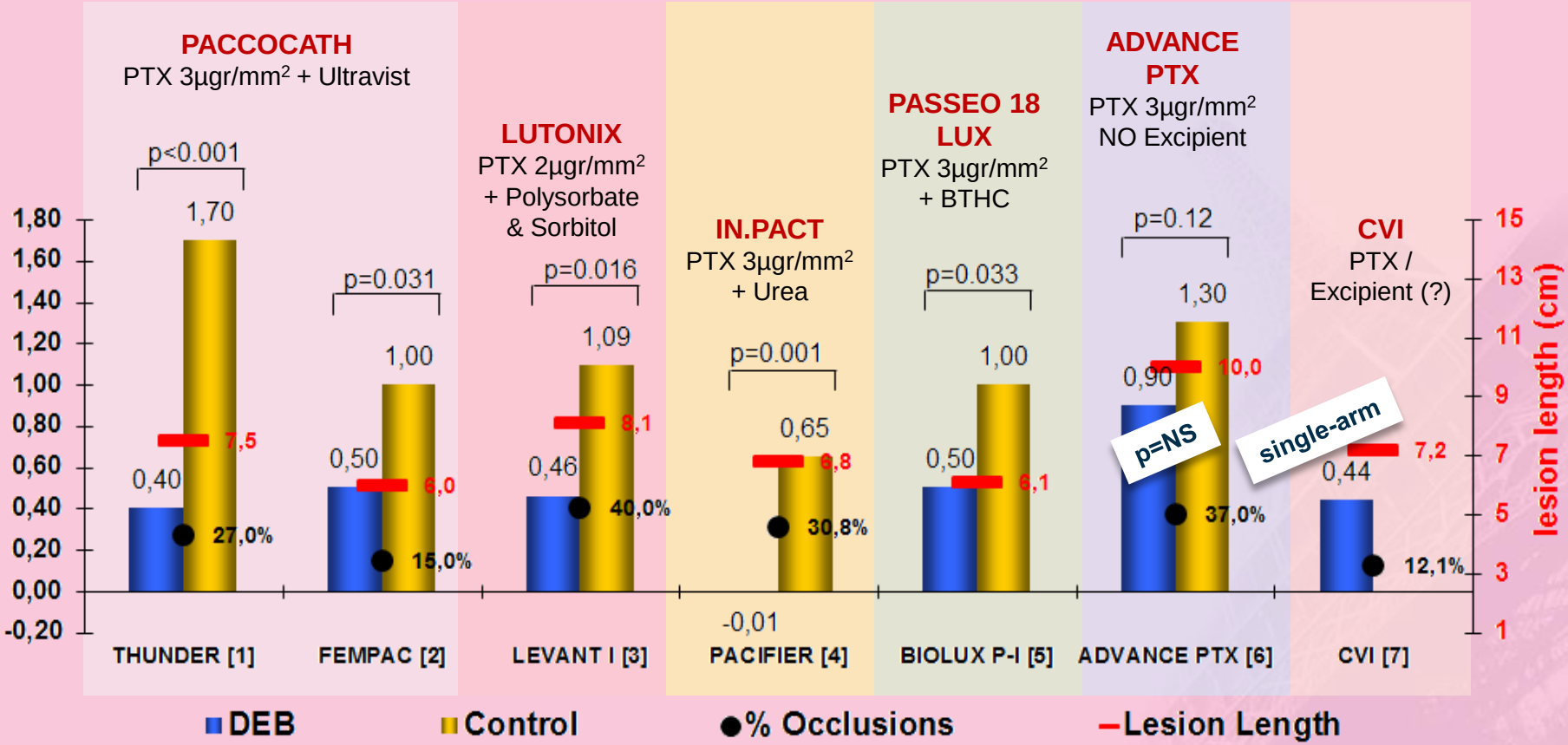
Kim et al.: 63 consecutive procedures / 54 pts. (TASC C 21%, TASC D 79%)

- Technical success: 94%
- **Primary 12 months patency: 52%**
- Independant predictors for patency:
  - Short occlusion length (p=0,04)
  - Lesion does not involve distal SFA (p=0,006)
  - Number of patent run-off vessels (p=0,018)

Sidhu R et al. Vasc Endovascular Surg. 2010 Nov;44(8):633-7.
Kim SJ et al. Circ J. 2010;74(9):1959-64.

DEB in SFA Evidence: Proof-of-Concept

7 Trials / 6 DEB Technologies; 6-month LLL (Primary Endpoint)



[1] G.Tepe et al. - NEJM 2008; [2] M.Werk et al. - Circulation 2008; [3] D.Scheinert - TCT 2012 oral presentation; [4] M.Werk et al. - Circulation CI 2012; [5] D.Scheinert – EuroPCR 2012 oral presentation; [6] D.Scheinert – LINC 2013 oral presentation; [7] S.Duda – EuroPCR 2013 oral presentation

DEB vs. DES
Femoro-Politeal Lesions

- Bad Krozingen retrospective analysis of 228 patients treated with DEB (131) and DES (97) from May 2009 to Oct 2011 for:
  - Caludication and Rest Pain
  - Femoropoliteal lesions > 10 cm
  - de-novo and restenotic (non-ISR)

DEB vs. DES
Femoro-popliteal Lesions

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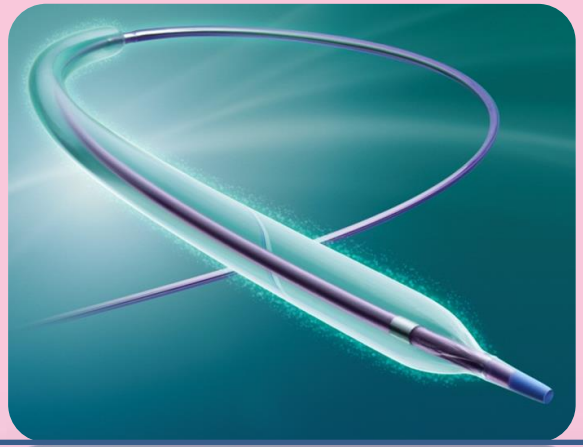
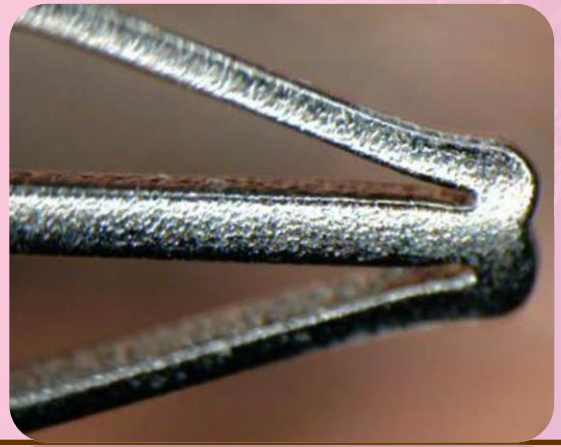
IN.PACT Admiral (Medtronic)

- Drug: Paclitaxel
- Excipient: Urea
- DEB ∅: 4 – 7 mm
- DEB Lengths: 40 – 120 mm



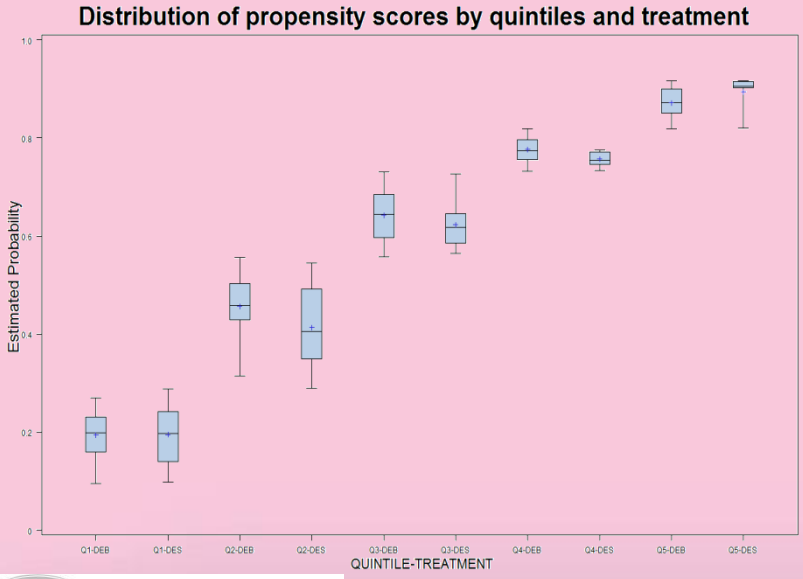
ZILVER PTX (Cook)

- Drug: Paclitaxel
- Excipient: none
- DES ∅: 6 – 8 mm
- DES Lenghts: 20 – 120 mm



Methods
Propensity Score Analysis

- allows for “apples-to-apples” comparison under non-randomized condition (minimize differences between treatment groups due to imbalance of baseline covariates)
- allows balancing of covariates to make more valid inferences about treatment effects



- Five propensity score groups used for stratification to remove ~90% of bias from confounding variable (Cochran, 1968).
- In each stratum, comparison made as treatments are compared within like patients – patients with similar propensity scores.

Baseline Patient Characteristics

Patient	DEB	DES	*p*
N	131	97	
Age (mean±SD)	68.9 ± 10.5	68.2 ± 8.0	*0.586*
Male	58.8% (77/131)	63.9% (62/97)	*0.432*
Diabetes	40.5% (53/131)	38.1% (37/97)	*0.724*
End Stage Renal Disease	1.5% (2/131)	2.1% (2/97)	*0.761*
Renal Insufficiency (Cr>1.2 mg/dl)	22.1% (29/131)	18.6% (18/97)	*0.509*
Hyperlipidemia	84.0% (110/131)	81.4% (79/97)	*0.616*
Past/current smoker	68.7% (90/131)	68.0% (66/97)	*0.915*
Hypertension	83.2% (109/131)	80.4% (78/97)	*0.587*
ABI (mean±SD)	0.496 ± 0.287	0.533 ± 0.294	*0.353*

Baseline
Lesion Characteristics

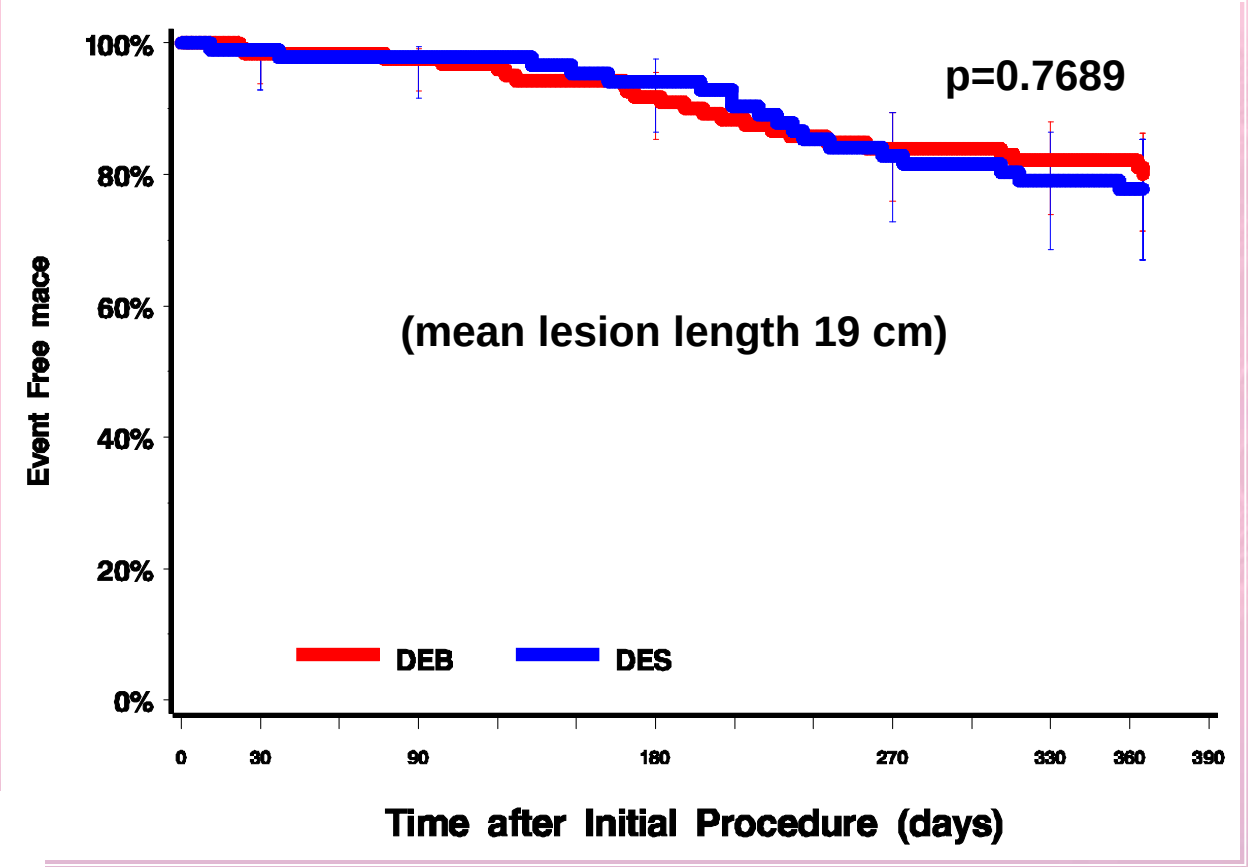
Lesion	DEB	DES	*p*
N	131	97	
Location: Proximal SFA	50.4% (66/131)	52.6% (51/97)	*0.743*
Mid SFA	70.2% (92/131)	79.4% (77/97)	*0.119*
Distal SFA	76.3% (100/131)	86.6% (84/97)	*0.052*
P1	26.0% (34/131)	17.5% (17/97)	*0.131*
P2	10.7% (14/131)	0.0% (0/97)	*< 0.001*
P3	7.6% (10/131)	0.0% (0/97)	*0.005*
Mean Length (mean±SD)	**194.4 ± 86.3**	**195.0 ± 64.5**	***0.948***
Length Min / Max (mm)	**100, 450**	**100, 350**	
Restenotic lesions	51.9% (68/131)	44.3% (43/97)	*0.258*
Tot Occlusions	52.7% (69/131)	62.9% (61/97)	*0.123*
% Diameter Stenosis (mean±SD)	93.5 ± 8.6	95.4 ± 7.6	*0.073*
Calcification: none	31.3% (41/131)	20.6% (20/97)	
slight	25.2% (33/131)	48.5% (47/97)	*0.527*
moderate	23.7% (31/131)	21.6% (21/97)	
severe	19.8% (26/131)	9.3% (9/97)	

Procedural Characteristics

Lesion	DEB	DES	p
N	131	97	
Sub-intimal	8.4% (11/131)	17.5% (17/97)	*0.038*
Re-entry device used	4.6% (6/131)	9.3% (9/97)	*0.157*
pre-dilatation	76.3% (100/131)		
Provisional Stenting	**18.3% (24/131)**		
Refractory Stenosis	3.8% (5/131)		
Flow-limiting Dissection	9.9% (13/131)		
Other	4.6% (6/131)		

12-month Freedom from Death and TLR*

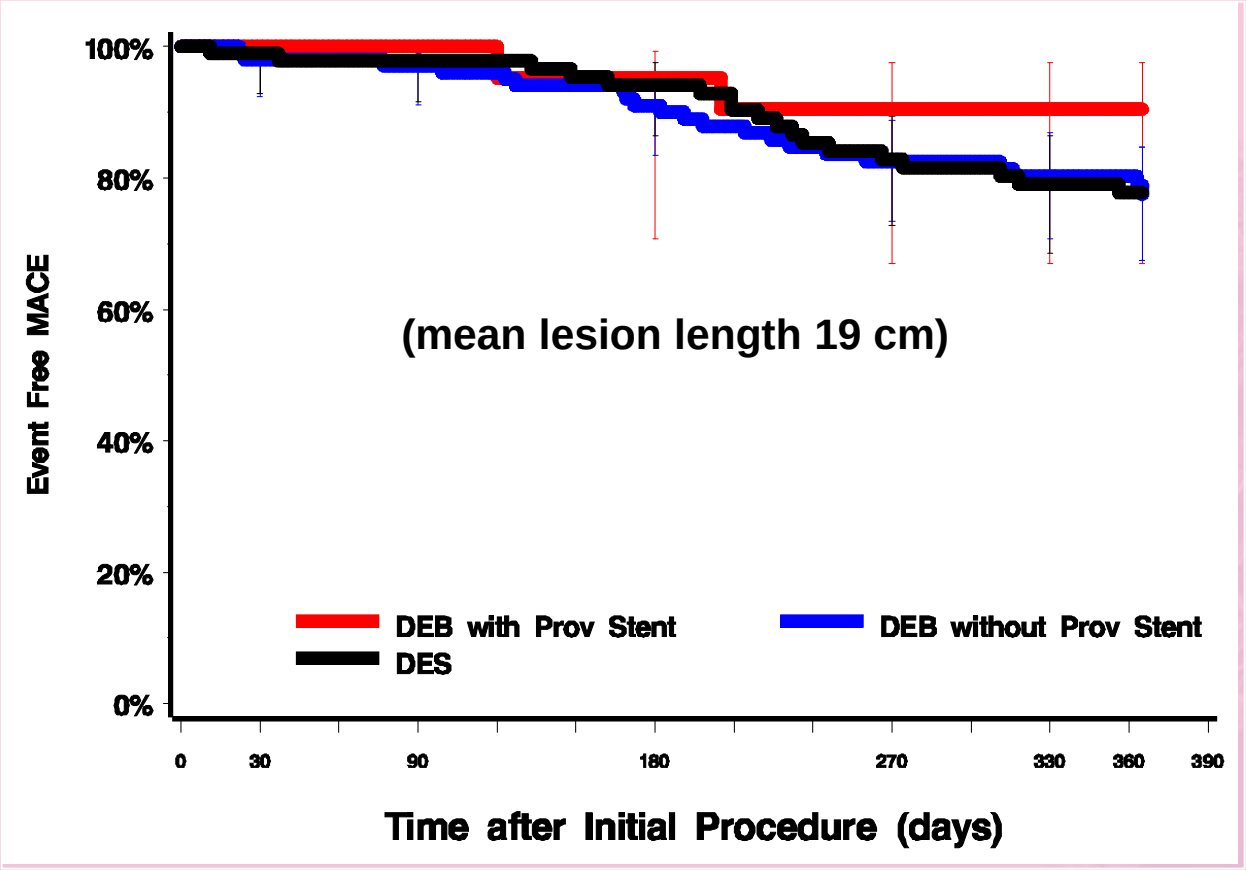
Major Adverse Events	DEB	DES	*p*	*adjusted p*
Clinical driven TLR	15.6% (17/109)	19.0% (15/79)	*0.543*	*0.572*



* Clinically Driven TLR

12-month Freedom from Death and TLR*

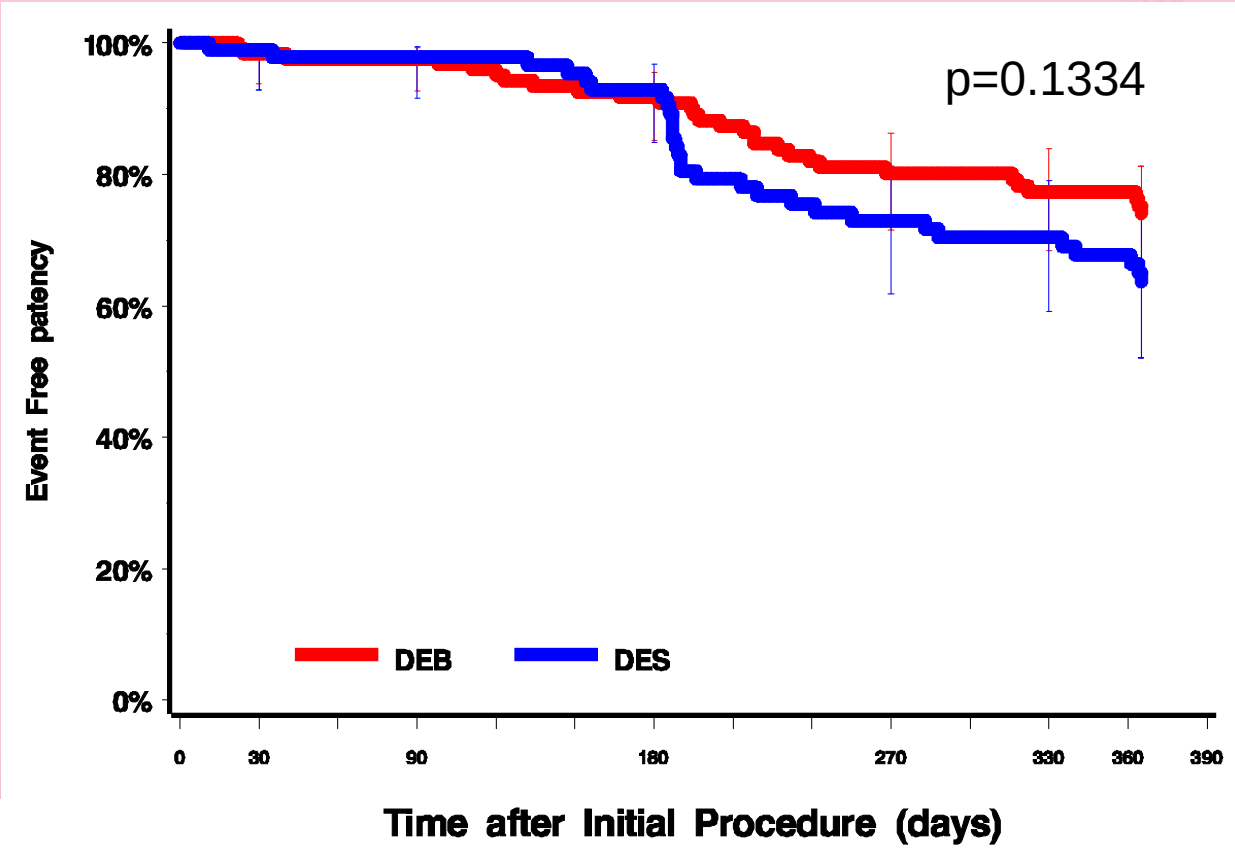
(DEB ± prov. Stent sub-analysis)



* Clinically Driven TLR

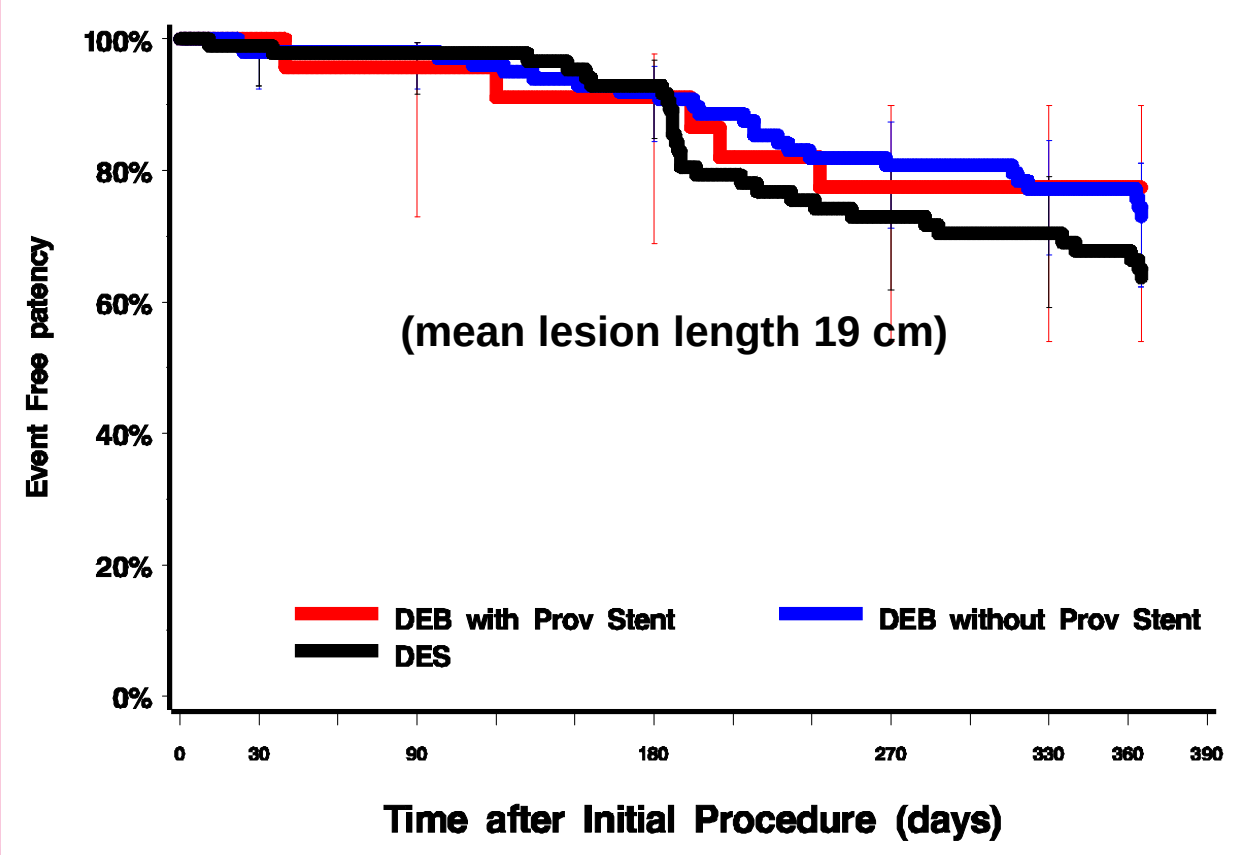
1-Year Primary Patency

Major Adverse Events	DEB	DES	*p*	*adjusted p*
Binary Restenosis	76.1% (83/109)	69.6% (55/79)	*0.319*	*0.372*



1-Year Primary Patency

(DEB ± prov. Stent sub-analysis)



DEB Long SFA
LEIPZIG Registry

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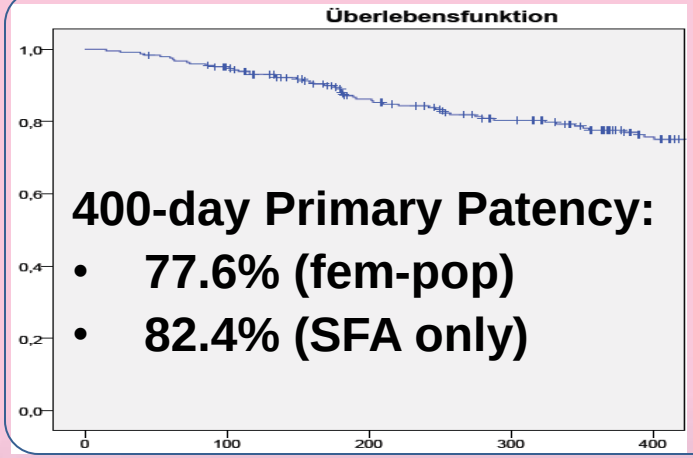
Real world Registry of long (24 cm) femoro-popliteal lesions

Prospective	√
Multicenter	
Randomized	
Corelab Adj.	
Peer-rev. Published	

# Limbs	288
Subject Population	IC + CLI
Major Indication	Fem-pop de-novo + ISR
Primary Endpoint	12-month Primary Patency
Key baseline / proced. characteristics	• Mean l. length: 24 cm; CTO: 65.3%; ISR: 37.2% • Stent rate: 23.3% (~75% focal)



400-day Primary Patency:

- 77.6% (fem-pop)
- 82.4% (SFA only)

Key Findings:

- Very promising (interim) results of IN.PACT DEB in TASC C-D fem-pop lesions
- pre Atherectomy / Thrombectomy may even further improve DEB results

A. Schmidt – LINC 2013

DEB vs. PTA
Meta-analysis

Paclitaxel-Coated Versus Uncoated Balloon Angioplasty Reduces Target Lesion Revascularization in Patients With Femoropopliteal Arterial Disease

A Meta-Analysis of Randomized Trials

Salvatore Cassese, MD*; Robert A. Byrne, MB, BCh, PhD*; Ilka Ott, MD; Gjin Ndrepepa, MD; Mateja Nerad, MD; Adnan Kastrati, MD; Massimiliano Fusaro, MD

- **meta-analysis of DEB vs. PTA: 4 proof-of-concept RCTs / 433 Patients [1] ; median FU = 10.3 months**
- **DEB shows superior efficacy vs. PTA in angiographic and clinical restenosis and same safety profile**
  - DEB significantly reduce TLR, restenosis and LLL vs. PTA
  - no differences in all cause mortality

1. Cassese S et al. Paclitaxel-coated versus uncoated balloon angioplasty reduces target lesion revascularization in patients with femoropopliteal arterial disease: a meta-analysis of randomized trials. Circ Cardiovasc Interv. 2012 Aug 1;5(4):582-9.

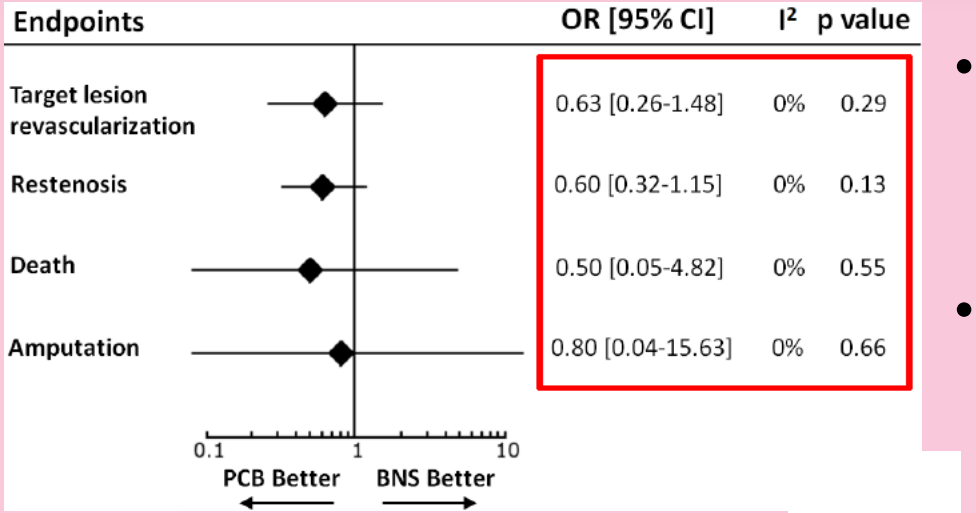
DEB vs. BMS (indirect) meta-analysis

Contents lists available at SciVerse ScienceDirect
International Journal of Cardiology
journal homepage: www.elsevier.com/locate/ijcard

Paclitaxel-coated balloon or primary bare nitinol stent for revascularization of femoropopliteal artery: A meta-analysis of randomized trials versus uncoated balloon and an adjusted indirect comparison☆

Massimiliano Fusaro, Salvatore Cassese *, Gjin Ndrepepa, Lamin A. King, Tomohisa Tada, Ilka Ott, Adnan Kastrati
Deutsches Herzzentrum, Technische Universität, Munich, Germany

- **11 RCTs / 1464 Patients [1]**
- **Median FU = 24m (DEB) 12m (BMS)**



- **both DEB and BMS show superior antirestenotic efficacy to PTA**
- **DEB is at least as efficacious as BMS without safety trade-offs**

1. Fusaro M et al. Paclitaxel-coated balloon or primary bare nitinol stent for revascularization of femoropopliteal artery: A meta-analysis of randomized trials versus uncoated balloon and an adjusted indirect comparison. Int J Cardiol. 2013 Jul 23

DEB in Long Femoro-popliteal Lesions Conclusions

- DEBs potentially overcome the Achille's heel of reduced durability of endovascular revascularisation
- With the limitations of a retrospective single center study, the advanced Propensity Score statistical method adds rigor and reliability to head-to-head comparisons of real-world cohorts with ~90% of bias removed from confounding variables
- IN.PACT Admiral and Zilver PTX offer similar safety and efficacy outcomes to patients treated for claudication and rest pain due to long (~19 cm) SFA lesions
- DEBs offer a broader anatomical applicability and bring all the advantages of a "leave nothing behind" first-line therapy

RCT: REAL PTX Trial

- Drug Coated Balloons vs. Zilver PTX DES
- 3 subgroups stratified to lesion length
  - 1-10 cm
  - 10 – 20 cm
  - 20 – 30 cm
- Started enrollment 12/2012
- 108 /150 pts. enrolled after 3 months of stopping recruitment due to Zilver PTX stent recall